BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Engineering Division

Permit Handbook

ENGINEERING DIVISION

Permit Handbook

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BAY AREA AIR QUALITY MANAGEMENT DISTRICT PERMIT HANDBOOK

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INTRODUCTION

March 1, 2024

The Bay Area Air Quality Management District (BAAQMD or Air District) Permit Handbook (Handbook) is intended to be used by permit applicants, Air District permit engineers, Air District inspectors, and other Air District staff.

The purpose of this Handbook is to set forth the fixed standards and objective measurements to be used by Air District engineers in the evaluation of a permit application for a particular project belonging to a given source category.

The Handbook provides Air District permit engineers with the tools necessary to evaluate the emissions and the compliance status of a source. The Air District also expects the Handbook to be useful to permit applicants, as it defines all elements of a complete permit application and provides an explanation of the factors considered during the permit evaluation process. Air District inspectors will find the Handbook useful because it will help them better understand the processes and emissions they are enforcing. Other Air District staff may find the Handbook useful where their duties require involvement with the permitting process.

GENERAL APPLICATION GUIDANCE

February 28, 2024

Air Quality Permit Requirements

The Bay Area Air Quality Management District's Regulation 2 Rule 1 describes the permit requirements for sources of air pollution. In general, any new, modified, relocated, or altered equipment or operation that emits pollutants into the atmosphere requires a Permit to Operate from the Air District unless it is excluded from Air District Regulations per Regulation 1 or exempted from Air District permit requirements by a specific section of Regulation 2 Rule 1. Any air pollution control equipment, associated with a source that requires an Air District permit, is also required to have a Permit to Operate from the Air District. Facilities may use the Permit Exemption Guidance to aid in determining whether a source is required to have a permit or is exempt from permit requirements. This document does not cover operations or equipment eligible for a certificate of registration. For registrations, information is available on the Air District Register Equipment webpage.

Once it has been determined that a permit is required for a particular source or operation for a new, modified, relocated, or altered source, a facility applies for the required permit by submitting a permit application package to the Air District's Engineering Division for review. The Engineering Division issues and renews air quality permits for equipment that emits or controls the emission of air pollution from large, medium, and small facilities. If a facility is unsure about whether a permit is required, it is advisable to submit a permit application package for the operation and the Air District will review the application and make the final determination.

A flow diagram of the Air District's permitting process is provided for illustrative purposes. A Frequently Asked Questions document is also available. If you cannot find an answer to your question, you can contact the Engineering Division at permits@baaqmd.gov (preferred) or (415) 749-4990.

Minimum Requirements for a Permit Application Package

The Air District has minimum requirement before a permit application is considered submitted. Failure to submit the minimum forms and supplemental documents in the format specified may result in the return of all submitted material.

The minimum submittal requirements to create an application are:
1. Application Cover Form: P-101B
2. Facility Creation Form (For first time permittees only) and Facility Contacts Form (For first time permittees, but can be used to update contacts for existing facilities with permits
3. Cover letter on company letterhead or email describing the project
4. At least one (1) Data Form or a Permit Condition Change Request form
5. If the application contains Trade Secret information, submit the documents specified under Trade Secret section of the P-101B.

Electronic submittals (preferred):
- Attachments must be PDF files only.
- Email plus attachments is limited to 35 megabytes or less in size.

Paper submissions:
- No staples
- Two (2) copies of all data forms must be provided
- Paper size limited to 11"x 17"

Completeness Determination

Applications for an authority to construct or a permit to operate must include applicable Air District forms and contain the information required for the Air Pollution Control Officer (APCO) to make a permit decision. Permit Handbook chapters (chapters) have a listing of the Air District forms and additional information required for each of the sources in the various source categories. In addition, the chapters refer to the applicable fee calculation procedures to determine the required fee. A Completeness Determination Checklist has been developed to aid in the preparation of a complete application.

If an application is not complete, the APCO shall notify the applicant in writing and indicate what additional data or fees are required to complete the application. Typically, the Air District must review and determine whether an application is complete within 30 days of receipt of the application or upon receipt of any resubmittal of the application addressing completeness deficiencies. The APCO may cancel an application if the applicant fails to furnish the requested information or pay all appropriate fees during the requested time frame in Regulation 2-1-309 (90 days with an additional 90 days upon written request and Air District approval).

In general, the APCO notifies the applicant in writing of the approval or denial of their application within 90 days of receipt of a completed application per Regulation 2-1-408.

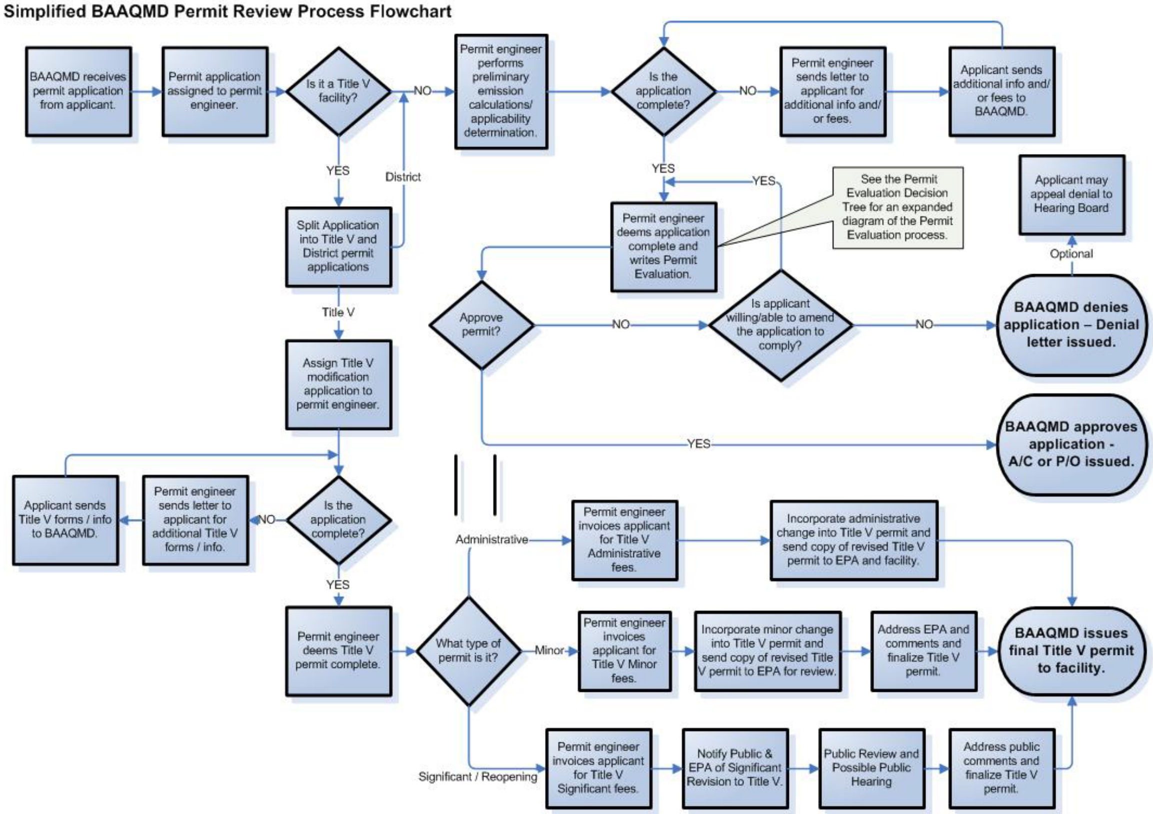
The deadlines are different for the following permit types:

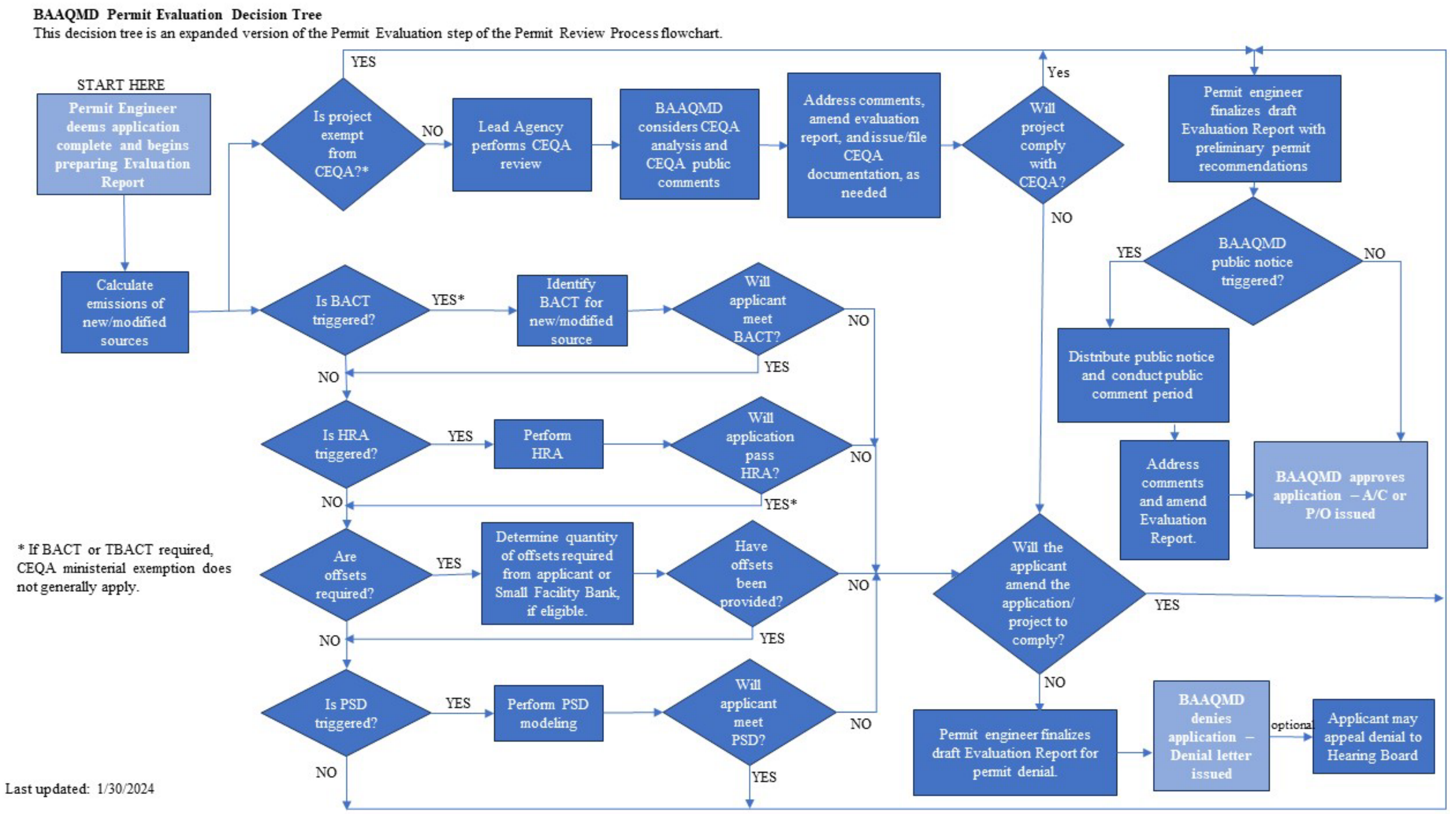
- Major Facility Review (Title V);
- Prevention of Significant Deterioration (PSD);
- Projects within 1000 feet of a school boundary;
- Projects within an overburdened community that trigger a health risk assessment;
- Projects that require CEQA environmental review and documentation;
- Projects that trigger publication, and public comment requirements of Regulation 2-2-404, 2-4-405, or 2-9-405.

In addition, the deadlines may be extended upon mutual consent of the applicant and the APCO. Project changes after an application is deemed complete may require a new permit application.

Permitting Process Flow Diagrams

Simplified BAAQMD Permit Review Process Flowchart





BAAQMD Permit Evaluation Decision Tree

GENERAL EVALUATION GUIDANCE

February 28, 2024

The permit evaluator prepares an "evaluation report" which documents the evaluation and the resulting decision (approval or denial) of the application. The sections within the evaluation report include a brief background description of the application, emission calculations, applicable requirements, and recommended permit conditions. The following sections of this guidance will provide the details to be considered in preparing the evaluation report. Evaluation Report Template Guidance has been prepared to aid in the preparation of the report.

Background

The permit evaluator should include a list and description of the sources or operations to be permitted in the project. Relevant historical information regarding sources should be included in the background. Examples include but not limited to:

- Initial date of operation, if already operating
- Proposed date of construction
- Compliance history

Emission Calculations

The emissions from the proposed source(s) will normally be calculated using the specific procedures and/or emission factors referenced in the chapter for that source type. Deviations from these procedures may make the permitting decision non-ministerial and therefore subject to CEQA. Emission calculations should include all relevant criteria pollutants including toxic air contaminants (TAC) and for all relevant time periods:

- Annual;
- Maximum daily; and
- Maximum 1-hour (if TAC has an acute trigger level listed in Table 2-5-1 of Regulation 2-5)

Regulations 2-2-604 and 2-5-601 provide the emission calculation procedures for criteria pollutants and TACs, respectively.

Applicable Requirements

For each source, the permit evaluator must list, and determine compliance with, each applicable requirement identified in the chapter for the source type. A permit cannot be approved without the source being in compliance with all applicable regulatory requirements.

Air District Rules and Regulations
The chapters identify all applicable Air District rules that may apply to each specific source type in each source category.

Best Available Control Technology (BACT)
In accordance with Regulation 2-2-301, BACT is triggered if emissions of a Air District BACT Pollutant for a new source (defined in Regulation 2-1-232) has the potential to emit in an amount of 10.0 or more pounds on any one day.

2-2-202 Best Available Control Technology (BACT): An emission limitation, control device, or control technique applied at a source that is the most stringent of: 202.1 The most effective emission control device or technique that has been successfully utilized for the type of equipment comprising such a source; or 202.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or 202.3 The most effective control device or technique or most stringent emission limitation that the APCO has determined to be technologically feasible for a source, taking into consideration cost-effectiveness, any ancillary health and environmental impacts, and energy requirements; or 202.4 The most effective emission control limitation for the type of equipment comprising such a source that is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitation is not achievable. Under no circumstances shall BACT be less stringent than any emission control required by any applicable provision of federal, state or District laws, rules or regulations.

Once a source has been determined modified per Regulation 2-1-234 for one or more Air District BACT pollutant(s), a BACT review is required for the pollutant(s) which triggered a modified source. For those Air District BACT pollutants for which there will be an increase within the language of Regulation 2-1-234, BACT must be re-evaluated if (i) there is an increase from baseline to future Potential to Emit (as determined in procedures specified in proposed Section 2-2-603 and 2-2-605) and (ii) emissions will be over 10 pounds per day. If there is a criteria pollutant for which there is not going to be an increase within the language of Regulation 2-2-234, then BACT would not be re-evaluated for that pollutant. Air District BACT Pollutants are defined in Regulation 2-2-210 as the following: Precursor Organic Compounds (POC), Non-Precursor Organic Compounds (NPOC), Nitrogen Oxides (NOx), or Sulfur Dioxides (SO_2), PM10, and PM2.5 and carbon monoxide (CO).The Complex Permitting Handbook for BAAQMD New Source Review Permitting should be reviewed for more detailed information.

1) Technologically Feasible/Cost-Effective and 2) Achieved in Practice. The level of control that satisfies BACT evolves and becomes stricter over time, so each BACT determination must be made on a case-by-case basis. Any emission control or emission limitation has already been achieved in practice is the minimum level of BACT control. Once that is determined, the permit engineer must also consider whether a more stringent level of control is technologically feasible and cost effective.

The BACT/TBACT Workbook may assist in the BACT determination because it will list known emission controls or limitations that have already been determined to be “technologically feasible/cost-effective” or have been “achieved in practice.” However, because BACT is constantly evolving and becoming more stringent, entries in the workbook may be obsolete. For instance, there may be a technology that has since become cost-effective, or a new technology may have become achieved in practice since the workbook was last updated. Accordingly, the workbook can inform the BACT analysis but cannot be relied upon alone.

To use the BACT/TBACT Workbook, the user should look for a BACT entry in the first BACT level of control, technologically feasible/cost-effective controls or emission limitations, and determine whether the control or emission limitation is appropriate for the specific application under review. The Air Pollution Control Officer, with the assistance of Air District staff, will make the final determination of the applicability of that BACT determination for the specific source equipment, usage, and operating condition under review. Staff must also review the proposed control equipment and/or emission control level for obsolescence and determine whether a more efficient control technique and/or more stringent emission limitation has been shown to be feasible and cost effective as well as whether a more efficient control technique and/or more stringent emission limitation has been achieved in practice. As discussed in the Cost Effectiveness Determination section, such factors as the material usage or process throughput limits expected on the permit to operate will have a major impact on the final cost-effectiveness determination. Once staff has reviewed the BACT/TBACT workbook and researched whether any more stringent control technique or emission limitation is “technologically feasible/cost-effective” or has been “achieved in practice,” the BACT determination can be made. BACT must be the most stringent level of control found to be “technologically feasible/cost-effective” or “achieved in practice.”

Offsets

In accordance with Regulation 2-2-302, offsets are triggered if a facility has the potential to emit (PTE) more than 10 ton per year of POC or NOx. If the facility has a PTE above 10 but below 35 tons per year of POC or NOx, then the facility is eligible to receive offsets from the Small Facility Bank provided that the SFB is funded and the facility or its parent company do not already own banked emission reduction credits (see Policy: Clarification Regarding Provider of Emission Reductions Credits/Offsets). If the facility has emissions above 35 tons per year and the project emissions are not eligible for SFB credits per H&S Code 42314, the facility shall provide the offsets. The evaluation report should document the quantity of offsets required, how offsets are provided and, if applicable, any rationale as to why offsets are not required by noting the post project PTE of the emitted pollutant(s) for the facility. A permit cannot be approved without the required offsets. The Complex Permitting Handbook for BAAQMD New Source Review Permitting provides more detailed information.

In accordance with Regulation 2-2-303, offsets are also triggered if a new or modified source at a facility emits 100 tons per year of PM2.5, PM10, or sulfur dioxide after the new or modified source is constructed (including emissions from cargo carriers per Section 2-2-610. A permit cannot be approved without the required offsets.

Prevention of Significant Deterioration (PSD)
A new or modified source or a combination thereof that are part of a single common project which meets the definition of a PSD Project set forth in Regulation 2-2-224 is subject to the following PSD requirements:

PSD BACT – In accordance with Regulation 2-2-304, PSD Projects must use the "Best Available Control Technology (BACT) to control emissions of the pollutants that are subject to PSD review.

PSD Source Impact Analysis – In accordance with Regulation 2-2-305, PSD Projects must demonstrate that they will not cause or contribute to a violation of (i) any applicable ambient air quality standard or (ii) any PSD "increment in air quality that is allowed before it is considered "significant" (defined in Regulation 2-2-227).

PSD Additional Impacts Analysis – In accordance with Regulation 2-2-306, PSD Projects must prepare an analysis of any impacts to visibility, soil, and vegetation that will occur as a result of the project and any commercial, residential, industrial or other growth associated with the project.

The Complex Permitting Handbook for BAAQMD New Source Review Permitting should be reviewed for more detailed information.

A permit application cannot be approved unless the PSD analysis demonstrates that the proposed source emissions will not interfere with the attainment or maintenance of a National Ambient Air Quality Standard (NAAQS), and, if applicable, will not cause an exceedance of a PSD increment. For Air District purposes, NAAQS is defined to include both California and national standards. Guidance from the Air District's Engineering Division is available for the applicant's use to give the permit applicant specific assumptions, requirements, conventions, and procedures for the preparation of a modeling analysis. Because this guidance cannot cover every aspect of the analysis needed for a proposed source without becoming unwieldy, the applicant should submit a PSD plan (protocol) with their application before beginning the analysis.

The Air District permit evaluator shall include reference of the PSD analysis and summarize the results in the evaluation report and attach the analysis to the evaluation report. If PSD modeling is triggered, then the publication and public comment requirement of Regulation 2-2-404 is also triggered.

California Environmental Quality Act (CEQA)
CEQA requires public agencies (e.g., local, county, regional, and state government) to consider and disclose the environmental effects of their decisions to the public and governmental decisionmakers before approving a project. CEQA also mandates that agencies implement feasible mitigation measures or alternatives that would mitigate significant adverse effects on the environment. Projects must comply with the provisions of CEQA, which are found in the California Public Resources Code, Sections 21000 *et seq.* as well as the State CEQA Guidelines, title 14 of the California Code of Regulations, Sections 15000 *et seq.*, which are administrative regulations governing the implementation of CEQA. The Air District also publishes guidance for evaluating the air quality and climate impacts of projects under CEQA. CEQA is intended to address a broad range of environmental issues, including air quality, water quality, noise, land use, transportation, energy, and greenhouse gases. As a public agency, the Air District takes an active part in the CEQA intergovernmental review process. In carrying out its CEQA duties, the Air District may act

as a Lead Agency, a Responsible Agency, or a Reviewing Agency [Link to 2024 State CEQA Statutes and Guidelines:hhttps://www.califaep.org/docs/2024_CEQA_Statute_and_Guidelines_Handbook.pdf].

Step 1: During the completeness determination phase of the permit review, the permit evaluator shall seek early guidance from their supervisor and/or Permit Ombudsman (if needed) to determine the Air District's planned approach for CEQA compliance, or compliance through other functionally-equivalent environmental review programs such as the federal National Environmental Protection Act (NEPA) or CEQA "certified regulatory programs".

- CEQA Section 21080.5 and CEQA Guidelines Sections 15250 and 15251 contain an exemption for Certified State Regulatory Programs, such as those that the Agricultural Departments get through the State Department of Pesticide Regulation's "Restricted Materials and Permitting Program Section 15251 (i). Certified regulatory programs substitute for the normal CEQA process. A Certified State Regulatory Program is exempt from the requirements for preparing EIRs, Negative Declarations, and Initial Studies if the criteria in Section 21080.5 are met. A certified program remains subject to other provisions of CEQA such as the policy of avoiding significant adverse effects on the environment where feasible.

Common CEQA compliance approaches include determinations such as: Not a project, subject to a statutory exemption (i.e., ministerial/emergency/Title V/etc.), subject to a categorical exemption, CEQA review has been/is being undertaken by another public agency, and CEQA review will be undertaken by the Air District.

Step 2:
For applications that are determined to be statutorily exempt (i.e., ministerial/emergency/Title V/etc.) from CEQA or emissions banking applications, skip Step 2.

For all other applications, the permit evaluator shall determine whether the CEQA information for the permit application is complete. If the CEQA information is not complete, request the specific information in the incomplete letter to the applicant. (Basis: Regulation 2-1-426.1 and 2-1-426.2).

After the receipt of any required CEQA information, the permit evaluator shall state in the Engineering Evaluation that the application has been deemed complete for CEQA per Regulation 2-1-426.1 and 2-1-426.2.

Step 3a: Exemption Determinations
The permit evaluator shall cite the specific CEQA statutory exemption/s and/or CEQA Guidelines categorical exemption/s that apply to the project along with the rationale that supports each determination. If multiple CEQA exemptions apply to the project, the permit evaluator shall list each exemption citation along with the rationale for each.. In addition, for high public interest facilities, a Notice of Exemption shall be filed with the County Clerk where the project is to be located.

Step 3b: CEQA Review
For projects which are not exempt from CEQA and are therefore subject to CEQA review, consult with your supervisor and/or the Permit Ombudsman for instructions and guidance. The Engineering Evaluation would provide a chronology of the CEQA review process including background on the CEQA lead agency determination, CEQA documents prepared, public comment periods, County Clerk filings, and if the BAAQMD was CEQA lead agency, a summary of comments received with responses.

Overburdened Communities
Permit applications for projects located within an overburdened community (OBC), as defined in Regulation 2-1-243, are subject to additional permitting requirements including: additional fees (pending citation: Regulation 3-302.7), more stringent cancer risk limitations (Regulation 2-5-302.1), and public notification requirements (Regulation 2-1-412). The Air District has developed an interactive mapping tool that enables staff, facilities, and the public to easily identify if a project location is within an OBC by entering an address, intersection, or latitude/longitude location in the mapping tool. Shaded areas and color-

coded location pins will identify if the location is within an OBC. The OBC mapping tool is available on the Air District Interactive Map webpage.

Overburdened Community Notification

Any project that includes new or modified sources that are located within an overburdened community and that triggers a health risk assessment for that project is required to undergo public notification pursuant to Reg. 2, Rule 1 (baaqmd.gov). A notification shall be prepared that fully describes the project, proposed emissions, and health risks determined pursuant to Regulation 2, Rule 5. The notification shall be distributed to each address located within 1000 feet of any source within the project. The APCO shall review and consider all comments received during the 30 days after the notice is distributed and shall include a written response to the comments in the permit application file prior to taking final action on the application.

School Notification

AB 3205 (H&S Code Section, 42301.6 through 42301.9) addresses sources of hazardous air pollutants near schools. It requires new or modified sources of "hazardous air emissions" located within 1000 feet of the outer boundary of a school to give public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1000-foot radius.

As a result, any new or modified source located within 1000 feet of the outer boundary of a school and which results in the increase of any "hazardous air emissions" into the ambient air, triggers the public notice requirement of Regulation 2-1-412. A school is defined as any public or private school of more than 12 children in kindergarten or any grades 1 to 12, excluding private schools in which education is primarily conducted in private homes. H&S Code Section 42301.6(h)(1) defines "hazardous air emissions" as the following:

> "Hazardous air emissions" means emissions into the ambient air of air contaminants which have been identified as a toxic air contaminant by the state board or by the air pollution control officer for the jurisdiction in which the project is located. As determined by the air pollution control officer, hazardous air emissions also means emissions into the ambient air from any substances identified in subdivisions (a) to (f), inclusive, of Section 44321 of the Health and Safety Code."

As indicated in the definition, "hazardous air emissions" are identified on the following lists:

- AB2588 List
- Regulation 2-5, Table 2-5-1
- Proposition 65 List
- CalARP Program List

All four lists should be reviewed to determine whether the applicant will emit a "hazardous air emission".

The permit evaluator should check whether the facility is located within 1000 feet of a school. The Air District evaluator shall use the Google Earth Pro program. [Applicants may use the following web sites to check the facility location and the location of the nearest schools: Google Earth or Google Maps.] If the preliminary check indicates that the facility location is within 1500 feet of a school, then the permit evaluator should verify whether each site operating at the identified location is indeed a K-12 school of more than 12 children. Verification can be done by looking at individual school website, looking up the student profile on a website such as GreatSchools.org or by contacting the school(s) directly. If the school is large enough to trigger public notice requirements, the applicant must provide a satellite map showing 1) the location of the source, 2) the boundary of the school, and 3) the scale of the map. Once one school is identified within 1000 feet, the search radius must be enlarged to 0.25 mile (1320 feet) to determine whether there are more schools within this new search radius. Once all the schools have been identified, and prior to approving any authority to construct or permit to operate, a public notice must be distributed to all parents/guardians of students going to the school and all addresses within 1000 feet of the school. The public notice shall describe the proposed new or modified source, and the proposed emissions and allow 30 days for public comment. The APCO shall review and consider all comments received during the 30 days after the notice is distributed and shall include a written response to the comments in the permit application file prior to taking final action on the application.

Health Risk Assessment (HRA)
In accordance with Regulation 2-5, the total emissions of each applicable TAC from all new and modified sources contained within a permit application shall constitute the "project" for the purpose of determining whether an HRA must be prepared. In addition, in order to prevent circumvention which might be achieved by breaking a project into smaller pieces and submitting more than one permit application over a period of time, a project shall include those new or modified sources of TACs at a facility that have been permitted within the five-year period immediately preceding the date a complete application is received and any projects at the facility where an Authority to Construct has been issued and has not expired, unless the applicant demonstrates to the satisfaction of the APCO that construction or modification of the sources included in the current application was neither (1) a reasonably foreseeable consequence of the previous project, nor (2) a critical element or integral part of the previous project. If the estimated project emission of any identified TAC exceeds its respective acute or chronic trigger level listed in Table 2-5-1 of Regulation 2-5, then an HRA is required for the project.

The permit evaluator should calculate TAC emission rates, including annual average emission rates, and maximum hourly emission rates (if the TAC has an acute trigger level) to determine if an HRA is required. If an HRA is required, the permit evaluator should submit a completed HRA form with accompanying facility plot plan and local street map indicating the location of the facility, the source location(s), any surrounding building(s), application information from other new or modified sources of TACs at the facility that have been determined to be related to the current application (permitted within the last five-years or issued a valid Authority to Construct), and a transmittal interoffice memorandum to the Air District's Toxics Section Manager. Regulation 2-5 dictates that the cancer risk is acceptable if it is below one in a million, or if TBACT is applied and the cancer risk is below 6 in a million for projects located in overburdened communities or below 10 in a million for all other locations; the non-cancer risk is acceptable if the chronic hazard index is less than or equal to 0.2, or if TBACT is applied and the chronic hazard index is less than or equal to 1.0, and the acute hazard index is less than or equal to 1.0. The Air District permit evaluator should summarize the risk assessment in the evaluation report. Unless the cancer and non-cancer risks are acceptable in accordance with Regulation 2-5, a permit application cannot be approved.

Airborne Toxics Control Measures (ATCM)
The California Air Resources Board (CARB) has adopted ATCMs for several source categories to protect public health from harmful effects of air pollution. CARB ATCMs may apply to both new and existing mobile sources, portable sources, temporary sources, and stationary sources. The chapters will identify any applicable ATCM that may apply for each specific source type in each source category.

New Source Performance Standards (NSPS)
Section 111 of the Clean Air Act, "Standards of Performance of New Stationary Sources," requires EPA to establish federal emission standards for source categories, which cause or contribute significantly to air pollution. These standards are intended to promote use of the best air pollution control technologies, taking into account the cost of such technology and any other non-air quality, health, and environmental impact and energy requirements. These standards apply to sources, which have been constructed or modified since the proposal of the standard. Since December 23, 1971, the Administrator has promulgated nearly 75 standards. These standards can be found in the Code of Federal Regulations at Title 40 (Protection of Environment), Part 60 (Standards of Performance for New Stationary Sources).

The chapters will identify any applicable NSPS that may apply for each specific source type in each source category.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)
The Federal Clean Air Act requires the Environmental Protection Agency (EPA) to regulate emissions of hazardous air pollutants from a published list of industrial sources referred to as "source categories." As

required under the Act, EPA has developed a list of source categories that must meet control technology requirements for these toxic air pollutants. The EPA is required to develop NESHAP for all industries that emit one or more of the pollutants in significant quantities in 40 CFR 63. In addition, in 40 CFR 61, they also adopted NESHAPs based on control of certain types of hazardous pollutants.

The chapters will identify any applicable NESHAP that may apply for each specific source type in each source category. These standards are also called Maximum Achievable Control Technology (MACT) standards. Most apply in the event that the facility is a Title V facility and a major source of HAPs. However, there are many MACT standards that now apply to small sources or area sources (facilities that are not a major source of HAPs). The source-specific chapters will identify these cases.

Permit Conditions

Standardized conditions for the various source types for each source category are available from each chapter and the Permit Condition Guidance. Deviations from standard permit conditions must be clearly indicated in the permit evaluation and may result in a project being deemed non-ministerial, thereby triggering further CEQA review. Each of the chapters contains applicable permit conditions for each source type.

PERMIT CONDITION GUIDANCE

March 7, 2024

Background

Authorities to Construct or Permits to Operate may be subject to permit conditions (conditions). A condition may contain parts that limit material usage rates, set allowable operating parameter ranges, require emissions or parametric monitoring, require compliance demonstration tests, or establish record keeping requirements, per the Policy: Records Retention for Permit Conditions. The standardized and template permit conditions that are provided in this guidance are to be used in uniform treatment of ministerial sources. A standardized permit condition has fixed language that can be assigned to a source or operation category. A template permit condition has the framework of the text and can be tailored to the specific source(s) in the application such as source/device IDs and usage limits.

In general permit conditions should follow the following guidance:

- Each condition part limiting source operations shall include a method of demonstrating compliance if not already required by rule.
- Except for standardized conditions, the text should not cite specific rule citations or requirements already required by rule.
- Conditions should not contain trade secret information.

Microsoft Word versions of these permit conditions are available from the Evaluation Report Template Guidance.

Condition Basis Codes

Each permit condition part limiting source operations shall include a basis code. Basis codes shall be based on requirements in Air District, State, or Federal regulations. Limits should be deemed necessary to ensure a source complies with that regulation. The following are abbreviations and descriptions for each basis code. The Permit Evaluator should use the abbreviated identifiers at the end of each part and provide a legend at the end of the condition text.

Abbreviation	Description
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology, per Regulation 2-2-301;
Offsets	Offset requirements of Regulation 2-2-302/303;
ERC	Emission Reduction Credit from banked emissions.
IERC	Interchangeable Emission Reduction Credit banking per Regulation 2-9;
PSD	Prevention of Significant Deterioration, Regulation 2-2-304 through 306;
Toxics	Health Risk Assessment, per Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants;
TBACT	Best Available Control Technology for Toxics, per Regulation 2-5-301
NSPS	New Source Performance Standard, Regulation 10;
NESHAPS	National Emission Standard for Hazardous Air Pollutants, Regulation 11;
MACT	Maximum Achievable Control Technology;
Cumulative Increase	Cumulative emission increase, as defined in Regulation 2-2-208, and as calculated in permit application; and
Other	Provide a brief description.

Each part should usually have three sections:

1. Limit
2. Monitoring

3. Reporting/recordkeeping (see Policy: Records Retention for Permit Conditions)

Template Permit Conditions

An index of the various permit conditions is provided below:

2.1 Boilers, Steam Generators & Process Heaters
- Natural Gas
- Natural Gas w/Diesel Fuel Backup
- Other Gas Fuel

2.2 (deleted)

2.3 Internal Combustion Engines
- Emergency Stationary Diesel Engines
- Single > 1,000 BHP Emergency Stationary Diesel Engine
- Tier 2 Engines equipped with add-on SCR but no DPF, ST for NOx/CO
- Tier 2 Engines, equipped with add-on SCR but no DPF, ST for NOx/CO and POC
- Tier 2 Engines, equipped with add-on SCR and DPF, ST for NOx/CO
- Tier 2 Engines, equipped with add-on SCR and DPF, ST for NOx/CO and POC
- Tier 2 Engines, equipped with add-on SCR and DPF, ST for NOx/CO & PM
- Tier 2 Engines, equipped with add-on SCR and DPF, ST for NOx/CO and POC
- Emergency Stationary Natural Gas Engines
- Essential Emergency Natural Gas Engines
- Portable Diesel Engine
- Biogas Engines

3.1 Bulk Loading
- General
- Marine

3.3 Oil-Water Separators

3.4 Petroleum Refinery Fugitive Emissions

3.5 Natural Gas Facilities and Crude Oil Facilities
- Dehydrator
- Injection Wells
- Natural Gas Fired Engine
- Facility-Wide
- General Conditions (fixed roof tanks)
- Oil-Water Separators

4 Organic Liquid Storage Tanks
- General Conditions (fixed roof tanks)
- Additional for Internal or External Floating Roofs
- Additional for Vapor Recovery System

5.1&5.3 Coating Operations (including Graphic Arts)

5.2 Coating, Adhesives, and Ink Manufacturing
- Mixing Vats
- Screening Mill

6 Solvent Cleaning

7.2 Wave Solder Machine

7.3 Flexible and Rigid Disc Manufacturing

7.4 Semiconductor Fabs
- Abatement by thermal oxidation
  - Additional for Thermal Oxidizer RACT
  - Additional for source testing
  - Additional for allowable temperature excursion

8.0 Wastewater Treatment Facilities
- Anaerobic Digester Flares
- POTW Flares
- High Strength Waste
- Carbon Abatement for H_2S at Wastewater Treatment Facilities

Throughput Limit at Wastewater Treatment Facilities
9.1 Airstripping
Using Carbon Adsorption
Using Thermal Oxidation
Portable Using Carbon Adsorption
9.2 Soil Vapor Extraction
Using Carbon Adsorption
Using Thermal Oxidation
Portable Using Carbon Adsorption
9.3 Sub-Slab Depressurization
10.1 Chrome Plating (Hexavalent)
Decorative Chrome Plating
Hard Chrome Plating
Trivalent Chrome Plating
10.2 Ethylene Oxide Sterilizers
Ethylene Oxide Sterilizer w/Catalytic Oxidation
Small Sterilizers that are abated by integral carbon adsorption
10.4 Petroleum Solvent Dry Cleaning
11.1 Abrasive Blasting
non-BACT with no abatement
non-BACT with abatement
BACT with abatement
11.2 Asphalt Facilities
Asphalt Drum Mixer
Portable Asphalt Rubber Blending Plant
11.2 Coffee Roasters
Smaller Coffee Roasting Operation
Larger Coffee Roasting Operations
11.4 Cooling Towers
Non-BACT
BACT
11.5 Concrete Batch Plants
Abatement by Baghouse
11.6 Crematories
Human
Animal
11.7 Crushing and Grinding
Abatement by Baghouse
11.8.1 Methyl Bromide Fumigation
11.8.2 Phosphine Fumigation
11.9 Miscellaneous Organic Operations
11.10 Portable Equipment
Portable Diesel Engine
Portable Tub Grinders w/Diesel Engines
Portable Oil/Water Separation and Sludge Dewatering Operations
11.11 Polyester Resin Manufacturing
11.12 Polyester Resin Operation
11.13 Tub Grinders
Powered by Electricity (stationary)
Powered by Diesel Engine (stationary)
11.14 Landfill Gas Flares
11.15 Material Recovery Operations
11.16 Composting Operations
12 Procedures
12.1 Banking

The chapters provide recommended permit conditions for each source type. Moreover, additional parts may be added in circumstances when BACT-required abatement or other circumstances warrant source testing and/or additional monitoring. These additional parts are identified below:

A. Abatement by Thermal Oxidizer
B. Allowable Temperature Excursions
C. Source Testing
D. Abatement by Carbon
E. Abatement by Baghouse
F. Thermal Oxidizer RACT

Permit Conditions for Boilers, Steam Generators & Process Heaters, fired with natural gas and diesel fuel as backup fuel:

1. The owner/operator of S- shall operate this source on natural gas fuel exclusively, except that diesel fuel may be used when natural gas is unavailable and also to test the performance of the source using diesel fuel. (basis: Cumulative Increase)

2. The owner/operator shall not use more than therms of natural gas fuel at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

3. The owner/operator shall not use more than gallons of diesel fuel in any consecutive twelve-month period and only during times of natural gas curtailment and to test the performance of the source using diesel fuel. (basis: Cumulative Increase)

4. To determine compliance with the above parts, the owner/operator shall maintain the monthly records of natural gas and diesel fuel consumption at S- in an Air District approved log. Monthly throughput shall be totaled for each consecutive twelve-month period. These logs shall be kept for at least 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) and shall be made available to the Air District upon request. (basis: Cumulative Increase)

5. The owner/operator shall not exceed the following emission factors when operating S- using natural gas as a fuel:

   NOx = ppm @ 3% O_2
   CO = ppm @ 3% O_2
   POC = ppm @ 3% O_2
   (basis: BACT or Regulation 9-7-307, Cumulative Increase)

   [Add Source Test Conditions after part 5 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Boilers, Steam Generators & Process Heaters, fired with natural gas only:

1. The owner/operator of S- shall operate this source on natural gas fuel exclusively. (basis: Cumulative Increase)

2. The owner/operator shall not use more than therms of natural gas fuel at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

3. To determine compliance with the above parts, the owner/operator shall maintain the monthly records of natural gas consumption at S- in an Air District approved log. Monthly throughput shall be totaled for each consecutive twelve-month period. These logs shall be kept for at least 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) and shall be made available to the Air District upon request. (basis: Cumulative Increase)

4. The owner/operator shall not exceed the following emission factors when operating using natural gas as a fuel:

   NOx = ppm @ 3% O_2
   CO = ppm @ 3% O_2
   POC = ppm @ 3% O_2
   (basis: BACT or Regulation 9-7-307, Cumulative Increase)

   [Add Source Test Conditions after part 4 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Boilers, Steam Generators & Process Heaters, fired with other gaseous fuel:

1. The owner/operator of S- shall operate this source on gas fuel exclusively. (basis: Cumulative Increase)

2. The owner/operator shall not use more than standard cubic feet of gas fuel at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

3. To determine compliance with the above parts, the owner/operator shall maintain the monthly records of gas consumption at S- in an Air District approved log. Monthly throughput shall be totaled for each consecutive twelve-month period. These logs shall be kept for at least 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) and shall be made available to the Air District upon request. (basis: Cumulative Increase)

4. The owner/operator shall not exceed the following emission factors when operating S- using gas as a fuel:

   NOx = ppm @ 3% O_2
   CO = ppm @ 3% O_2
   POC = ppm @ 3% O_2
   (basis: BACT or Regulation 9-7-307, Cumulative Increase)

   [Add Source Test Conditions after part 4 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Emergency Stationary Diesel Engines: (Condition # 22850)

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing. [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited. [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated, and properly maintained. [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

4. Records: The owner/operator shall maintain the following monthly records in a District- approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).

   [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

5. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

   The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
   a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
   b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.

   [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

Permit Conditions for Single ≥ 1,000 BHP Emergency Stationary Diesel Engine:

[Conditions are not for agricultural or for direct drive fire pumps.]

I. Tier 4 Certified Engines, equipped with SCR and DPF

Notes: This condition should be used for Tier 4 certified engines. Source testing is not required.

1. The owner/operator shall abate the engine at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

3. The owner/operator shall commence urea injection as soon as the SCR catalyst bed reaches minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

4. The owner/operator shall not exceed an ammonia (NH_3) slip of 10 ppmv, dry @ 15% O_2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

5. To determine compliance with the above conditions, the owner/operator shall maintain the following records in a Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.
   a. Engine, SCR, and DPF maintenance records
   b. SCR system owner's manual or manufacturer's specifications
   c. DPF owner's manual or manufacturer's specifications
   d. All backpressure monitor notifications and corrective actions

   [Basis: BACT, Cumulative Increase, Recordkeeping]

Tier 2 Engines, equipped with add-on SCR but no DPF; ST for NOX/CO (Condition # 27780)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System. The engine and SCR System shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

2. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

3. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH_3) slip of 10 ppmv, dry @ 15% O_2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

4. The owner/operator shall ensure engine emissions do not exceed the following limit:
   NOx: 0.50 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

5. To demonstrate compliance with Part 4, the owner/operator shall conduct an initial Air District-approved source test on the engine within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

6. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District’s Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   NOx EPA Method 7E or Air District-approved equivalent
   CO EPA Method 10 or Air District-approved equivalent
   [Basis: Regulation 2-1-403]

7. To determine compliance with the above, the owner/operator shall maintain the following records in a Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.
   a. Source Test Notifications
   b. All source test reports
   c. Engine serial number and source number for each source test
   d. Engine load percentage
   e. Engine and SCR maintenance records
   f. SCR system owner's manual or manufacturer’s specifications
   g. SCR urea injection rate (gpm)
   [Basis: BACT, Cumulative Increase, Recordkeeping]

Tier 2 Engines, equipped with add-on SCR but no DPF; ST for NOx/CO and POC (Condition # 27781)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System. The engine and SCR System shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

2. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

3. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH_3) slip of 10 ppmv, dry @ 15% O_2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

4. The owner/operator shall ensure engine emissions do not exceed the following limits:
   NOx: 0.50 g/bhp-hour
   POC: 0.14 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

5. To demonstrate compliance with Part 4, the owner/operator shall conduct an initial Air District-approved source test on the engine within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

6. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   NOx EPA Method 7E or Air District- approved equivalent
   POC EPA Method 25A and EPA Method 18 or Air District-approved equivalent
   CO EPA Method 10 or Air District- approved equivalent
   [Basis: Regulation 2-1-403]

7. To determine compliance with the above, the owner/operator shall maintain the following records in a Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District or state regulations.
   a. Source Test Notifications
   b. All source test reports
   c. Engine serial number and source number for each source test
   d. Engine load percentage
   e. Engine and SCR maintenance records
   f. SCR system owner's manual or manufacturer’s specifications
   g. SCR urea injection rate (gpm)

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NOx/CO (Condition # 27782)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor, or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

3. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

4. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH_3) slip of 10 ppmv, dry @ 15% O_2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

5. The owner/operator shall ensure engine emissions do not exceed the following limit:
   NOx: 0.50 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test on the engine within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

7. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   NOx EPA Method 7E or Air District-approved equivalent
   CO EPA Method 10 or Air District-approved equivalent
   [Basis: Regulation 2-1-403]

8. To determine compliance with the above parts, the owner/operator shall maintain the following records in a Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District or state regulations.
   a. Source Test Notifications
   b. All source test reports
   c. Engine serial number and source number foreach source test
   d. Engine load percentage
   e. Engine, SCR, and DPF maintenance records

f. SCR system owner's manual or manufacturer's specifications
g. DPF owner's manual or manufacturer's specifications
h. All backpressure monitor notifications and corrective actions
i. SCR urea injection rate (gpm)

[Basis: BACT, Cumulative Increase, Recordkeeping]

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NOX/CO and POC (Condition # 27783)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor, or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

3. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

4. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH3) slip of 10 ppmv, dry @ 15% O2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

5. The owner/operator shall ensure engine emissions do not exceed the following limits:
   NOx: 0.50 g/bhp-hour
   POC: 0.14 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

7. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   NOx EPA Method 7E or Air District- approved equivalent
   POC EPA Method 25A and EPA Method 18 or Air District-approved equivalent
   CO EPA Method 10 or Air District- approved equivalent
   [Basis: Regulation 2-1-403]

8. To determine compliance with the above parts, the owner/operator shall maintain the following records in a Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.
   a. Source Test Notifications
   b. All source test reports
   c. Engine serial number and source number for each source test

d. Engine load percentage
e. Engine, SCR, and DPF maintenance records
f. SCR system owner's manual or manufacturer's specifications
g. DPF owner's manual or manufacturer's specifications
h. All backpressure monitor notifications and corrective actions
i. SCR urea injection rate (gpm)

[Basis: BACT, Cumulative Increase, Recordkeeping]

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NOx/CO & PM. (Condition # 27784)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR1039.101, BACT, TBACT]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

3. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

4. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH3) slip of 10 ppmv, dry @15% O2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require A source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

5. The owner/operator shall ensure engine emissions do not exceed the following limits:
   NOx: 0.50 g/bhp-hour
   PM: 0.02 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test on the engine within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallon per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

7. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   PM (filterable) EPA Method 5 or Air District- approved equivalent
   NOx EPA Method 7E or Air District- approved Equivalent
   CO EPA Method 10 or Air District- approved equivalent
   [Basis: Regulation 2-1-403]

8. To determine compliance with the above conditions, the owner/operator shall maintain the following records in a Air District- approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.
   a. Source Test Notifications
   b. All source test reports
   c. Engine serial number and source number for each source test

d. Engine load percentage
e. Engine, SCR, and DPF maintenance records
f. SCR system owner's manual or manufacturer's specifications
g. DPF owner's manual or manufacturer's specifications
h. All backpressure monitor notifications and corrective actions
i. SCR urea injection rate (gpm)

[Basis: BACT, Cumulative Increase, Recordkeeping]

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NOx/CO and POC (Condition # 27785)

1. The owner/operator shall ensure the engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

3. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches minimum operating temperature as specified by the manufacturer. [Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, TBACT]

4. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH3) slip of 10 ppmv, dry @ 15% O2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit. [Basis: Regulation 2, Rule 5]

5. The owner/operator shall ensure engine emissions do not exceed the following limits:
   NOx: 0.50 g/bhp-hour
   POC: 0.14 g/bhp-hour
   CO: 2.60 g/bhp-hour
   PM: 0.02 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferable as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. [Basis: BACT and Cumulative Increase]

7. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:
   PM (filterable) EPA Method 5 or Air District-approved equivalent
   NOx EPA Method 7E or Air District-approved equivalent
   POC EPA Method 25A and EPA Method 18 or Air District-approved equivalent
   CO EPA Method 10 or Air District-approved equivalent.
   [Basis: Regulation 2-1-403]

8. To determine compliance with the above conditions, the owner/operator shall maintain the following records in a Air District- approved log and shall make these records available to Air District staff upon request. All records shall be retained for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.
   a. Source Test Notifications

b. All source test reports
c. Engine serial number and source number for each source test
d. Engine load percentage
e. Engine, SCR, and DPF maintenance records
f. SCR system owner's manual or manufacturer's specifications
g. DPF owner's manual or manufacturer's specifications
h. All backpressure and corrective actions
i. SCR urea injection rate (gpm)

Basis: BACT, Cumulative Increase, Recordkeeping]

Permit Conditions for Emergency Stationary Natural Gas Engines:

1. Operating for reliability-related activities is limited to 100 hours per year per engine. [Basis: Regulation 9-8-330.2]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with an Air District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with Air District, state or Federal emission limits is not limited. [Basis: Regulation 9-8-330]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. [Basis: Regulation 9-8-530]

4. Records: The owner/operator shall maintain the following monthly records in an Air District-approved log for at least 24 months from the date of entry (5 years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location and made immediately available to the Air District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation (emergency).
   c. For each emergency, the nature of the emergency condition.
   d. Fuel usage for each engine(s).
   e. Monthly hours of operation for parts 4a and 4b shall be totaled for each consecutive twelve-month period.

   [Basis: Regulation 9-8-502]

Permit Conditions for Essential Emergency Natural Gas Engines (Condition # 23110):

REQUIREMENTS FOR ESSENTIAL EMERGENCY ENGINES:
An essential emergency engine is one that is used in the service of an essential public service. An essential public service is defined in Reg. 9-8-233 as:

- A sewage treatment facility, and associated collection system, which is publicly owned and operated;
- Water treatment and delivery operations;
- Public transit;
- Police or fire fighting facility;
- Airport runway lights; or
- Hospital or other medical emergency facility.

"Emergency Conditions" is defined as any of the following:

- Loss of regular natural gas supply.
- Failure of regular electric power supply.
- Flood mitigation.
- Sewage overflow mitigation.
- Fire.
- Failure of a primary motor, but only for such time as needed to repair or replace the primary motor.

[Basis: Reg. 9-8-231]

"Reliability-related activities" is defined as any of the following:

- Operation of an emergency standby engine to test its ability to perform for an emergency use, or
- Operation of an emergency standby engine during maintenance of a primary motor.

[Basis: Reg. 9-8-232]

1. Hours of Operation: The owner/operator shall operate the emergency standby engine(s) only to mitigate emergency conditions or for reliability-related activities. Operating while mitigating emergency conditions is unlimited. Operating for reliability-related activities is limited to 100 hours per any calendar year. [Basis: Reg. 9-8-331]

2. The owner/operator shall equip the emergency standby engine(s) with either:
   a. a non-resettable totalizing meter that measures and records the hours of operation for the engine.
   b. a non-resettable fuel usage meter.

   [Basis: Reg. 9-8-530]

3. Records: The owner/operator shall maintain the following monthly records in an Air District-approved log for at least 2 years and shall make the log available for Air District inspection upon request:
   a. Hours of operation (total).
   b. Hours of operation (emergency).
   c. For each emergency, the nature of the emergency condition.

   [Basis: Reg. 9-8-530, 1-441]

Permit Conditions for Portable Diesel Engine:

This condition can be for a portable engine that is portable on-site or that can leave the site. 2-1-413 applies only if it leaves the site.

1. The owner/operator of S- Diesel Engine has been given a permit for a portable source and is subject to Regulation 2-1-413 and the CARB Portable Engine ATCM. (basis: CARB ATCM for Portable Diesel Engines, BAAQMD 2-1-413.7)

2. The owner/operator shall not store or operate the sources in one location (footprint) for more than 12 consecutive months, following the date of initial operation. Any backup or standby engine, which replaces S-1 IC Engine at the same location and is intended to perform the same function will be counted toward this time limitation. The owner/operator shall not move the equipment and then return it to the same location in an attempt to circumvent the portable equipment time requirement. (basis: CARB ATCM for Portable Diesel Engines, BAAQMD 2-1-413.7)

3. The owner/operator shall not operate within 1000 feet of the outer boundary of any K-12 school site. (basis: Regulation 2-1-413.3)

4. The owner/operator shall comply with the risk requirements of Regulation 2, Rule 5. The owner/operator shall not operate this equipment within an overburdened community, as defined in Regulation 2-1-243, unless the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302 have been met. This will require submittal and Air District approval of an application for a revised permit to operate. (basis: Regulations 2-1-412, 2-1-413.2, and 2-5-302)

5. The owner/operator shall emit no more than 10 tons per year of each pollutant, including POC, CO, NOx, PM10, NPOC or SO2. (basis: Regulation 2-1-413.1)

6. The owner/operator shall fire S- Diesel Engine exclusively with CARB diesel fuel. (basis: Cumulative increase, BACT, Toxics; Section 93116.3(a) of the ATCM for Portable Diesel Engines)

7. The total operation is limited to hours of operation in any consecutive 12-month period. The total operation is limited to hours of operation in any consecutive 12-month period. [Note: To qualify for as a "low-use" engine, the engine operations cannot exceed 80 hours in a calendar year. Also, if "low-use", add Section 93116.3(b)(2)(B) of ATCM for Portable Diesel Engines to basis.](basis: Cumulative increase, BACT, Toxics)

8. The owner/operator shall equip S- Diesel Engine with either:
   a. a non-resettable totalizing meter that measures hours of operation for the engine; or
   b. a non-resettable fuel usage meter, the maximum hourly fuel rate shall be used to convert fuel usage to hours of operation.

   (basis: Cumulative Increase)

9. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions.
   a. Daily hours of operation.
   b. Monthly consumption of diesel fuel (in gallons).
   c. Hours of operation and amount of diesel fuel in parts a) and b) shall be totaled on a rolling consecutive 12-month basis.
   d. The owner/operator shall record all records in an Air District-approved log. The owner/operator shall retain the records with the equipment for 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and make them available for inspection by Air

District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations.
(basis: Toxics, Cumulative Increase, Regulation 1-441)

10. The owner/operator shall notify the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at least 3 days in advance, of the new location in which it intends to operate. The notification shall include:
    a. Permit number
    b. Brief description of the nature of the operation
    c. Estimated duration of the operation at the new location
    d. Name and telephone number of a contact person at the new location
    (basis: Regulation 2-1-403)

11. Within 30 days after the end of the calendar year, the owner/operator shall provide the Director of the Compliance and Enforcement Division a year-end summary with the following information:
    a. The location(s) and dates at which the equipment was operated.
    b. The total amount of diesel fuel consumed in this operation for the previous 12 months (in gallons).
    c. The total hours of operation.
    (basis: Regulation 2-1-403)

[The following condition applies only to “in-use” portable diesel engines:]

12. Effective January 1, 2010, the owner/operator of S- Diesel Engine shall comply with one of the following:
    a. S- Diesel Engine complies with the Tier emission standards. A copy of its CARB certification or approved source test data is submitted to the Air District’s Engineering Division for review.
    b. The owner/operator submits a permit application to replace S- Diesel Engine with a portable diesel-fueled engine certified to the Tier 4 emission standards.
    (basis: Section 93116.3(b)(2)(A) of ATCM for Portable Diesel Engines)

[The following condition applies only to “low-use” or “emergency” portable diesel engines:]

13. Effective January 1, 2020, the owner/operator of S- Diesel Engine shall comply with one of the following:
    a. S- Diesel Engine complies with Tier 4 emission standards for newly manufactured nonroad engines.
    b. The owner/operator submits a permit application to equip S- Diesel Engine with a properly functioning level-3 verified technology.
    c. The owner/operator submits a permit application to equip S- Diesel Engine with a combination of verified emission control strategies that have been verified together to achieve at least 85% reduction in diesel PM.
    d. The owner/operator submits a permit application to replace S- Diesel Engine with a portable diesel-fueled engine certified to the Tier 4 emission standards.
    (basis: Section 93116.3(b)(3) of ATCM for Portable Diesel Engines)

Permit Conditions for Biogas Engines:

Note: The amount of natural gas allowed may be limited if resource recovery credits were given to the facility.

1. The owner/operator shall fire S- exclusively on (digester/landfill) gas from S- , (Anaerobic Digesters/Landfill), and/or pipeline quality natural gas. (basis: Cumulative Increase)

2. The owner/operator of S- shall not allow the combined heat input to exceed million BTU (HHV) during any consecutive 12-month period. (basis: Cumulative Increase)

3. The owner/operator shall ensure that all digester/landfill gas combusted in S- is treated by A- prior to combustion. The owner/operator shall not allow the concentration of total sulfur in the gas exiting A- to exceed ppm. (basis: Cumulative Increase)

4. The owner/operator shall properly maintain and operate A- in accordance to the manufacturer's specifications during all periods of operation of S- . The owner/operator shall not regenerate A- media on site. (basis: Cumulative Increase)

5. The owner/operator shall abate NOx emissions from S- by A- at all times of operation except during startup and shutdown of S- . The owner/operator shall ensure that each SCR catalyst bed is equipped with a temperature monitor and continuous recorder that accurately measures and records the temperature of exhaust gas from the catalyst during all periods of operation. Except during periods of startup or shutdown, the owner/operator shall maintain the exhaust gas temperature within a range of 575 degrees Fahrenheit and 960 degrees Fahrenheit while the engine is in operation. (basis: Cumulative Increase)

6. The owner/operator shall properly maintain and operate A- in accordance to manufacturer's specifications during all periods of operation of S- . (basis: BACT)

7. The owner/operator shall abate CO and organic compound emissions from S- by A- at all times of operation except during startup and shutdown of S- . (basis: BACT, Regulation 2-5-302)

8. The owner/operator shall properly maintain and operate A- in accordance to manufacturer's specifications during all periods of operation of S- . (basis: BACT)

9. The owner/operator shall not allow NOx emissions from each of S- to exceed an emission rate of grams of NOx (calculated as NO2) per brake-horsepower-hour, or the equivalent outlet concentration of ppmv of NOx, corrected to 15% oxygen, dry basis, averaged over the test period. The owner/operator shall not allow total NOx emissions from S- to exceed tons per year. The concentration and grams per brake-horsepower-hour limits do not apply during periods of startup or shutdown. The startup period shall not exceed 2 hours and the shutdown period shall not exceed 1 hour. (basis: Cumulative Increase, BACT)

10. The owner/operator shall not allow CO emissions from each of S- to exceed an emission rate of grams of CO per brake-horsepower-hour, or the equivalent outlet concentration of ppmv of CO, corrected to 15% oxygen, dry basis, averaged over the source test period. The owner/operator shall not allow total CO emissions from S- to exceed tons per year. The concentration and grams per brake-horsepower-hour limits do not apply during periods of startup and shutdown. The startup period shall not exceed 2 hours and the shutdown period may not exceed 1 hour. (Basis: Cumulative Increase, BACT)

11. In order to demonstrate compliance with the limits in Parts 9 and 10, the owner/operator shall use a portable analyzer to take NOx and CO emission readings to verify compliance with Parts 9 and 10 at least once on each engine every calendar quarter in which the engine operates. All emission readings shall be taken with the engine operating at conditions representative of normal operations.

NOx emission readings shall be averaged over a consecutive 15-minute period. (Basis: BACT, Cumulative Increase, and Regulation 2-1-403 and 9-8-503)

The following two conditions are likely to apply only to larger facilities.

12. The owner/operator shall not allow PM10 or PM2.5 emissions from each of S- to exceed grams of PM10 or PM2.5 per brake-horsepower-hour. The owner/operator shall not allow total PM10 or PM2.5 emissions from S- to exceed tons per year. This includes condensable and filterable PM. (Basis: Cumulative Increase, BACT) .

13. The owner/operator shall not allow a net increase of PM2.5 emissions to exceed 10 tons per year from this project. The project includes . (Basis: Regulation 2-2-308)

14. The owner/operator shall not allow POC measured as NMOC emissions from each of S- to exceed grams of POC per brake-horsepower-hour, or the equivalent outlet concentration of ppmv of POC (as methane), corrected to 15% oxygen, dry basis, averaged over the source test period. The owner/operator shall not allow formaldehyde emissions from each of S- to exceed pounds per hour. (Basis: Cumulative Increase, BACT, Regulation 2, Rule 5)

15. The owner/operator shall not allow the ammonia (NH3) concentration in the exhaust from each of S- to exceed ppmv, corrected to 15% oxygen, dry basis. (Basis: Regulation 2-5-302)

The following condition will only apply to engines with PM10 or PM2.5 limits.

16. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. Sampling ports shall be installed in the exhaust stack after control in a straight section of piping with at least six (6) diameters clear downstream of any bends, inlets, constriction, flow altering device or change of area or geometry and two (2) diameters upstream of the stack exit or other flow disturbance. The sample ports shall be at least 6" in diameter. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation and construction. (Basis: BACT; Cumulative Increase)

The requirements for PM10 and PM2.5 testing will apply only to engines with PM10 and PM2.5 limits. If the engine is fired on landfill gas, the source test should show compliance with Regulation 8-34-301.4.

17. In order to demonstrate compliance with Parts 9, 10, and 12 through 15 above and Regulations 9-1-302, 9-8-302.1, 9-8-302.3, the owner/operator shall ensure that an Air District approved source test is conducted in each engine not later than 60 days after startup and once every 8,760 hours of operation or three years, whichever comes first. Each source test shall be conducted at the exhaust stack after control while the engine is operating under normal operating conditions while fired on digester gas or a digester gas and natural gas blend and shall not include startup or shutdown periods. Each source test shall determine all items identified below. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (Basis: BACT, Cumulative Increase, and Regulations 2-5-302, 9-1-302, 9-8-302.1, and 9-1-302.3)

    a. Actual gross electrical output (kW-hrs) from the tested engine(s) during the test period and the calculated power output (bhp) from each engine determined using the following equation: bhp = 1.34 * kW;

    b. Total flow rate (standard cubic feet per minute, dry basis, or sdcfm) of all gaseous fuel to the tested engine(s);

c. Concentrations (percent by volume or ppmv, dry basis) of carbon dioxide (CO2), nitrogen (N2), oxygen (O2), methane (CH4), total non-methane organic compounds (NMOC), and total sulfur compounds (TS) in the gaseous fuel burned in the tested engine(s);

d. Higher heating value (BTU/scf) for the biogas;

e. Heat input rate (BTU/hour) to the tested engine(s) averaged over the test period;

f. Exhaust gas flow rate (sdcfm) from the tested engine(s) based on EPA Method 2 or Method 19;

g. Concentrations (ppmv or percent by volume, dry basis) of NOx, CO, CH4, NMOC, SO2, NH3, formaldehyde, and O2 in the exhaust gas from the tested engine(s);

h. Corrected concentrations (ppmv, corrected to 15% O2, dry basis) of NOx, CO, CH4, SO2, NH3, and H2S in the exhaust gas from the tested engine(s);

i. Corrected concentration (ppmv, dry basis) of NMOC in the fuel to the tested engine(s);

j. NMOC destruction efficiency (weight percent) achieved by the tested engine(s);

k. Emission rates (grams/bhp-hour) of NOx, CO, POC, and PM10 from each engine;

l. Emissions (pounds/hour) of PM10 from each engine and the PM10 grain loading rate (grains/dscf) from the tested engine(s). This includes filterable and condensable particulate.

m. Emission rate (pounds/hour) of formaldehyde from the tested engine(s);

n. Average temperature of the SCR catalyst exhaust gas temperature for the tested engine(s) during the test period.

o. During the source test, the owner/operator shall also measure concentrations of NOx, CO, and O2 (ppmv) in the exhaust from the tested engine(s) using the portable analyzer procedures described in Part 12. The portable analyzer measurements of corrected NOx and CO concentrations shall be compared to the values measured pursuant to Part 17h.

18. The owner/operator shall measure and record the flowrate of the biogas and natural gas supplied to each engine on a continuous basis (at least one measurement every 15-minutes) using an Air District approved method. The flow meters and recorder shall be installed and properly calibrated prior to any engine operation; this equipment shall be maintained in good working condition. (Basis: Cumulative Increase)

19. To demonstrate compliance with the limit in Part 3, the owner/operator shall monitor and record the sulfur content of the treated digester gas at least once each month. (Basis: Cumulative Increase)

20. The owner/operator shall monitor and record the heat content of the (digester/landfill) gas at least once each month. (Basis: Cumulative Increase)

21. The owner/operator shall maintain the following plans and records on-site for a minimum of 5 years from the date of entry. The plans and records shall be made available to Air District staff upon request.

    a. Records of heat input to each engine for each calendar month and for each rolling 12-month period. Heat input shall be calculated using Air District approved procedures based on measured biogas flow rate data and measured biogas methane concentration data. The calculated heat input rates shall be recorded in a data acquisition system or electronic spreadsheet.

b. Records of all monitoring or source testing conducted to demonstrate compliance with this permit condition and Air District rules.

c. An engine maintenance plan.

d. Records of all maintenance conducted on each engine.

e. Records of start-ups, shut-downs, and malfunctions for each engine. For any malfunction, the records shall include the cause of the malfunction, the actions taken to correct the malfunction, the date and time that the malfunction was corrected, and the actions taken to prevent such malfunctions in the future.

(Basis: Cumulative Increase; Recordkeeping)

Permit Conditions for Bulk Loading:

1. The owner/operator of A-   Vapor Recovery Unit shall receive obtain appropriate certification from the California Air Resources Board (CARB) for installation of the modified new equipment prior to commencement of operation. (Basis: Regulation.8-33)

2. The owner/operator of A-   shall install an Air District approved exhaust flow measurement and continuous hydrocarbon emission monitor at each exhaust outlet of the vapor recovery system. This monitor shall continuously measure hydrocarbon concentration in parts per million as C1. (Basis: Cumulative Increase)

3. Not later than 60 days from the startup of S-   , the owner/operator shall conduct Air District approved source tests to determine the following:
   a. Determine the relationship between the organic emission concentration measured on the continuous hydrocarbon monitor and the corresponding emission rate in pounds per 1000 gallons of gasoline loaded. This test shall establish the maximum allowable organic concentration level that meets the   pounds organic per 1000 gallons of gasoline loaded criteria of   .
   b. Maximum gasoline loading rate (gallons per calendar day)
   c. Maximum Refrigeration Unit discharge temperature.

   (Basis: Cumulative Increase)
   The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)

4. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

5. The owner/operator shall ensure that S-   is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

6. The total amount of   fuel loaded at source S-   shall not exceed   gallons during any consecutive twelve-month period. (Basis: Cumulative Increase)

7. To demonstrate compliance with the above, the owner/operator shall maintain the following daily records in an Air District-approved log:
   a. The type and amount of material loaded
   b. Date of each loading event
   c. Part 7a shall be totaled for each consecutive twelve-month period.

   All records shall be retained on site for at least five years from the date of entry and be made available for inspection by Air District staff on request. (Basis: Recordkeeping; Regulation 8-33-500)

Permit Conditions for Marine Loading/Offloading Facility:

1. The owner/operator of Marine Loading/Offloading Facility (S-) and its associated equipment shall ensure that it is properly maintained and leak free at all time. (Basis: Regulation 8-44-304)

2. The owner/operator of source S- shall not exceed gallons of fuel loaded during any consecutive twelve-month period. (Basis: Cumulative Increase)

3. The owner/operator of source S- shall not exceed 2 pounds of POC emissions per 1000 barrels of fuel loaded. (Basis: Regulation 8-44-301)

4. To demonstrate compliance with the above, the owner/operator shall maintain the following daily records in an Air District-approved log:
   a. The type and amount of material loaded
   b. Date of each loading event
   c. The identification/name of each marine vessel calling at the dock
   d. Part 4a shall be totaled for each consecutive twelve-month period.

   All records shall be retained on site for at least five years from the date of entry and be made available for inspection by Air District staff on request. (Basis: Recordkeeping; Regulation 8-44-500)

Permit Conditions for Oil-Water Separator:

1. The owner/operator of S-   shall not exceed wastewater throughput limits of   gallons during any consecutive twelve-month period. (Basis: Cumulative Increase)

2. To determine compliance with the above part, the owner/operator shall maintain the following records:
   a. Quantities of wastewater processed on a monthly basis.
   b. Monthly throughput shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase)

Permit Conditions for Petroleum Refinery Fugitive Emissions:

1. Not more than 30 days after the start-up of S-   , the owner/operator shall provide the Air District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components:

    valves in gas service
    valves is liquid service
    pumps
    PRV in gas service
    PRVs in liquid service
    connectors/flanges

    (basis: Cumulative Increase, offsets, Toxics)

2. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the Air District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly, and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator. (basis: offsets)

3. The owner/operator shall install valves, in light hydrocarbon service, that are of Air District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm. (basis: BACT, Regulation 8-18, Toxics)

4. The owner/operator shall install flanges and connectors, in light hydrocarbon service, that are of Air District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm. (basis: BACT, Regulation 8-18, Toxics)

5. The owner/operator shall install pump seals, in light hydrocarbon service, that are of Air District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm. (basis: BACT, Regulation 8-18, Toxics)

6. The owner/operator shall ensure that each pressure relief valve installed in hydrocarbon service is vented back to the process, to the refinery fuel gas system, or to an abatement device with a capture and destruction efficiency of at least 98% by weight. (basis: BACT, Regulation 8-28, Toxics)

7. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of the S-   into the facility fugitive equipment monitoring and repair program. (basis: BACT, Regulation 8-18)

Permit Conditions for Dehydrator, Injection Wells, Natural Gas Fired Engine and Facility-Wide Permit Conditions for Natural Gas Production Facilities and Crude Oil Production Facilities:

Conditions for S- Dehydrator:

1. The owner/operator of S- shall not exceed the following dry gas flow rates:

   MMSCF per day
   (Basis: Cumulative Increase)

2. The owner/operator of S- shall not use stripping gas. (Basis: Cumulative Increase, Toxics)

3. The owner/operator of S- shall ensure that all emissions from the reboiler stack of S- shall be abated at all times of operation by routing the emissions first to the gallon cooling tank and then to the reboiler burner of S- . (Basis: Cumulative Increase)

4. The owner/operator of S- shall ensure that all emissions from the flash tank of S- shall be abated at all times of operation by routing the emissions to the reboiler burner of S- as fuel gas. (Basis: Cumulative Increase)

5. The owner/operator of S- shall not exceed the following limits for the combined emissions from the regenerator vent and flash gas at any time.

   Combined Regenerator Vent/Flash Gas Emission Limit

Benzene	lb/hr	lb/yr
VOC*	lb/hr	lb/yr

   * Non-methane Hydrocarbon
   (basis: Cumulative Increase, Toxics)

6. The owner/operator of S- Natural Gas Dehydrator including Reboiler and A- Air-Condenser Tank shall ensure that Air District approved sample ports are installed in the following locations for use during Air District approved source tests to measure emissions of benzene and VOCs.
   a. Regenerator vent stack (regenerator emissions before abatement)
   b. A- Air-Condenser tank vent (regenerator emissions after abatement)
   c. Reboiler exhaust stack (flash gas emissions after abatement)

   (basis: Cumulative Increase, Toxics)

7. Within 60 days of startup and annually within the months of June through August, the owner/operator shall source test each of the locations in part 6 under the following conditions:
   a. The dehydrator shall run at maximum capacity.
   b. The specification for the dry gas shall be lb water per million cubic feet or less.
   c. The test shall consist of determining the flowrates at each point; taking a sample for lab analysis; determining the concentration of the following components: VOC, benzene; and determining the hourly mass emission rates of VOC and benzene.

   The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)(basis: Cumulative Increase, Toxics)

8. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

9. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator

shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

Conditions for S- Natural Gas-Fired Engine:

1. The owner/operator shall operate S- engine only when NOx, CO and POC emissions are abated by the properly maintained and properly operated A- 3-Way Catalyst. (Basis: Cumulative Increase)

2. The owner/operator of S- shall not exceed the following limits: ppmv of NOx corrected to 15% oxygen, dry Basis, ppmv of CO corrected to 15% oxygen, dry Basis. (Basis: Regulation 9-8-301, Cumulative Increase)

3. The owner/operator of S- shall demonstrate compliance with the emissions limits of Part 2 by use of a portable analyzer to take NOx and CO emission readings. Reading shall be taken at least once each calendar quarter in which a source test is not performed. All emissions readings shall be taken with the engine operating at conditions representative of normal operations. NOx emissions readings shall be averaged over a consecutive 15-minute period. (Basis: Regulation 9-8-503)

4. Within 60 calendar days of permit issuance under Application , the owner/operator of S- shall conduct an Air District approved source test at the outlet of A- to demonstrate compliance with Part 2 and with Regulation 9-8-301.1. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocol and projected test date at least 7 days prior to testing. The owner/operator shall submit the source test results of S- to the Air District's Source Test Section no later than 30 days after the source test. This condition does not replace any other regulatory requirement to conduct source tests. (Basis: Regulation 9-8-301, Cumulative Increase)

5. Not later than 60 days from the startup of S- and A- , the owner/operator shall conduct Air District approved source tests to determine initial compliance with the limits of Regulation 9-8-301. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)

6. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

7. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

8. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Each monitor reading or analysis result for the day of operation that the monitoring reading or analysis result is taken.
   b. All source test data results.

   All records shall be retained on-site for two years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Recordkeeping)

Conditions for S- Injection Wells:

1. The owner/operator of S- shall reinject all gas from the facility, including all gas from S- Tank and all excess gas from S- Crude Oil Wells, into the gas injection well of S- . Excess gas from S- Crude Oil Wells is defined as all gas from S- that is not consumed as fuel by S- engine. (Basis: Cumulative Increase)

2. The owner/operator of S- shall reinject all produced water from the facility into the water injection well of S- . (Basis: Cumulative Increase)

Facility-Wide Conditions:

1. The owner/operator shall not exceed the following fugitive component counts at the facility:

   valves in service
   connectors in service
   flanges in service
   miscellaneous components in service
   (Basis: Cumulative Increase)

2. The owner/operator shall ensure that the concentration of organic compounds at every valve, flange, connector, compressor, or pump shall be inspected every calendar quarter. The first inspection shall take place within 60 days of issuance of the permit to operate pursuant to Application . The inspections shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A). Any instrument used for the measurement of organic compounds shall be a combustible gas detector or any other type of instrument approved by the APCO that meets the specifications and performance criteria of, and is calibrated in accordance with, EPA Reference Method 21. (Cumulative Increase, Regulation 8-37)

3. The owner/operator shall ensure that any valve, flange, connector, compressor, or pump that leaks total organic compounds in excess of 10,000 ppm as C1 shall be minimized within 24 hours and repaired within 7 days. (Basis: Cumulative Increase)

4. The owner/operator shall not exceed emissions of pounds TOC in any consecutive 12-month period from all components listed in Part 1. This emissions limit includes emissions from non-leaking components and from pegged leakers. Pegged leakers are defined as components leaking at or greater 10,000 ppmv measured as C1. Compliance with this Part is achieved if the number of days identified under Part 6d does not exceed 90 days in any consecutive 12-month period.

   If the number of days identified under Part 25d exceeds 90 days in any consecutive 12-month period, the owner/operator shall calculate the actual TOC emissions from all components using the measured leak concentrations determined under Part 6b, and compliance with Part 4 is achieved if the calculated actual TOC emissions from all components does not exceed pounds in any consecutive 12-month period. (Basis: Cumulative Increase)

5. The owner/operator shall assign an identification code to each valve, flange, connector, compressor, pump seal, and miscellaneous component. The facility shall keep the following records: The fitting identification code, the date of each inspection, and the corresponding leak concentration measured. Records shall be maintained for at least 5 years and shall be made available for inspection by Air District staff upon request. (basis: Cumulative Increase, Recordkeeping)

6. To determine compliance with the above parts, the owner/operator shall maintain a monthly log of the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

a. Identification code of each component.
b. Date of each inspection, and the corresponding leak concentration measured.
c. Number of days that each individual component leaks at or greater than 10,000 ppmv (measured as C1), type of component, identification number of component.
d. The total number of days identified in Part 6c.
e. Each monitor reading or analysis result for the day of operation that the monitoring reading or analysis result is taken.

All records shall be retained on-site for two years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Recordkeeping)

7. The owner/operator shall ensure that there shall be no open liquid pools of crude oil or condensate in the lease area. (Basis: Cumulative Increase, Regulation 8-37-302)

8. The owner/operator shall ensure that all spills of crude oil and condensate which causes a liquid pool shall be cleaned up by removal of the liquid within 24 hours of the spill detection. (Basis: Cumulative Increase, Regulation 8-37-304)

9. The owner/operator shall ensure that no open or uncovered vessels of crude material larger than 250 ml shall be kept in the lease area. (Basis: Cumulative Increase, Regulation 8-37-303)

10. The owner/operator of S- Tank shall ensure that all access hatches shall remain closed except during active maintenance or repairs. (Basis: Cumulative Increase, Regulation 8-37-308)

11. The owner/operator shall properly install, use, and maintain vapor tight piping rated for oil/gas/water service at this facility. (Basis: Cumulative Increase)

12. The owner/operator shall properly install, operate, and maintain all pressure relief protection equipment at this facility. (Basis: Cumulative Increase)

13. The owner/operator shall not install and shall not use pneumatic devices at this facility. (Basis: Cumulative Increase)

14. The owner/operator shall ensure that there are no open-ended lines at this facility. (Basis: Cumulative Increase)

15. Within 60 days of issuance of the Authority to Construct for Application , the owner/operator shall conduct a pressure decay test for the produced gas system to demonstrate its structural integrity and to demonstrate compliance with Part 11.
The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)

16. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

17. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

18. The owner/operator shall report non-compliance with any of the above conditions within 10 days of discovering such non-compliance. The report shall be sent to the Compliance and Enforcement

Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement). (Basis: Regulation 2-1-403)

Permit Conditions for Storage Tanks (general conditions):

1. The owner/operator of S- shall not exceed the following throughput limits during any consecutive twelve-month period:
   {Liquid #1} Gallons
   {Liquid #2} Gallons
   [Include the following daily limits if physical daily Potential To Emit can equal or exceed 10 lbs/day:]
   The owner/operator of S- shall not exceed the following throughput limits during any consecutive 24-hour period:
   {Liquid #1} Gallons
   {Liquid #2} Gallons
   (Basis: Cumulative Increase)

2. The owner/operator may store alternate liquid(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:
   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period; and
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger level of Table 2-5-1 in Regulation 2-5.

   [Include the following daily limits if physical daily Potential To Emit can equal or exceed 10 lbs/day:]
   d. Total POC emissions from S- do not exceed pounds in any consecutive 24-hour period; and
   e. Total NPOC emissions from S- do not exceed pounds in any consecutive 24-hour period.

   (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities and maximum true vapor pressure of each type of liquid stored at this source on a monthly [or daily] basis.
   b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis.
   c. Monthly [or daily] throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months (five year if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase; Toxics)

Permit Conditions for Storage Tanks (additional conditions for internal or external floating roofs):

4. The owner/operator of S- shall equipped the source with a liquid mounted primary seal and a zero-gap secondary seal. There shall be no ungasketed roof fittings. Except for roof legs, each roof fitting shall be of the design, which yields the minimum roof fitting losses (per EPA Compilation of Air Pollution Emission Factors, AP-42, Supplement E, Section 12.3.2, Table 12.3-11). The following list indicates the type of control required for a variety of typical roof fittings. Control techniques for roof fittings not included in this list shall be subject to Air District approval, prior to installing the roof on the tank.

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole / Well	Unslotted guide pole, gasketed sliding cover; or Slotted with controls per API 2517 Addendum (See Note 1)
Gauge float well	Bolted cover, gasketed
Gauge hatch / Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	Roof drain does not drain water into product
Roof leg	Fixed; or adjustable with vapor seal boot, or gasket between roof leg and leg sleeve
Rim vent	Weighted mechanical actuation, gasketed

Note 1: Slotted Guide Pole Control Configuration, per Addendum to API Publication 2517, May 1994, shall include the following components:

a. Sliding cover;

b. Well gasket;

c. Pole sleeve with pole wiper approximately 6 inches above sliding cover, or Air District approved equivalent; and

d. Float with float wiper approximately 1 inch above the sliding cover, or alternately a float with multiple wipers.

(Basis: BACT)

Permit Conditions for Vapor Recovery Systems:

1. The owner/operator of S- shall abate the source with A- , Vapor Recovery System with , with an overall collection and destruction efficiency of at least 95%, by weight (basis: Regulation 8-5-311.3)

   [Add Source Test Conditions after part 2 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Coating Operations (including Graphic Arts):

1. The owner/operator of S- shall not exceed the following usage limits during any consecutive twelve-month period:

   {Coating or Ink #1} Gallons
   {Coating or Ink #2} Gallons
   {Cleanup Solvent or Blanket Wash #1} Gallons
   {Cleanup Solvent or Blanket Wash #2} Gallons
   {Other #1} Gallons
   {Other #2} Gallons
   (Basis: Cumulative Increase)

2. The owner/operator may use an alternate coating(s) or cleanup solvent(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period; and
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger level of Table 2-5-1 in Regulation 2-5.

   (Basis: Cumulative Increase and Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

   a. Quantities of each type of coating and cleanup solvent used at this source on a monthly basis.
   b. If a material other than those specified in Part 1 is used, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
   c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months (36 months for graphic arts operations; 5 years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Recordkeeping)

Permit Conditions for Mixing Vats for Coating, Adhesives, and Ink Manufacturing:

1. The owner/operator of S- shall not exceed the following throughput limits during any consecutive twelve-month period:
   {Coating or Ink Component #1} Gallons
   {Coating or Ink Component #2} Gallons
   {Coating or Ink Component #3} Gallons
   {Coating or Ink Component #4} Gallons
   {Cleanup Solvent #1} Gallons
   {Cleanup Solvent #2} Gallons
   (Basis: Cumulative Increase)

2. To determine compliance with the above part, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of component listed in Part 1 used at this source on a monthly basis.
   b. Monthly throughput shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two years (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase)

3. The owner/operator of S- shall comply with the requirements of Regulation 8-35-301 and 305 in maintenance of the source and its cleaning. (Basis: Regulation 8-35-301 and 305)

Permit Conditions for Screening Mill for Coating, Adhesives, and Ink Manufacturing:

1. The owner/operator of S-   shall not exceed the following throughput limits during any consecutive twelve-month period:
   {Coating Pigment#1}   Gallons
   {Coating Pigment #2}   Gallons
   (Basis: Cumulative Increase)

2. To determine compliance with the above part, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of component listed in Part 1 used at this source on a monthly basis.
   b. Monthly throughput shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two years (5 years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase)

3. The owner/operator of S-   shall comply with the requirements of Regulation 8-35-304. (Basis: Regulation 8-35-304)

Permit Conditions for Cold Solvent Cleaning:

1. The Owner/Operator of Cold Cleaner S- shall not exceed the following usage limit for each cleaner during any consecutive twelve-month period:

   gallons/year/cleaner
   (Basis: Cumulative Increase)

2. The Owner/Operator of source S- may use solvent other than the material specified in Part 1 above, and/or usages in excess of those specified in Part 1 above, provided that the Owner Operator can demonstrate that all of the following are satisfied:
   a. S- Cold Cleaner comply with Regulation 8-16-303.5;
   b. The total NPOC combined emissions from S202 and S318 do not exceed 632 pounds in any consecutive twelve-month period; and
   c. The use of these alternate materials does not increase toxic air contaminant (TAC) emissions above any acute and/or chronic TAC health risk assessment trigger level in Table 2-5-1 of Regulation 2, Rule 5. The owner/operator shall maintain records of any TAC component contents of each alternate material used and supporting mass emission calculations demonstrating TAC emissions do not exceed the acute and/or chronic TAC trigger levels in Table 2-5-1 of Regulation 2, Rule 5 by calculating TAC emissions on a pound per hour and pound per year basis, respectively..
   (Basis: Cumulative Increase)

3. To determine compliance with the above conditions, the Owner/Operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:
   a. Quantities of solvent used at each source on a monthly basis.
   b. If a material other than that specified in Part 1 above is used, NPOC and toxic component contents of each alternate material used; and mass emission calculations to demonstrate compliance with Part 2.b. on a monthly basis and 2.c. on a daily basis
   c. Monthly usage and/or daily emission calculations shall be totaled for each consecutive twelve-month period.

   (Basis: Cumulative Increase)

Permit Conditions for Wipe Cleaning Operations:

1. The Owner/Operator of S- shall not exceed the following usage limit for each cleaner during any consecutive twelve-month period:

   {Cleaning Solvent #1} gallons
   {Cleaning Solvent #2} gallons
   (Basis: Cumulative Increase)

2. The Owner/Operator of sources S- may use solvents other than the material(s) specified in Part 1 above, and/or usages in excess of those specified in Part 1 above, provided that the owner operator can demonstrate that all of the following are satisfied:

   a. S- complies with Regulation 8-16.
   b. The total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   c. The total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period; and,
   d. The use of these alternate materials does not increase toxic air contaminant (TAC) emissions above any acute and/or chronic TAC health risk assessment trigger level in Table 2-5-1 of Regulation 2, Rule 5. The owner/operator shall maintain records of any TAC component contents of each alternate material used and supporting mass emission calculations demonstrating TAC emissions do not exceed the acute and/or chronic TAC trigger levels in Table 2-5-1 of Regulation 2, Rule 5 by calculating TAC emissions on a pound per hour and pound per year basis, respectively.

   (Basis: Cumulative Increase and Toxics)

3. To determine compliance with the above conditions, the Owner/Operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:

   a. Quantities of solvent used at each source on a monthly basis.
   b. If a material other than that specified in Part 1 above is used, POC, NPOC, and toxic component contents of each alternate material used and mass emission calculations to demonstrate compliance with Parts 2(b) and 2(c) on a monthly basis and Part 2(d) on a daily basis.
   c. Monthly usage and/or emissions shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two years (5 years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Recordkeeping)

Permit Conditions for Wave Solder Flux Applicator:

1. The owner/operator of S- shall not exceed the following usage limits during any consecutive twelve-month period:

Chemical	Gallons

(Basis: Cumulative Increase)

2. The owner/operator may use an alternate material(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1. Provided that the owner/operator can demonstrate that all of the following are satisfied:

   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger levels of Table 2-5-1 in Regulation 2-5

   (Basis: Cumulative Increase and Toxics)

3. The owner/operator of S- shall minimize emissions by covering or emptying the flux bath when S- is not operating.
   (Basis: Cumulative Increase)

4. In order to demonstrate compliance with Part 1, the owner/operator of S- shall maintain the following records in an Air District approved log:

   a. Monthly records of the type and amount of materials added to the flux applicator.
   b. Monthly records of the amount of materials removed from the flux applicator.
   c. Monthly Summary of net material used (Difference between Parts 4(a) and 4(b)).
   d. Material Safety Data Sheet (MSDS)/Technical Data Sheet (from chemical manufacturer) of all the materials used. MSDS/Technical Data Sheet should contain all the necessary information to calculate the POC, NPOC, and toxic emissions.
   e. If a material other than that specified in Part 1 is used, POC, NPOC, and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis.
   f. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations.
   (Basis: Record Keeping)

Permit Conditions for Flexible and Rigid Disc Manufacturing:

1. The owner/operator of S- shall not exceed the following usage limits during any consecutive twelve-month period:

Chemical	Gallons

(Basis: Cumulative Increase)

2. The owner/operator may use an alternate solvent(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period; and
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger level of Table 2-5-1 in Regulation 2-5.

   (Basis: Cumulative Increase and Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

   a. Net quantity of each type of solvent used at this source on a monthly basis.
   b. Material Safety Data Sheet (MSDS)/Technical Data Sheet (from chemical manufacturer) of all the materials used. MSDS/Technical Data Sheet should contain all the necessary information to calculate the POC, NPOC, and toxic emissions.
   c. If a material other than those specified in Part 1 is used, POC, NPOC, and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis.
   d. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations.
   (Basis: Record Keeping)

Permit Conditions for Semiconductor Manufacturing Operations:

1a. The owner/operator of S- shall not exceed the following gross usage limits at any solvent station during any consecutive twelve-month period:

{Solvent #1}	Gallons
{Solvent #2}	Gallons

(Basis: Cumulative Increase)

1b. The owner/operator of S- shall not exceed the following gross usage limits for wipe cleaning within the source during any consecutive twelve-month period:

{Solvent #1}	Gallons
{Solvent #2}	Gallons

(Basis: Cumulative Increase)

1c. The owner/operator of S- shall not exceed the following gross usage limits at any photoresist spinner during any consecutive twelve-month period:

{Photoresist Maskant}	Gallons
{Organic Photoresist Developer}	Gallons
{Organic solvent mixture}	Gallons

(Basis: Cumulative Increase)

1d. The owner/operator of S- shall not exceed the following gross usage limits at any toxic inorganic operation during any consecutive twelve-month period:

{Toxics #1}	{Usage unit}
{Toxics #2}	{Usage unit}

(Basis: Toxics)

2. The owner/operator may use an alternate coating(s) or cleanup solvent(s) other than the materials specified in Part 1a through 1c and/or usages in excess of those specified in Part 1a through 1c, provided that the owner/operator can demonstrate that all of the following are satisfied:
   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve-month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve-month period; and
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger level.

   For the purposes of emission calculations, 30% of the gross usage at solvent stations shall be assumed to be emitted, 100% of the gross usage for wipe cleaning shall be assumed to be emitted, and 90% of the gross usage at photoresist spinners shall be assumed to be emitted, unless the Air Pollution Control Officer has provided written approval to the owner/operator of this source to use other emission factors. (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of coating and solvent used at this source on a monthly basis.
   b. If a material other than those specified in Part 1 is used, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis.
   c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for 24 months from the date of entry and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase; Toxics)

Permit Conditions for Anaerobic Digester Flares:

1. The owner/operator shall ensure that emissions from S- are abated at all times by combustion at any of the following sources except as specified in part 2: S- . (Basis: Regulation 1-301)

2. The owner/operator may only combust digester gas from S- in the flare(s) A- under the following circumstances:
   a. During equipment failure or other emergencies which require the flaring of digester gas.
   b. During maintenance, testing, and/or emergencies which require the flaring of digester gas.
   c. (*optional if the facility has an old, redundant candlestick flare)* A- shall be used as the primary flare when it is functional and has sufficient capacity to combust the entirety of the digester gas in need of flaring.

3. The owner/operator shall ensure that digester gas total sulfur content does not exceed ppm. (Basis: Cumulative Increase)

4. The owner/operator shall ensure that SO_2 emissions from digester gas combustion do not exceed tons in any consecutive 12-month period. The owner/operator shall use daily records of H_2S content and digester gas production to calculate SO_2 emissions. For the purposes of this part, the owner/operator shall assume that all H_2S in the digester gas is combusted. (Basis: Cumulative Increase)

5. To demonstrate compliance with the limits in part 3 and part 4, the owner/operator shall monitor and record the following:
   a. Sulfur content of the digester gas at least once every calendar day. The sulfur content of the digester gas shall be used to calculate SO_2 emissions from all combustion sources firing untreated digester gas.
   b. Sulfur content for digester gas combusted in S- will be determined from the outlet of the gas treatment system, A- .
   c. Total digester gas production.
   (Basis: Cumulative increase)

6. The owner/operator shall record the dates, hours of use, and purpose of flaring in a Air District approved logbook, whenever the flares are used. (Basis: Regulation 2-6-409.2)

7. The owner/operator shall have installed pressure sensors at each digester, S- . Over-pressurization is assumed to cause opening of the pressure/vacuum valve and thus digester gas release. The owner/operator shall perform an inspection of the pressure/vacuum valve in all instances of over-pressurization to confirm proper functioning of the valve following the event. The owner/operator shall record the dates, the times, and the H_2S concentration in a Air District approved logbook whenever digester gas is vented from any pressure relief valve at S- , Digesters. (Basis: 2-1-403)

8. A release of digester gas at a pressure relief valve on a digester shall not be considered a violation of Parts 1 or 2 of this permit condition under the following conditions:
   a. H_2S emissions from the digester gas release are less than lb per hour, or
   b. The owner/operator prepares an air dispersion modeling analysis within 30 days of the incident that shows that the limits in BAAQMD Regulation 9, Rule 2, were not exceeded.

   The owner/operator shall ensure that, if detected and known, the occurrence, duration, and cause of emissions of digester gas from any cause or activity are recorded. Notwithstanding this part 8, the owner/operator shall not cause or allow any digester gas emissions otherwise allowed by this Part to create a violation of Air District regulations. (Basis: 2-1-403)

9. The owner/operator shall ensure that the heat input to A-   , Enclosed Flare, does not exceed   MMBtu/day. (Basis: Cumulative Increase)

10. The owner/operator shall install flow meters and recorders to monitor the digester gas flow to (*flare*) A-   . (Basis: Cumulative Increase)

11. The owner/operator shall install a temperature monitor and recorders to monitor the temperature at (*flare*) A-   . (Basis: Cumulative Increase)

12. The combustion zone temperature of (*flare*) A-   shall be maintained at a minimum of 1,400 degrees F, except upon start-up where a 15-minute warm-up period is allowed and a residence time of at least 0.6 seconds is maintained. If a source test demonstrates compliance with all applicable requirements at a different temperature, the owner/operator can submit a petition to revise the minimum combustion zone temperature limit. (Basis: Regulation 2-1-403)

13. The owner/operator shall ensure that the emissions of nitrogen oxides (NO_x) from A-   do not exceed   pounds per million BTU (calculated as NO_2). (Basis: RACT)
Note: 0.06 lb/MMBtu is RACT.

14. The owner/operator shall ensure that the emissions of carbon monoxide (CO) from A-   do not exceed   pounds per million BTU. (Basis: RACT)
Note: 0.2 lb/MMBtu is RACT.

15. The owner/operator shall ensure that hydrogen sulfide (H_2S) emissions are less than   lb/hr at the outlet of A-   . (Basis: 2-1-301)

16. The owner/operator shall ensure that the emissions of methane (CH_4) from A-   do not exceed   pounds per million BTU. (Basis: 2-1-301)

17. In order to demonstrate compliance with parts 13, 14, 15, and 16 of these conditions, the owner/operator shall conduct an initial Air District approved source test on A-   , Enclosed Flare within 60 days of startup. The source test shall determine the following:
    a. digester gas flow rate (dry basis);
    b. concentrations (dry basis) of carbon dioxide (CO_2), nitrogen (N_2), oxygen (O_2), methane (CH_4) and hydrogen sulfide (H_2S) and total non-methane organic compounds (NMOC) in the digester gas;
    c. stack gas flow rate (dry basis);
    d. concentrations (dry basis) of NO_x, CO, H_2S, CH_4, NMOC, SO_2, and O_2 in the stack gas;
    e. the H_2S and methane destruction efficiencies achieved by each flare; and
    f. the average combustion temperature during the test period.

    In addition, source tests shall be repeated every 8,760 hours of operation or every five years, whichever comes first. The periodic source test is not required if the flare has not been operated since the last Air District-approved source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and to the Source Test Section within 60 days of the test date. (Basis: Regulations 2-1-301 and 9-1-302)

18. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

19. The owner/operator shall ensure that A-   is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

20. In order to demonstrate compliance with the above conditions, the owner/operator shall maintain the following records in an Air District approved logbook.
    a. Record the operating times and the digester gas flow rate to A- on a daily basis when operating. Summarize these records on a monthly basis.
    b. Maintain continuous records of the combustion zone temperature for A- , Enclosed Flare during all hours of operation.
    c. Maintain records of all test dates and test results performed to demonstrate compliance with part 17 above and any applicable rule or regulation.

    All records shall be maintained on site or shall be made readily available to Air District staff upon request for a period of at least 5 years from the date of entry. These record keeping requirements do not replace the record keeping requirements contained in any applicable rules or regulations. (Basis: Cumulative Increase, 2-1-301, 2-6-501/1-543, 9-1-302, and 9-2-301)

21. In order to demonstrate compliance with the maintenance/construction activity provisions of Part 2, the owner/operator shall maintain the following records in a Air District approved logbook:
    a. Record the operating times of each flare listed within part 2, operated during maintenance/construction activities;
    b. Record the combined daily thermal throughput of all listed flares within part 2 during maintenance/construction activities;
    c. Record the total amount of digester gas from S- , anaerobic digesters, which is abated by the listed flares in part 2 during maintenance/construction activities, on a monthly basis.

    All records shall be maintained on site or shall be readily available to Air District staff upon request for a period of at least 24 months (5 years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) from the date of entry. These record keeping requirements do not replace the record keeping requirement contained in any applicable rule or regulation. (Basis: Cumulative increase and Regulation 2-6-501 or Regulation 1-543)

Permit Conditions for POTW Flares:

1. The owner/operator shall ensure that the minimum destruction efficiency for H_2S at A- is % (*98% is typical*). The owner/operator shall ensure that the minimum destruction efficiency for VOC at A- is % (*99% is typical*). (Basis: Cumulative Increase; Regulation 9, Rule 2)

2. The owner/operator shall equip A- with a combustion temperature readout monitor and continuous recorder to measure and record the temperature in the combustion zone. (Basis: 2-1-403)

3. The owner/operator shall ensure that the emissions of Nitrogen Oxides (NOx) from A- do not exceed pounds per million BTU (calculated as NO2). (Basis: Cumulative Increase, RACT)
Note: 0.06 lb/MMBtu is RACT.

4. The owner/operator shall ensure that the emissions of Carbon Monoxide (CO) from A- do not exceed pounds per million BTU. (Basis: Cumulative Increase, RACT)
Note: 0.2 lb/MMBtu is RACT.

5. The combustion zone temperature of A- shall be maintained at a minimum of 1,400 degrees F and a minimum residence time of 0.6 seconds while digester gas is being fed to the flare. The owner/operator may perform a source test to determine if the flare can operate at a lower temperature while complying with parts 1, 3, and 4. The flare shall be at the minimum temperature within 15 minutes of digester gas introduction to the flare and for one minute after flow of digester gas is discontinued. (Basis: Regulation 2-1-403)

6. The temperature limit in Part 5 shall not apply during a 16-hour period of optional source testing conducted by the owner/operator. The owner/operator shall notify the District's Engineering Division, in writing, of the projected test date at least 7 days in advance. The owner/operator shall submit the source test results to the District's Engineering Division no later than 30 days after the source test. (Basis: 2-1-403, Cumulative Increase)

7. In order to demonstrate compliance with parts 3 and 4, the owner/operator shall conduct an initial District approved source test on A- , Enclosed Waste Gas Flare within 60 days of startup. The source test shall determine the following:

    a. Digester gas flow rate (dry basis)
    b. Concentration (dry basis) of hydrogen sulfide (H_2S) in the digester gas to be combusted at A-
    c. Concentration (dry basis) of non-methane organic compounds (NMOC) in the digester gas to be combusted at A-
    d. Stack gas flow rate (dry basis)
    e. Concentration (dry basis) of nitrogen (NO_X), carbon monoxide (CO), hydrogen sulfide (H_2S), and total non-methane organic compounds (NMOC) in the stack gas
    f. The H_2S and VOC destruction efficiencies achieved by A-
    g. The average combustion temperature during the test period.

    The source test report shall be submitted to the Compliance and Enforcement Division and to the Source Test Section within 60 days of the test date. In addition, source tests shall be repeated every 8,760 of operation or every five years, whichever comes first. The periodic source test is not required if the flare has not been operated since the last District-approved source test. (Basis: BACT, Cumulative Increase, Regulation 2-5)

8. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's

Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

9. The owner/operator shall ensure that A- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

10. The owner/operator shall record and maintain the following in a District approved log for a period of five years from the date of entry and shall make them readily available to District staff upon request:
    a. Digester gas flow to the flare, A- .
    b. A- combustion zone temperature.

    (Basis: Recordkeeping)

Permit Conditions for High Strength Waste:

For the purposes of this condition, the following definitions apply:

Digester Gas: Gas stream that is generated from the facility's Anaerobic Digesters (S-). Such gases have not been further conditioned or processed after production during the anaerobic digestion process.

High Strength Waste: Feedstock that is from local food and beverage industries and fed to S- to produce digester gas. Such wastes have wastewater with suspended solids or biological oxygen demand (BOD) above what is allowed to be discharged to the municipal sanitary sewage system.

GENERAL REQUIREMENTS

1. The owner/operator of S- shall only store high strength waste as defined above. [Basis: Cumulative Increase]

2. The owner/operator of S- shall not exceed the following filling limit:
   a. S- : tank flow rate of gpm

   [Basis: Cumulative Increase]

3. The owner/operator shall vent S- at all times to abatement device A- , *Foul Air Scrubber/Activated Carbon Adsorber*. [Basis: 2-1-403]

4. The owner/operator of A- shall ensure that the H_2S, POC, and ammonia adsorption media vessels are not desorbed on site. [Basis: Cumulative Increase]

5. When raw digester gas from S- is flared due to unavailability of *the digester gas combustion sources* or *the digester gas pretreatment system*, or due to an excess of digester gas, the owner/operator shall cease to receive high-strength waste at S- , and shall cease to pump high-strength waste into the digesters until *the digester gas combustion sources* and *the digester gas pre-treatment system* are operational or the demand for digester gas at *the digester gas combustion sources* and *the digester gas pre-treatment system* increases. (Basis: Cumulative Increase)

EMISSION LIMITATIONS

6. The owner/operator of A- shall not exceed the following limitations at the outlet:

   a. ppmv of POC
   b. ppmv of H2S
   c. ppmv of Ammonia

   [Basis: Cumulative Increase]

MONITORING REQUIREMENTS

7. The owner/operator shall conduct the monitoring required by Part 6 of this condition in accordance with any of the following methodologies:

   a. Draeger Tube Test Method: A Draeger Tube test or a meter using a Draeger H_2S sensor, Part No 680910, or equivalent, demonstrating an H_2S level up to (*half the limit*) ppmv shall demonstrate compliance with the above limit. An H_2S measurement by Draeger Tube exceeding (*half the limit*) ppmv shall not be deemed a violation but shall trigger a requirement to demonstrate compliance using either methods of Part 7(b) and 7(c) of this condition.
   b. Portable Instrument Method: A Draeger PAC-III (or equivalent) portable meter with an H_2S sensor capable of measuring over 800 ppmv H_2S. In the event that H_2S levels exceed 800 ppmv, the owner/operator shall commence to perform a source test using the method of Part 7(c) of this condition.

c. Chromatographic Method: The owner/operator may sample and test for sulfides according to BAAQMD Lab Method 44A (Manual of Procedures, Volume III), or by ASTM Method 5504, or by any other equivalent method, approved in advance by the District.

[Basis: Toxics and Regulation 9-2]

8. To demonstrate compliance with the standards in Part 6 of this condition, the owner/operator shall monitor at the outlet of the carbon vessel prior to venting to the atmosphere
[Basis: Cumulative Increase, Regulation 2-5]

RECORDKEEPING REQUIREMENTS

9. The owner/operator of S- and A- shall maintain the following records for a minimum of two (2) years and be made available to the District upon request:

   a. Monthly records of high strength waste processed;
   b. H2S concentration records required by Part 6 of this condition;
   c. POC concentration records required by Part 6 of this condition; and
   d. Ammonia concentration records required by Part 6 of this condition;

[Basis: Regulation 2-1-403]

Permit Conditions for Carbon Abatement for H2S Abatement at Wastewater Treatment Facility:

1. The owner/operator shall ensure that the abated hydrogen sulfide (H_2S) emissions from S- do not exceed ppmv, measured at the exhaust of A- .
[Basis: Regulation 2-5, Regulation 9-2]

2. To demonstrate compliance with Part 1 of this condition, the owner/operator shall measure the concentration of H_2S at the outlet stacks of A- using Draeger tubes, a Jerome meter (provided the instrument is maintained and calibrated per manufacturer's specs and a bump test is performed and recorded prior to data collection), or other District approved method on a daily basis at least 5 days per week for the first two months of operation and on a weekly basis thereafter, if all daily concentrations show compliance with the full emission limit of the respective devices. The results from the first two months of testing shall be submitted to the Engineering Division to initially reduce the testing frequency from daily to weekly. The owner/operator can reduce the monitoring frequency from weekly to monthly if all readings are below one half of the emission limits of the respective devices for two months and the results of this testing are submitted to the Engineering Division. If readings rise above the emission limits, monitoring frequency will return to daily until two months of consecutive compliance can be demonstrated, at which point testing shall again be submitted to the Engineering Division to reduce testing frequency from daily to weekly. The reduction in monitoring frequency will be handled administratively.
[Basis: Regulation 2-1-403, Regulation 2-5, Regulation 9-2]

3. The owner/operator shall maintain the following records:

   a. H_2S volumetric concentration records from Part 2; and,
   b. NMHC volumetric concentration records from Part 5.

   All records shall be retained onsite for two years from the date of entry and made available for inspection by District staff upon request. These recordkeeping requirements do not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Regulation 9-2]

4. The owner/operator shall ensure that the abated non-methane hydrocarbon (NMHC) emissions from S- , do not exceed ppmv, measured as methane, at the exhaust of A- on an annual average basis.
[Basis: Cumulative Increase, BACT]

5. To demonstrate compliance with the limits in Part 4 of this condition, the owner/operator shall measure NMHC, as methane, with an FID or PID at the outlet of each vessel of A- on a daily basis at least 5 days per week for the first two months of operation of A- and on a weekly basis thereafter, if all daily concentrations show compliance with the full emission limit of the respective devices. The results from the first week of testing shall be submitted to the Engineering Division within 30 days of startup of A- . The results from the first two months of testing shall be submitted to the Engineering Division to initially reduce the testing frequency from daily to weekly. The owner/operator can reduce the monitoring frequency from weekly to monthly if all readings are below one half of the emission limits of the respective devices for two months and the results of this testing are submitted to the Engineering Division. If readings rise above the emission limits, monitoring frequency will return to daily until two months of consecutive compliance can be demonstrated, at which point testing shall again be submitted to the Engineering Division to reduce testing frequency from daily to weekly. The reduction in monitoring frequency will be handled administratively.
[Basis: Cumulative Increase, BACT, Regulation 2-1-403]

6. The owner/operator shall abate the emissions from S- with A- at all times, except that A- can be out of service for up to 16 hours per calendar year for the changing out of media or other maintenance.

[Basis: Cumulative Increase, BACT Regulation 2-1-320]

7. The owner/operator shall ensure that the gas flow to A- is at least cfm per vessel (of [*number of vessels*]) at all times while A- is in operation[, except during carbon changeout or required maintenance when operation can go down to one vessel - *add this section if abatement has two vessels and can support the full flow with one vessel*].
   [Basis: Cumulative Increase, BACT, Regulation 2-1-320]

8. The owner/operator shall ensure that the stacks of A- are at least feet above grade and emit (*stack orientation, e.g., vertically with no rain cap)*.
   [Basis: Regulation 9-2, Regulation 2-5, Regulation 2-1-320]

9. The owner/operator of A- shall use the monitoring results obtained from part 2 and/or part 5 to estimate the frequency of A- carbon changeout necessary to maintain compliance with part 10.
   [Basis: Cumulative Increase, Regulation 9-2]

10. The owner/operator of A- shall immediately schedule change out with unspent carbon for each carbon vessel exhibiting breakthrough, defined as detection at its outlet of whichever occurs first of the following:
    a. ppmv NMHC (measured as methane, using the measurements from part 5) averaged over 1 week, or
    b. ppmv H_2S (using the measurements from part 2) averaged over 1 week.
    [Basis: Cumulative Increase, Regulation 9-2]

Note: This template condition can be used for carbon adsorption abating preliminary treatment, sludge handling, etc.

Permit Conditions for Throughput Limit at Wastewater Treatment Facilities:

1. The owner/operator shall not exceed a total wastewater flow exceeding million gallons/day dry flow and million gallons/day wet flow. (Basis: Cumulative Increase)

2. To determine compliance with the above condition, the owner/operator shall maintain the following records: (Basis: Cumulative Increase)

   a. Daily and monthly records of the quantity of wastewater processed at this source.
   b. Monthly records totaled for each consecutive 12-month period.
   c. All records shall be retained onsite for 24 months (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) from the date of entry and made available for inspection by Air District staff upon request.

   These recordkeeping requirements shall not replace the recordkeeping requirements contained in any Air District Regulation. (Basis: Cumulative Increase)

Permit Conditions for End of Remediation Project (for Airstripping or Soil Vapor Extraction):

1. Upon final completion of the remediation project, the owner/operator of Source S- shall notify the Engineering Division by email to permits@baaqmd.gov (Attention: Director of Engineering) within two weeks of decommissioning the operation. [basis: Regulation 2-1-401]

Permit Conditions for Airstripping/Soil Vapor Extraction (using carbon adsorption):

1. The owner/operator shall abate the precursor organic compound (POC)/non-precursor organic compound (NPOC) emissions from the soil vapor extraction system (S-) with the Activated Carbon Vessel (A-), consisting of a minimum of two (2) 2,000 lb activated carbon vessels in series, during all periods of operation. The influent vapor flow rate shall not exceed scfm. In no event shall the toxic air contaminant (TAC) emissions to the atmosphere from S- exceed the trigger levels listed in Air District Regulation 2-5, Table 2-5-1. [Basis: Regulations 8-47-301 and 8-47-302 and Toxics].

2. Upon initial start-up, the owner/operator shall take air samples from S- for laboratory analysis using EPA Method TO-15. The air samples shall be taken at the following locations:

   a. At the inlet to the first carbon vessel in series.
   b. At the outlet of the carbon vessel that is last in series prior to venting to the atmosphere.

   The owner/operator shall use the results from the laboratory report to calculate TAC emissions emitted to the atmosphere, using the maximum design flowrate of S- . The owner/operator shall submit the laboratory report and calculated TAC emissions within 21 days of the initial startup, to demonstrate compliance with Parts 1 and 6 of this condition. [Basis: Regulation 2-1-403]

3. During operation of A- , the owner/operator shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air District's Source Test Manager at the following locations:

   a. At the inlet to the second to last carbon vessel in series.
   b. At the inlet to the last carbon vessel in series.
   c. At the outlet of the last carbon vessel in series, prior to venting to the atmosphere.

   When using an FID to monitor breakthrough, readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purposes of these permit conditions. [Basis: Regulations 1-523 and 2-1-403]

4. The owner/operator shall conduct monitoring on a daily basis in accordance with Part 3 of this condition. The owner/operator shall record these monitor readings in a monitoring log at the time they are taken. The owner/operator shall use the monitoring results to estimate the frequency of carbon change-out necessary to maintain compliance with Parts 1, 5, and 6 of this condition.

   a. If the owner/operator can demonstrate one (1) month of consecutive daily monitoring readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to weekly.
   b. After the monitoring frequency has been reduced to weekly, if the owner/operator can demonstrate one (1) month of consecutive weekly monitoring readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to once every two (2) weeks.
   c. After the monitoring frequency has been reduced to once every two (2) weeks, if the owner/operator can demonstrate one (1) month of consecutive bi-weekly readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to monthly.
   d. If any subsequent results from monitoring exceed 1.5 ppmv, measured as isobutylene, the owner/operator shall revert to daily monitoring. If monitoring reverts back to daily, the owner/operator may reduce the monitoring frequency in accordance with Parts 4(a) through (c) of this condition.

   [Basis: Cumulative Increase, Toxics, and Regulations 1-523 and 2-1-403]

5. The second to last carbon vessel shall be immediately changed out with unspent carbon upon breakthrough, defined as the detection at its outlet in excess of the higher of the following limits:

   a. 10 % of the inlet stream concentration to the carbon bed.
   b. 10 ppmv (measured as Isobutylene).

   [Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

6. The last carbon vessel shall be immediately changed out with unspent carbon upon detection at its outlet of 3 ppmv or greater (measured as Isobutylene). [Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

7. The owner/operator shall maintain the following information for each month of operation:

   a. Hours and time of operation.
   b. Each emission test, analysis, or monitoring results logged in for the day of operation they were taken.
   c. The number of carbon vessels removed from service.
   d. Total throughput of soil vapor from source S-   in standard cubic feet.

   Such records shall be retained and made available for inspection by the Air District for two (2) years following the date the data is recorded. [Basis: Recordkeeping]

8. The owner/operator shall report any noncompliance with these conditions to the Compliance and Enforcement Division, by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at the time that it is first discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal. [Basis: Regulation 2-1-403]

9. The owner/operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this condition. All measurements, records and data required to be maintained by the operator shall be retained for at least two (2) years following the date the data is recorded. [Basis: Regulation 1-523]

10. Upon final completion of the remediation project, the operator shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Regulation 2-1-403]

Permit Conditions for Airstripping/Soil Vapor Extraction (using thermal oxidation):

1. The owner/operator shall abate the precursor organic compound (POC)/non-precursor organic compound (NPOC) emissions from the soil vapor extraction system (S-) with the Thermal Oxidizer (A-) during all periods of operation. The influent vapor flow rate shall not exceed scfm. In no event shall the toxic air contaminant (TAC) emissions to the atmosphere from S- exceed the trigger levels listed in Air District Regulation 2-5, Table 2-5-1. [Basis: Regulations 8-47-301 and 8-47-302 and Toxics].

2. Upon initial start-up, the owner/operator shall take air samples from S- for laboratory analysis using EPA Method TO-15. The air samples shall be taken at the following locations:

   a. At the inlet to the Thermal Oxidizer (A-).
   b. At the outlet of the Thermal Oxidizer (A-) prior to venting to the atmosphere.

   The owner/operator shall use the results from the laboratory report to calculate TAC emissions emitted to the atmosphere, using the maximum design flowrate of S- . The owner/operator shall submit the laboratory report and calculated TAC emissions within 21 days of the initial startup, to demonstrate compliance with Part 1 of this condition. [Basis: Regulation 2-1-403]

3. The owner/operator shall operate A- Thermal Oxidizer such that the POC abatement efficiency shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as hexane). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained by the owner/operator. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained by the owner/operator. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as hexane). [basis: Cumulative Increase, Regulation 2-5, TBACT]

4. While operating the Thermal Oxidizer, the owner/operator shall not operate A- below a minimum operating temperature of less than (1400 for thermal and 600 for catalytic) degrees Fahrenheit. [basis: Cumulative Increase, Regulation 2-5, TBACT]

5. To determine compliance with part 4, the owner/operator shall equip the A- Thermal Oxidizer with continuous measuring and temperature recording instrumentation. The owner/operator shall collect and maintain the temperature data from the temperature recorder in a file which shall be available for Air District inspection for a period of at least 2 years following the date on which such data are recorded. [basis: Regulation 1-523]

6. The owner/operator shall maintain the following information for each month of operation:

   a. Hours and time of operation.
   b. Each emission test, analysis, or monitoring results logged in for the day of operation they were taken.
   c. Total throughput of soil vapor from source S- in standard cubic feet.

   Such records shall be retained and made available for inspection by the Air District for two (2) years following the date the data is recorded. [Basis: Recordkeeping]

7. The owner/operator shall report any noncompliance with these conditions to the Compliance and Enforcement Division, by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at the time that it is first discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal. [Basis: Regulation 2-1-403]

8. The owner/operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this condition. All measurements, records and data required to be maintained by the operator shall be retained for at least two (2) years following the date the data is recorded. [Basis: Regulation 1-523]

9. Upon final completion of the remediation project, the operator shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Regulation 2-1-403]

[Add Source Test Conditions after part 10 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Portable Airstripping/Soil Vapor Extraction (using carbon adsorption)

1. The operator of this source shall notify the Air District at least 3 days prior to start-up of operation at any new location. The notification shall include:

    a. Application Number and Plant Number .
    b. Street address, including zip code, for the location where the equipment will be operated.
    c. The name and telephone number of a contact person where the equipment will be operated.
    d. The date of initial start-up and estimated duration of operations at that location.
    e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1000 feet.

    In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Engineering Division. If the start-up is delayed more than 5 days, written notification must be resubmitted. [Basis: 2-1-413]

2. The owner/operator of this source shall not operate or retain it at any single location for a period in excess of 12 consecutive months, following the date of initial operation. If this portable source remains at any fixed location for more than 12 months, the multi-location permit will automatically revert to a conventional permanent location permit and will lose its portability.
[Basis: Regulation 2-1-403]

3. The owner/operator shall operate S- portable equipment at all times in conformance with the eligibility requirements set forth in Regulation 2-1-413 for portable equipment. [Basis: Regulation 2-1-413]

4. The owner/operator of S- shall not operate this equipment within 1000 feet of the outer boundary of any other K-12 school, unless the applicable requirements of the California Health and Safety Code Section 42301.6 have been met. This will require a submittal and Air District approval of an application for a revised permit to operate. The owner/operator shall not operate this equipment within an overburdened community, as defined in Regulation 2-1-243, unless the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302 have been met. This will require submittal and Air District approval of an application for a revised permit to operate. [Basis: Regulations 2-1-412, 2-1-413.3, and 2-5-302]

5. The owner/operator of S- shall abate the Non-Precursor Organic Compound (NPOC) and Precursor Organic Compound (POC) emissions from Source S- with A- , SVE abatement system, consisting of two lbs minimum capacity Activated Carbon Vessels in series during all periods of operations. Startup and subsequent operation of each abatement device shall take place only after written notification of same has been received by the Air District's Engineering Division. Influent vapor flow rate shall not exceed scfm for S- . In no event shall the Toxic Air Contaminants (TACs) emissions to the atmosphere from S- exceed the respective chronic and acute trigger levels in Air District's Regulation 2-5, Table 2-5-1. [Basis: Regulation 8-47-301.1,2 and 2-5].

6. The owner/operator shall take air samples from S- for laboratory analysis using EPA Method TO-15 upon start-up at any new equipment location. The air samples shall be taken at the following S- locations:
    a. At the inlet to the first Carbon vessel in series.
    b. At the outlet of the Carbon vessel that is last in series prior to venting to the atmosphere.

    Laboratory results shall be submitted to the Air District Engineering Division within 14 days of start-up. [Basis: Regulation 2-1-403]

7. During operation of A- Activated Carbon Vessels, the owner/operator of these sources shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air District's Source Test Manager at the following locations:
   a. At the inlet to the second to last Carbon vessel in series.
   b. At the inlet to the last Carbon vessel in series.
   c. At the outlet of the Carbon vessel that is last in series prior to venting to the atmosphere.

   When using an FID to monitor breakthrough, readings may be taken with and without a Carbon filter tip fitted on the FID probe. Concentrations measured with the Carbon filter tip in place shall be considered methane for the purposes of these permit conditions. [Basis: Regulations 1-523 and 2-1-403]

8. The owner/operator of S- shall record these monitor readings in a monitoring log at the time they are taken. The owner/operator shall use the monitoring results to estimate the frequency of carbon change-out necessary to maintain compliance with parts number 9 and 10 and shall be conducted on a daily basis for the first week of operation. After demonstrating continuous compliance for the first week, the owner/operator may switch to monitoring to a weekly schedule. The owner/operator of this source may propose for Air District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the Air District's Engineering Division must be received by the owner/operator prior to a change to the monitoring schedule. [Basis: Cumulative Increase, Regulation 2-5, TBACT]

9. The second to last Carbon vessel shall be immediately changed out with unspent carbon upon breakthrough, defined as the detection at its outlet in excess of the higher of the following limits:
   a. 10 % of the inlet stream concentration to the carbon bed.
   b. 10 ppmv (measured as Isobutylene).

   [Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

10. The last Carbon vessel shall be immediately changed out with unspent Carbon upon detection at its outlet of 10 ppmv or greater (measured as Isobutylene). [Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

11. The owner/operator of this source shall maintain the following information for each month of operation of the Activated Carbon Vessels:
    a. Hours and time of operation.
    b. Each emission test, analysis or monitoring results logged in for the day of operation they were taken.
    c. Tetrachloroethylene, Trichlorethylene, Benzene, Ethylbenzene emissions in pounds.
    d. The number of Carbon vessels removed from service.

    Such records shall be retained and made available for inspection by the Air District for two years following the date the data is recorded. [Basis: Regulation 1-523]

12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division a year end summary showing the following information:
    a. The location(s) at which the equipment was operated including the dates operated at each location.
    b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
    c. The total Tetrachloroethylene, Trichlorethylene, Benzene, Ethylbenzene emissions for the previous four quarters (indicated in pounds).

    [Basis: Regulation 1-523]

13. The owner/operator of S- shall report any non-compliance with these conditions to the Compliance and Enforcement Division, by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at the time that it is first discovered. The owner/operator of S-

shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal. [Basis: Cumulative Increase, Regulation 2-5]

14. The owner/operator of S- shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this conditional Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded. [Basis: Regulation 1-523]

15. Upon final completion of the remediation project, the operator of S- shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Cumulative Increase, Regulation 2-5, TBACT

Permit Conditions for Sub-Slab Depressurization:

1. The owner/operator shall abate the precursor organic compound (POC)/non-precursor organic compound (NPOC) emissions from the Sub-Slab Depressurization System (S-) with the Activated Carbon Vessel (A-1), consisting of a minimum of two (2) 170-lbs activated carbon vessels in series, during all periods of operation. The influent vapor flow rate shall not exceed 350 scfm. In no event shall the toxic air contaminant (TAC) emissions to the atmosphere from S- exceed the trigger levels listed in Air District Regulation 2-5, Table 2-5-1. [Basis: Regulations 8-47-301 and 8-47-302 and Toxics].

2. Upon initial start-up, the owner/operator shall take air samples from S- for laboratory analysis using EPA Method TO-15. The air samples shall be taken at the following locations:

   a. At the inlet to the first carbon vessel in series.
   b. At the outlet of the carbon vessel that is last in series prior to venting to the atmosphere.

   The owner/operator shall use the results from the laboratory report to calculate TAC emissions emitted to the atmosphere, using the maximum design flowrate of S- . The owner/operator shall submit the laboratory report and calculated TAC emissions within 21 days of the initial startup, to demonstrate compliance with Parts 1 and 6 of this condition. [Basis: Regulation 2-1-403]

3. During operation of A-1, the owner/operator shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air District's Source Test Manager at the following locations:

   a. At the inlet to the second to last carbon vessel in series.
   b. At the inlet to the last carbon vessel in series.
   c. At the outlet of the last carbon vessel in series, prior to venting to the atmosphere.

   When using an FID to monitor breakthrough, readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purposes of these permit conditions. [Basis: Regulations 1-523 and 2-1-403]

4. The owner/operator shall conduct monitoring on a daily basis in accordance with Part 3 of this condition. The owner/operator shall record these monitor readings in a monitoring log at the time they are taken. The owner/operator shall use the monitoring results to estimate the frequency of carbon change-out necessary to maintain compliance with Parts 1, 5, and 6 of this condition.

   a. If the owner/operator can demonstrate one (1) month of consecutive daily monitoring readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to weekly.
   b. After the monitoring frequency has been reduced to weekly, if the owner/operator can demonstrate one (1) month of consecutive weekly monitoring readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to once every two (2) weeks.
   c. After the monitoring frequency has been reduced to once every two (2) weeks, if the owner/operator can demonstrate one (1) month of consecutive bi-weekly readings lower than 1.5 ppmv, measured as isobutylene, the monitoring frequency may be reduced to monthly.
   d. If any subsequent results from monitoring exceed 1.5 ppmv, measured as isobutylene, the owner/operator shall revert to daily monitoring. If monitoring reverts back to daily, the owner/operator may reduce the monitoring frequency in accordance with Parts 4(a) through (c) of this condition.

   [Basis: Cumulative Increase, Toxics, and Regulations 1-523 and 2-1-403]

5. The second to last carbon vessel shall be immediately changed out with unspent carbon upon breakthrough, defined as the detection at its outlet in excess of the higher of the following limits:

a. 10 % of the inlet stream concentration to the carbon bed.
b. 10 ppmv (measured as Isobutylene).
[Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

6. The last carbon vessel shall be immediately changed out with unspent carbon upon detection at its outlet of 3 ppmv or greater (measured as Isobutylene). [Basis: Cumulative Increase and Regulations 1-523 and 2-1-403]

7. The owner/operator shall maintain the following information for each month of operation:

   a. Hours and time of operation.
   b. Each emission test, analysis, or monitoring results logged in for the day of operation they were taken.
   c. The number of carbon vessels removed from service.
   d. Total throughput of soil vapor from source S-   in standard cubic feet.

   Such records shall be retained and made available for inspection by the Air District for two (2) years following the date the data is recorded. [Basis: Recordkeeping]

8. The owner/operator shall report any noncompliance with these conditions to the Compliance and Enforcement Division, by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at the time that it is first discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal. [Basis: Regulation 2-1-403]

9. The owner/operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this condition. All measurements, records and data required to be maintained by the operator shall be retained for at least two (2) years following the date the data is recorded. [Basis: Regulation 1-523]

10. Upon final completion of the remediation project, the operator shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Regulation 2-1-403]

Permit Conditions for Hard Chrome Plating:

1. The owner/operator shall not exceed a total (net) throughput at S- of million amp-hrs in any consecutive twelve month period. (basis: Cumulative Increase; Toxics)

2. The owner/operator shall vent S- through A- Scrubber System. The ventilation and abatement system shall be properly maintained and kept in good operation condition. (basis: Cumulative Increase; Toxics)

3. The owner/operator shall not emit hexavalent chromium from S- in excess of milligram per ampere-hour (mg/a-hr) after abatement by A- . (basis: Cumulative Increase; Toxics)

4. Source Test
   a. To assist in demonstrating ongoing compliance with part 3 above, the owner/operator shall perform a source test at a frequency of not less than once every 24 months after the previous source test. The initial source test to demonstrate compliance with part 3, shall be conducted within 60 days of initial startup of A- .
   b. The owner/operator shall submit a written source test protocol to the Air District's Source Test Section at least 30 days prior to conducting any source test for compliance. The chrome testing protocol shall include a requirement to operate all chrome plating baths at normal rectifier amperages during the test period. source test protocol shall include testing methods, length of sample period, plating facilities to be operating during the source test, parameters to be monitored, sampling equipment and methods, as well as the planned date for the source test.
   c. All source tests used to demonstrate compliance shall determine the mass emissions of both total and hexavalent chromium in g/hr, mg/a-hr, and mg/dscm as emitted after abatement.

   The owner/operator shall submit a complete report to the Air District's Source Test Section within 60 days of the source test completion and shall demonstrate compliance with part 3, above. (basis: Cumulative Increase; Toxics)

5. Parametric Monitoring
   a. To demonstrate compliance with part 1 above, the owner/operator shall install, operate and maintain continuous recording, non-resettable ampere-hour meters that operate on the electrical power lines connected to the tank rectifiers. A separate meter shall be hard-wired, maintained and operated for each rectifier if applicable.
   b. In order to comply with Regulation 11 Rule 8, Section (e)(2) and (e)(3) the owner/operator shall determine and recommend a parameter for regular monitoring to ensure ongoing compliance with part 4 above. The initial source test shall be used to establish the parameter operating range. This parameter type as well as an initial parameter operating range will be added to this part as an administrative amendment, upon demonstration of compliance with part 4.

   (basis: Cumulative Increase; Toxics)

6. Inspection/Maintenance
   a. The owner/operator shall perform visual inspections of the A- at a frequency of at least one time per calendar quarter. This visual inspection is to ensure that there is proper drainage, no unusual chromic acid buildup, and no evidence of chemical attack that would affect the structural integrity of the devices.
   b. The owner/operator shall visually inspect the back portion of the scrubber closest the stack at a frequency of at least one time per quarter to ensure there is no breakthrough of chromic acid mist.
   c. The owner/operator shall visually inspect ductwork from tank to the control device at a frequency of at least one time per calendar quarter to ensure there are no leaks. In the event a leak is discovered, it shall be repaired as soon as practicable.

d. The owner/operator shall perform periodic wash downs of the A- at a frequency as recommended by the manufacturer.
e. The ampere-hour meter shall be installed and maintained as per manufacturer's recommendations.

(basis: Cumulative Increase; Toxica)

7. The owner/operator shall prepare an operation and maintenance (O&M) plan. The plan shall incorporate the requirements noted in part 6 above, and shall include the following elements:
   a. A standardized checklist to document the operation and maintenance of the source, the add-on air pollution control devices, and the process and control system monitoring the equipment, and
   b. Procedures to be followed to ensure the equipment is properly maintained.
   c. The owner/operator shall keep the written O&M plan on record after is developed and have it available for Air District inspection, upon request.
   d. The owner/operator shall document any changes made to the O & M plan in an addendum to the plan. In addition, the owner/operator shall keep previous versions of the O & M Plan on record to be made available for Air District inspection upon request, for a period of 5 year after each revision to the plan.
   e. The owner/operator shall revise the O & M plan as necessary to minimize breakdowns.

   To satisfy the inspection and maintenance procedures, the owner/operator may use applicable standard operating procedure (SOP) manuals, Occupational Safety and Health Administration (OSHA) plans, or other existing plans, provided the alternative plans meet the requirements of this subsection. (basis: Cumulative Increase; Toxics)

8. Recordkeeping
   The owner/operator shall keep and maintain the following records for at least five years total; and at least two years on site.

   a. The owner/operator shall maintain inspection records to document that the Inspection/Maintenance requirements and the O & M Plan as required by Parts 6 and 7, above, respectively have been met. The record can take the form of a checklist and should identify
      1. the device inspected,
      2. the date and time of the inspection,
      3. a brief description of the working condition of the device during inspection,
      4. maintenance activities performed on the components of the air pollution control system, and
      5. any action taken to correct deficiencies found during inspection.
   b. The owner/operator shall maintain records to demonstrate that the inspection and maintenance requirements of Part 6, above, have been satisfied.
   c. The owner/operator shall maintain test reports documenting the conditions and results of all performance tests.
   d. The owner/operator shall maintain records of monitoring data as required by parts 1 and 5.
   e. The owner/operator shall maintain records of the occurrence, duration, and cause (if known) and action taken on each breakdown.
   f. The owner/operator shall maintain records of exceedances of:
      1. the emission limitation identified in part 3;
      2. the monitoring parameter values of Part 5;
      3. any site-specific operating parameters established for alternative equipment.

   The records shall include the date of the occurrence, the duration, cause (if known), and where possible, the magnitude of any excess emissions. (basis: Cumulative Increase; Toxics)

9. Reporting

a. The owner/operator shall prepare an annual summary report to the Air District to document the ongoing compliance status. This report shall be kept on site and made available to the Air District upon request.
b. The owner/operator shall report breakdowns as required by the Air District breakdown procedures identified in Regulation 1.

(basis: Cumulative Increase; Toxics)

Permit Conditions for Trivalent Chrome Plating:

1. The owner/operator shall not operate S- unless at least one of the bath components contains a wetting agent additive. (Regulation 11-8, Section (c)(3))

2. The owner/operator shall maintain the following monthly records:
   a. Bath components purchased with the wetting agent clearly identified as a bath constituent contained in one of the components.
   b. Current applied to the source integrated over time, in units of ampere-hours. Ampere-hour records to be monitored using non-resettable amp-hour meter.

   (Basis: Regulation 11-8, Section (h)(9), Regulation 1-441)

3. Within 30 days of issuance of this permit, the owner/operator shall submit a notification of compliance status that contains:
   a. A statement that a trivalent chromium process that incorporates a wetting agent will be used to comply with Parts 1 & 2, above.
   b. The list of bath components that comprise the trivalent chromium bath, with the wetting agent clearly identified.

   (Basis: Reg 11 Rule 8, Section (i)(5)

Permit Conditions for Sterilizer w/Catalytic Oxidation (not applicable to small sterilizers that are abated by integral carbon adsorption):

1. The owner/operator shall not use more than pounds of sterilant gas at S- per consecutive twelve-month period. Sterilant gas shall consist of 100% pure ethylene oxide [or describe approved mixture if applicable.] (basis: Cumulative Increase)

2. In order to demonstrate compliance with Part 1, the owner/operator shall maintain a log of sterilant gas purchase and the date and time of each sterilizer operation cycle. Such records shall be retained onsite for two years from the date of entry and made available for inspection by Air District staff upon request. (basis: Cumulative Increase)

3. The owner/operator shall evacuate the sterilizer chamber in a manner that prevents any ethylene oxide emissions to the drain. If the owner/operator uses a water-sealed vacuum pump, it shall be of a recirculating design. (basis: Cumulative Increase)

4. The owner/operator shall not operate the sterilizer chamber unless emissions of ethylene oxide are reduced 99.9% by the catalytic oxidizer, averaged over the entire discharge cycle. The owner/operator shall replace the catalyst bed as needed to comply with this condition. (basis: Cumulative Increase)

5. The owner/operator shall not operate the aerator chamber unless emissions of ethylene oxide are reduced 95% by the catalytic oxidizer, averaged over the entire discharge cycle. The owner/operator shall replace the catalyst bed as needed to comply with this condition. (basis: Cumulative Increase)

6. The owner/operator shall equip the catalytic oxidizer with automatic controls, which:
   a. Monitor and record the inlet and outlet catalytic oxidizer bed temperatures, and
   b. Shutoff the flow of ethylene oxide to the catalytic oxidizer if the inlet temperature is less than 280 F or the outlet temperature exceeds 500 F.

   The owner/operator shall maintain temperature records for a period of at least two years from the date of record and make such records available upon request to the Air District for inspection. (basis: Cumulative Increase)

   [Add Source Test Conditions after part 6 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Small Sterilizers that are abated by integral carbon adsorption:

1. Permitted approval is for the use of 100% ethylene oxide sterilant gas only. The use of any other sterilant gas is expressly prohibited under the terms of the permit unless prior approval and a Change of Condition is obtained in writing from the Bay Area Air Quality Management District. [Basis: Cumulative Increase]

2. Total cumulative emissions of ethylene oxide sterilant gas from source S- shall not exceed pounds per consecutive twelve-month period. [Basis: Cumulative Increase; Regulation 2, Rule 5]

3. Sterilizer emissions from Source S- shall be controlled by A- , Catalytic Oxidizer. [Basis: Cumulative Increase; Regulation 2, Rule 5]

4. The sterilization cycle shall not be conducted unless ethylene oxide emissions are reduced by at least 99.9% averaged over the entire discharge cycle. At any time when the abatement system is unable to accept emissions from the sterilizers, the flow to the sterilizers shall automatically cease. The catalyst bed shall be replaced as needed to comply with this requirement. [Basis: Cumulative Increase, "Ethylene Oxide ATCM for Sterilizers and Aerators", Section 93109, Title 17, CCR, Subsection (e)]

5. In order to demonstrate compliance with Paragraph 2 above, the permit holder shall maintain a log of sterilant gas purchases and the date and time of each sterilization operation cycle. These records shall be retained on site for two years after the date of purchase or entry and shall be made available for inspection by District staff upon request. [Basis: Cumulative Increase, Regulation 1, Rule 1-543]

[Add Source Test Conditions after part 6 and renumber the Source Test Conditions, as needed. An example of such conditions follows.]

6. In order to demonstrate compliance with these permit conditions, the permit holder shall perform a District approved compliance source test (ARB Test Method 431) on each sterilizer within 60 days of sterilizer startup. The permit holder should notify the Manager of the District's Source Test Section and the Director of the District's Engineering Division in writing at least seven (7) days prior to the test, to provide District staff with the option of observing testing. Within 30 days of test completion a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. [Basis: "Ethylene Oxide ATCM for Sterilizers and Aerators", Section 93109, Title 17, CCR, Subsections (g) and (h)]

7. In order to demonstrate compliance with these permit conditions, the permit holder also shall perform a District approved compliance source test (ARB Test Method 431) on each sterilizer every two years. The permit holder shall notify the Manager of the District's Source Test Section and the Director of the District's Engineering Division in writing at least Seven (7) days prior to the test, to provide District Staff the option of observing testing. Within 30 days of test completion a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. The first source test shall be due to the District on the second anniversary of the date of the Permit to Operate. [Basis: "Ethylene Oxide ATCM for Sterilizers and Aerators", Section 93109, Title 17, CCR, Subsections (g) and (h)]

8. The permit holder shall obtain approval from the District's Technical Services Division for the installation of stack sampling ports, and for all source testing procedures. The permit holder shall notify the Permit Services and Technical Divisions at least two weeks prior to any source test. [Basis: Regulation 1, Rule 1-501]

[Add Source Test Conditions after part 6 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Non-Halogenated Solvent Dry Cleaning:

1. The owner/operator shall not use more than gallons of petroleum solvent at S- per consecutive twelve-month period, as defined as solvent purchases minus any amounts remaining in storage. (basis: Cumulative Increase)

2. To demonstrate compliance with the above, the owner/operator shall maintain onsite records of all solvent purchases. Monthly throughput shall be totaled for each consecutive twelve-month period. Such records shall be retained onsite for 24 months from the date of entry and be available for inspection by Air District staff on request. (basis: Cumulative Increase)

Permit Conditions for Abrasive Blasting (BACT with abatement):

1. The owner/operator of S- Abrasive Blasting Operation shall not exceed a total abrasive throughput of tons of during any consecutive 12-month period. (basis: Cumulative Increase).

2. The owner/operator of S- Abrasive Blasting Operation shall abate the emissions with the properly maintained A- Baghouse at all times that S- is in operation. The owner/operator shall ensure that an Air District approved baghouse failure warning device be in operation at all A- Baghouse is in use. (basis: Cumulative Increase).

3. In order to demonstrate compliance with the above conditions, the owner/operator of S- Abrasive Blasting Operation and A- Baghouse shall maintain the following records in an Air District approved log. These records shall be kept on site and made available for Air District inspection for a period of 24 months from the date that the record was made. (basis: Cumulative Increase).
   a. Daily throughput of abrasive material, summarized on a monthly basis.
   b. Daily hours of operation, summarized on a monthly basis.
   c. Monthly throughput shall be totaled for each consecutive twelve-month period.
   (basis: Cumulative Increase)

4 The maximum air flow rate from A- Baghouse, shall not exceed dscfm. [Basis: Regulation 6-310].

5. The particulate loading at the exit of A- Baghouse, shall not exceed grain/dscf. [Basis: BACT]

[Add Source Test Conditions after part 5 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Abrasive Blasting (non-BACT with abatement):

1. The owner/operator of S- Abrasive Blasting Operation shall not exceed a total abrasive throughput of tons of during any consecutive 12-month period. (basis: Cumulative Increase).

2. The owner/operator of S- Abrasive Blasting Operation shall abate the emissions with the properly maintained A- Baghouse at all times that S- is in operation. The owner/operator shall ensure that an Air District approved baghouse failure warning device be in operation at all A- Baghouse is in use. (basis: Cumulative Increase).

3. In order to demonstrate compliance with the above conditions, the owner/operator of S- Abrasive Blasting Operation and A- Baghouse shall maintain the following records in an Air District approved log. These records shall be kept on site and made available for Air District inspection for a period of 24 months from the date that the record was made. (basis: Cumulative Increase).
   a. Daily throughput of abrasive material, summarized on a monthly basis.
   b. Daily hours of operation, summarized on a monthly basis.
   c. Monthly throughput shall be totaled for each consecutive twelve-month period.

   (basis: Cumulative Increase)

Permit Conditions for Abrasive Blasting (non-BACT with no abatement):

1. The owner/operator of S- Abrasive Blasting Operation shall not exceed a total abrasive throughput of tons of during any consecutive 12-month period. (basis: Cumulative Increase).

2. In order to demonstrate compliance with the above conditions, the owner/operator of S- Abrasive Blasting Operation shall maintain the following records in an Air District approved log. These records shall be kept on site and made available for Air District inspection for a period of 24 months from the date that the record was made.
   a. Daily throughput of abrasive material, summarized on a monthly basis.
   b. Daily hours of operation, summarized on a monthly basis.
   c. Monthly throughput shall be totaled for each consecutive twelve-month period.

   (basis: Cumulative Increase).

Permit Conditions for Asphalt Drum Mixer:

1. The owner/operator of S- Drum Mixer shall not process more than tons of finished asphaltic concrete during any consecutive 12-month period. [Basis: Cumulative Increase]

2. The owner/operator of S- Drum Mixer shall use only natural gas fuel for this source. [Basis: Cumulative Increase, Toxics, BACT]

3. The owner/operator of S- shall abate the emissions from S- at all times it is in use, with properly maintained A- . [Basis: BACT]

4. The owner/operator of S- shall not exceed the following emission limits (downstream of A-): [Basis: Cumulative Increase, BACT]

NOx	12 ppmv@ 15% O_2 dry
CO	133 ppmv@ 15% O_2 dry
PM_{10}	0.01 grain/dry standard cubic foot

5. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour, which is as dark or darker than Ringlemann 1 or equivalent to 20% opacity. [Basis: Regulation 6-1-301]

6. Operation of S- shall not emit emissions in sufficient quantities as to cause a public nuisance under Regulation 1-301. [Basis: Regulation 1-301]

7. The total throughput of finished asphaltic concrete, by weight, in tons, shall be recorded on a monthly basis in an Air District approved log. Monthly throughput shall be totaled for each consecutive twelve-month period. This record shall be retained for a period of at least two years (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit), from date of entry. The log shall be kept with the equipment and made available to the Air District staff upon request. [Basis: Record keeping]

[Add Source Test Conditions after part 7 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Portable Asphalt Rubber Blending Plant:
[Note: If the Asphalt Rubber Blending Plant is not portable, then remove Part 1 and 10 and renumber.]

1. The owner/operator of S- , S- , S- , S- , S- , and S- has been given a permit for a portable source and is subject to Regulation 2-1-413.
   a. The owner/operator will satisfy Regulation 2-1-413.1 (10 ton/yr limit of air pollutants) and Regulation 2-1-413.2 (Toxic Emissions) and if the throughput does not exceed the limit in Parts 3, 4, 5, and 6.
   b. Per Regulation 2-413.2, the owner/operator must not operate within 1,000 feet of the outer boundary of any K-12 school site, unless the applicable notice requirements of Health and Safety Code Section 42301.6 have been met. The owner/operator shall not operate this equipment within an overburdened community, as defined in Regulation 2-1-243, unless the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302 have been met. This will require submittal and Air District approval of an application for a revised permit to operate.
   c. To satisfy Regulation 2-1-413.7, the owner/operator must not store or operate the sources in one location for more than 12 months, following the date of initial operation. The owner/operator must not move the equipment and then return it to the same location in an attempt to circumvent the portable equipment time requirement.
   d. If this portable asphalt rubber blending plant remains at any fixed location in the Bay Area Air Basin for more than 12 months, its permit will automatically revert to a conventional permanent location BAAQMD permit and will lose its portability. This loss of portable status shall be reported to the Director of the Compliance and Enforcement Division no later than 30 calendar days after its occurrence.
   (Basis: Regulations 2-1-412, 2-1-413.3, and 2-5-302)

2. The owner/operator of S- and S- shall not emit visible dust and smoke emissions that exceed Ringelmann 1 or result in fallout on adjacent property in such quantities so as to cause a public nuisance as described in Regulation 1-301. The owner/operator will not emit for a period or periods aggregating more than three minutes in any hour, equal to or greater than 20% opacity as perceived by an opacity-sensing device.
   (Basis: Regulation 1-301 and Regulation 6-1)

3. The owner/operator of S- shall not exceed the following crumb rubber throughput:
   a. tons in any consecutive 24-hour period
   b. tons in any consecutive 12-month period
   (Basis: Cumulative Increase)

4. The owner/operator of S- shall not exceed the following natural rubber throughput:
   a. tons in any consecutive 24-hour period
   b. tons in any consecutive 12-month period
   (Basis: Cumulative Increase)

5. The owner/operator of S- Extender Oil Tank shall not exceed the following extender oil throughput:
   a. gallons in any consecutive 24-hour period
   b. gallons in any consecutive 12-month period
   (Basis: Cumulative Increase)

6. The owner/operator of S- Asphalt Oil Tank shall not exceed the following asphalt oil throughput:
   a. gallons in any consecutive 24-hour period
   b. gallons in any consecutive 12-month period
   (Basis: Cumulative Increase)

7. The owner/operator shall ensure that all emissions from S- , S- , S- , and S- are abated by A- , A- , and A- Air-Cooled Condensers at all times of operation. (Basis: Cumulative Increase)

8. The owner/operator of S- shall not use more than 10,000 therms or 1,000 MMBtu of LPG during any consecutive 12-month periods in any locations under the jurisdiction of BAAQMD. [Basis: cumulative increase]

9. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:
   a. Daily and monthly throughput of material usages for S- , S- , S- , and S- .
   b. Daily and monthly hours of operation.

   The owner/operator shall retain all records in an Air District-approved log to be retained on-site for at least two years, from the date of entry, and shall make these records available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase, Recordkeeping)

10. The owner/operator shall notify the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement) at least 3 days in advance, of the new location in which it intends to operate. The notification shall include:
    a. Plant number
    b. Brief description of the nature of the operation
    c. Estimated duration of the operation at this site.
    d. Name and telephone number of a contact person at the new location

    (Basis: Regulation 2-1-220)

Permit Conditions for Smaller Coffee Roasting Operations:
Applies to:

- Small to Medium (5 to 35 kg/batch) Roasting Operations with Integral or Add-on Afterburner, and
- Large (35 to 70 kg/batch) Roasting Operations with Integral or Add-on Afterburner and an Annual Roasting Throughput not Exceeding 1,000 tons (Large ≤ 1,000 tpy)

1. The owner/operator shall not exceed the following limits at the source indicated over any consecutive 12-month period:
   S-
   Coffee Beans tons/yr
   [basis: Cumulative Increase]

2. The owner/operator shall not use more than therms of natural gas usage at S- during any consecutive twelve-month period. [Basis: Cumulative Increase]

3. The owner/operator shall abate S- Coffee Roaster(s) at all times while operating by A- Afterburner/ built-in afterburner. [basis: Cumulative Increase]

4. The owner/operator shall operate A- with a minimum furnace temperature of 1200° F during all times that the beans are roasting. [basis: Regulation 2-1-403]

5. The owner/operator shall ensure that the exhaust stack is equipped with a temperature-measuring device capable of continuously measuring and recording the temperature in the stack zone when roasting. This device shall be accurate to within 10 degrees Fahrenheit (° F) and shall be maintained in accordance with manufacturer's recommendations. These temperature monitors shall be used to determine compliance with the temperature requirements in Part 4. [basis: Regulation 1-521]

6. The owner/operator shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1.0 on the Ringelmann Chart or of such opacity as to obscure an observer's view to an equivalent or greater degree. [basis: Regulation 6-1-301]

7. The owner/operator shall maintain the following records and provide all the data necessary to evaluate compliance with the above conditions, including the following information:

   a. Monthly records of the quantity of green coffee beans roasted at S- Coffee Roaster.
   b. Monthly records of natural gas usage at S- Coffee Roaster.
   c. Monthly usage records shall be totaled for each consecutive 12-month period.
   d. Records of continuous temperature measurements of A- Afterburner whenever S- Coffee Roaster is roasting coffee beans.

   All records shall be retained onsite for two years from the date of entry, and made available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record keeping requirements contained in any applicable Air District Regulations. [Basis: Regulation 1-523]

Permit Conditions for Larger Coffee Roasting Operations:
Applies to:

- Large (35 to 70 kg/batch) Roasting Operations with Integral or Add-on Afterburner and an Annual Roasting Throughput Exceeding 1,000 tons (Large > 1,000 tpy), and
- Extra-Large (70 kg/batch & up) with Integral or Add-on Afterburner Coffee Roasting Operations

1. The owner/operator shall not exceed the following limits at the sources indicated over any consecutive 12-month period:
   S-
   Coffee Beans tons/yr
   Natural Gas Usage MM scf/yr
   [basis: Cumulative Increase]

2. The owner/operator shall abate S- Coffee Roaster(s) at all times with the properly operating by A- Afterburner(s), and A- Baghouse(s) respectively. [basis: Cumulative Increase, include BACT or TBACT (if applicable)]

3. The owner/operator shall maintain a minimum furnace temperature of A- to be 1200° F and maintain a residence time of at least 0.3 seconds. [basis: Regulation 2-1-403]

4. The owner/operator shall ensure that A- Afterburner are equipped with a temperature-measuring device capable of continuously measuring and recording the temperature in the thermal oxidizers. These devices shall be accurate to within 10 degrees Fahrenheit (° F) and shall be maintained in accordance with manufacturer's recommendations. These temperature monitors shall be used to determine compliance with the temperature requirements in Part 3. [basis: Regulation 1-521]

5. The owner/operator shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 0.5 on the Ringelmann Chart or of such opacity as to obscure an observer's view to an equivalent or greater degree. [basis: BACT]

6. The owner/operator shall properly maintain all baghouses (A-) and keep them in good operating condition at all times. The owner/operator shall ensure that all baghouses (A-) are equipped with a device for measuring the pressure drop across the baghouse. (basis: Regulation 6-1-301, 6-1-310, 6-1-311, 2-1-403)

7. Within 7 days of startup of any of the following, the owner/operator shall identify the operating pressure drop ranges for each baghouse and ensure that the baghouses (A-) are maintained within those identified pressure drop ranges. (basis: Regulation 6-1-301, 6-1-310, 6-1-311, 2-1-403)

8. To demonstrate compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:
   a. Monthly records of the quantity of green coffee beans roasted at each coffee roaster.
   b. Monthly records of natural gas usage at each coffee roaster.
   c. Monthly usage records shall be totaled for each consecutive 12-month period.
   d. Records of continuous temperature measurements of A- Afterburner whenever S- Coffee Roasters are in operation.
   e. Records of daily pressure drop measurements of A- and dates when the filters are replaced and/or the baghouse repaired.
   f. Source test reports.

   All records shall be retained onsite for two years from the date of entry and made available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record keeping requirements contained in any applicable Air District Regulations. [basis: Cumulative Increase]

10. The owner/operator shall not exceed the following limits while operating any roaster or afterburner:
NOx = lb/MMBTU
CO = lb/MMBTU
POC = lb/ton of beans roasted
Formaldehyde = lb/ton
Acetaldehyde = lb/ton
[basis: Cumulative Increase, BACT]

11. The particulate emissions, as measured by EPA Method 5 front and back half, from the exhaust of the following abatement devices shall not exceed the indicated grain loading rates:
Abatement Device # g/dscf
A-
[basis: Cumulative Increase, BACT]

12. Within 60 days of start-up of each of S- , and every five years thereafter, the owner/operator shall conduct an Air District approved source test on the afterburner exhaust stacks to determine the emissions of the following pollutants in the units specified:
Nitrogen Oxides [lb/MMBTU natural gas]
Carbon Monoxide [lb/MMBTU natural gas]
Total Organics [lb/ton coffee roasted]
Formaldehyde [lb/ton coffee roasted] (only test on startup)
Acetaldehyde [lb/ton coffee roasted] (only test on startup)
The owner/operator shall submit the source test results to the Air District staff no later than 60 days after the source test. [basis: Cumulative Increase, BACT]

13. Not later than 60 days from the startup of S- and every three years thereafter, the owner/operator shall conduct Air District approved source tests to determine initial compliance with Part 11. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)

14. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

15. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

Permit Conditions for Cooling Towers (Non-BACT):

1. The owner/operator of S- Cooling Tower shall not exceed a total water throughput of gallons during any consecutive 12-month period. (basis: Cumulative Increase)

2. The owner/operator of S- Cooling Tower shall not exceed a total dissolved solids content of water (TDS) of ppmw. (basis: Cumulative Increase)

3. The operator/owner of the S- Cooling Tower shall maintain documentation, written and provided by the vendor/manufacturer, of the maximum drift rate of wt% and the premise, basis, and justification for the drift rate. (Basis: Cumulative Increase)

4. The owner/operator of S- Cooling Tower shall not exceed a bromine concentration in the water of ppmw. (basis: Toxics)

5. The owner/operator of the S- Cooling Tower, shall maintain all water usage, monitoring, source test, vendor specifications, and other records as required to demonstrate compliance with the above conditions. Monthly throughput shall be totaled for each consecutive twelve-month period. All records shall be maintained on site for at least two years from the date of data entry (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) and shall be made available to the Air District staff for inspection upon request. (basis: Cumulative Increase, Toxics)

Permit Conditions for Refinery Cooling Towers (BACT):
S- Cooling Tower, gallon per minute
Counterflow, Induced Draft
Sodium Hypochlorite, Flogard, Gengard, Inhibitor, Spectrus,
Sulfuric Acid Corrosion Inhibitors
Cellular Drift Eliminator
CFM Exhaust

1. The owner/operator of S- shall ensure the monthly average concentration of total dissolved solids (TDS) in the cooling tower recirculating water does not exceed 2,000 ppmw (averaged over any consecutive 30-day period). Compliance with the above TDS concentration limit shall be based on daily conductivity measurements that shall be taken at the cooling water sump basin at least once per operating shift and in concert with a correlation factor of 0.67 mg/L per microohm. (Basis: BACT and Cumulative Increase)

2. The owner/operator of S- shall ensure the drift rate of the drift eliminator does not exceed 0.0005%. (Basis: BACT and Cumulative Increase)

3. The owner/operator of S- shall ensure the monthly average water flow rates measured by a continuous flow monitor does not exceed gallons per minute. (Basis: Cumulative Increase)

4. The owner/operator of S- shall operate, install, and properly maintain a water flow meter and an Air District approved continuous hydrocarbon analyzer(s) at each cooling tower return line(s), and/or at each heat exchanger exit line(s) upstream of S- prior to exposure to air to demonstrate compliance with the leak action level in Subsection 11-10-204.2 (6 ppmv in the stripped air). The owner/operator shall ensure the continuous hydrocarbon analyzer(s) is capable of taking at least 4 measurements every hour (96 measurements per day). (Basis: Regulation 11-10-304.2)

5. The owner/operator of S- shall minimize the leak as soon as practicable or within seven calendar days, whichever is sooner, and conduct a leak repair and/or remove the defective piece of equipment from service within 15 calendar days of first detecting the leak if measurements taken by the Air District approved continuous hydrocarbon analyzer(s) show the sampled cooling tower water analyzed contains total hydrocarbon concentrations greater than 6 ppmw in stripped air. Any delay in completion of the leak repair beyond 15 days must meet the criteria cited in 40 C.F.R. 63.654(f)-(g). The owner/operator shall also speciate and quantify the Toxic Air Contaminants (TACs) associated with the leak within 72 hours of discovering the leak, using water sampling pursuant to the requirements of Sections 11-10-603, 11-10-604 and the BAAQMD Manual of Procedures. The TACs requiring speciation and quantification are defined in Regulation 2, Rule 5, Section 2-5-222 and are summarized in Table 2-5-1 of Regulation 2, Rule 5. (Basis: Toxics and Cumulative Increase)

6. If measurements taken by the Air District approved continuous hydrocarbon analyzer(s) shows the sampled cooling tower water analyzed contains total hydrocarbon concentrations greater than 6 ppmw in stripped air, the owner/operator of S- shall conduct daily cooling water sampling at least once per operating shift per Regulation 11-10-304. The daily water samples shall be collected in a manner that ensures no two samples are collected within 2 hours of each other. The first sample to determine the total hydrocarbon concentration and chlorine concentration in the cooling water shall be taken as soon as feasible but no later than 24 hours from the time and date of leak discovery. Within 72 hours of the time and date of leak discovery, the owner/operator of S- shall notify the APCO of the total hydrocarbon concentration and chlorine concentration in the cooling water and shall estimate the associated emissions from the leak. If the leak has not been repaired within 15 days of the time and date of leak discovery, the owner/operator shall notify the APCO regarding the magnitude of the leak, the specific repairs performed to date, whether the leaking component was re-inspected for leaks following the repair, the cause of the leak, whether further repair or replacement of equipment will be required at the next turnaround, whether the hydrocarbons and toxic air contaminants associated with the leak were speciated and quantified. The owner/operator shall

notify the APCO if the delay in completion of the leak repair beyond 15 days meets the criteria cited in 40 C.F.R. 63.654(f)-(g). (Basis: BACT, Regulation 11-10-401, and Recordkeeping)

7. The owner/operator of S- shall implement the following best modern practices:
   a. Conduct inspections and repairs of heat exchangers associated in accordance with Title 8 CCR Section 6857(c).
   b. Calibrate and maintain the on-line continuous total hydrocarbon analyzer in accordance with Regulation 1-523.

(Basis: Regulation 2-1-403)

8. The owner/operator of S- shall perform the following monitoring techniques until the Air District approved continuous hydrocarbon analyzer passes calibration in accordance with BAAQMD Manual of Procedures. The owner/operator of S- shall also perform the following monitoring during periods of analyzer malfunction, when the analyzer is not operating, and/or when the analyzer is undergoing maintenance/repair. The owner/operator shall initiate the monitoring parameters in part 8a through 8e on the following calendar day from the start of analyzer downtime.
   a. Conduct visual observations of the cooling water at least once per day to detect any changes in the appearance of the water that would indicate potential hydrocarbon contamination.
   b. Sample the cooling water for chlorine at least once per day.
   c. Use Air District approved hand-held or stationary monitors, such as PIDs or FIDs, to detect the presence of hydrocarbons in the air above the sump basin at least once per day.
   d. Use of Air District approved Oxidation Reduction Potential (ORP) data taken at least once per day to confirm/eliminate the potential presence of hydrocarbons in the cooling water.
   e. Sample the cooling water in accordance with Regulation 11-10-304.1 within seven calendar days from the beginning of analyzer downtime.
   f. Sample the cooling water in accordance with Regulation 11-10-304.1 within seven calendar days from when S- is initially placed in service and every subsequent seven calendar days until the continuous hydrocarbon analyzer passes calibration.

(Basis: Regulation 2-1-403)

9. The owner/operator of S- shall maintain the following records:
   a. Monthly average water flowrate of cooling tower recirculating water.
   b. Daily conductivity measurements of cooling tower recirculating water to determine Total Dissolved Solids (TDS) concentration using a correlation factor of 0.67 mg/L per microohm and the associated daily PM10 emissions.
   c. Dated logs of all sampled cooling tower water total hydrocarbon concentration data and TACs speciated and quantified as required by Parts 4 and 5 of this permit condition.
   d. Dated logs of all daily cooling water samples collected and analyzed, and the associated daily POC and TAC emissions speciated and quantified as required by Part 6 of this permit condition.
   e. Dated logs of the root cause analysis and corrective actions taken from all events where the applicable leak action levels in Regulation 11-10-204 were exceeded.
   f. Dated logs of all actions taken and implemented to comply with the best modern practices in Part 7 of this permit condition.
   g. Dated logs of all monitoring performed to comply with Part 8 of this permit condition.

All records shall be retained for at least five years from the date of entry. The log shall be retained onsite and made available to Air District staff upon request. (Basis: Recordkeeping)

Permit Conditions for Concrete Batch Plants:

1. The owner/operator shall operate A- Baghouse to abate S- during all times of operation of the source. The owner/operator shall ensure that the outlet PM10 grain loading for A- Baghouse shall not exceed 0.01 grains per dry standard cubic foot. [basis: Cumulative Increase]

2. The owner/operator shall properly maintain and keep in good operating condition A- Baghouse at all times. The owner/operator shall equip the A- Baghouse with a device for measuring the pressure drop across the baghouse. (basis: Regulation 6-1-301, 6-1-310, 6-1-3111, 2-1-403)

3. The owner/operator shall produce no more than cubic yards of concrete from this facility in any consecutive 12-month period. (basis: Cumulative Increase)

4. The owner/operator shall not discharge an air contaminant into the atmosphere for a period or periods aggregating more than 3 minutes in any hour, which is as dark or darker than a Ringelmann 1.0. (basis: Regulation 6-1-301)

5. The owner/operator shall abate stockpiles, conveyors and unpaved roads as necessary with A- Water Sprays to maintain compliance with Part 4 of this condition. (basis: Regulation 6-1-301)

6. The owner/operator shall maintain an Air District approved log on a monthly basis for material throughput at each source. Monthly throughput shall be totaled for each consecutive twelve-month period. The owner/operator shall keep this log on site for at least two years from the date of entry and make it available to Air District staff upon request. (basis: Cumulative Increase)

Permit Conditions for Animal Crematories:

1. The owner/operator shall operate S- Cremator in such a way that the cremator's processing rate shall not exceed pounds per hour, and the maximum firing rate shall not exceed MM BTU per hour. (basis: Cumulative Increase; Toxics)

2. The owner/operator shall not cremate more than pounds of animal remains in any consecutive twelve-month period. (basis: Cumulative Increase; Toxics)

3. The owner/operator shall maintain the set point for the operating temperature in the secondary chamber of the S- Cremator at or above 1650-degree Fahrenheit during the cremation mode. The operating temperature during cremation mode shall be maintained at a minimum of 1600 degree Fahrenheit under all circumstances. The owner/operator shall equip the cremator with an Air District approved continuous temperature monitoring and recording device to ensure compliance with this condition. The location of the thermocouple shall be approved by the Source Test Section of the Air District. Natural gas input to the secondary chamber burner shall be increased, if necessary, to increase temperature sufficiently to control odor and visible plume. (Basis: Regulation 6-1-301, 6-1-310; TBACT)

4. The owner/operator shall not cremate until the temperature in the secondary chamber is at least 1650-degree Fahrenheit. (Basis: Regulation 6-1-301, 6-1-310; TBACT)

5. The owner/operator shall fire the S- Cremator with natural gas only. (basis: Cumulative Increase; TBACT)

6. The owner/operator shall use the S- Cremator to cremate animal remains with or without enclosure in associated containers. No other material contaminated with toxic air contaminants as listed by Air Resources Board, including radioactive and biohazardous waste shall be incinerated in this cremator without prior approval of the Air District. (basis: Cumulative Increase; Toxics)

7. The owner/operator shall have an operator present at all times during cremations. (Basis: Regulation 6-1-301)

8. The owner/operator shall keep the S- Cremator in good working condition. (basis: Regulation 6-1-301, 6-1-310)

9. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including but not limited to daily record of the following information:
    a. Operating hours
    b. Weight (in pounds) of animal remains cremated
    c. Daily cremation rate (in pounds)
    d. Daily records shall be totaled on a monthly and for each consecutive twelve-month period.
    e. Any maintenance performed on S- Cremator

    The owner/operator shall keep all records on site for at least two years from the date of data entry, and the records shall be made available to the Air District staff for inspection. (basis: Cumulative Increase, TBACT; Regulation 6-1-301, 6-1-310)

    [Add Source Test Conditions after part 9 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Human Crematories:

1. The owner/operator shall not operate S- Cremator in such a way that the cremator's processing rate shall not exceed cremations per hour, and the maximum firing rate shall not exceed MM BTU per hour. (basis: Cumulative Increase; Toxics)

2. The owner/operator of S- Cremator shall not perform more than a total of cremations in any consecutive twelve-month period. (basis: Cumulative Increase; Toxics)

3. The owner/operator shall maintain the set point for the operating temperature in the secondary chamber of the S- Cremator at or above 1650 degree Fahrenheit during the cremation mode. The operating temperature during cremation mode shall be maintained at a minimum of 1600 degree Fahrenheit during all circumstances. The owner/operator shall equip the cremator with an Air District approved continuous temperature monitoring and recording device to ensure compliance with this condition. The location of the thermocouple shall be approved by the Source Test Section of the Air District. Natural gas input to the secondary chamber burner shall be increased, if necessary, to increase temperature sufficiently to control odor and visible plume. (Basis: Regulation 6-1-301, 6-1-310; TBACT)

4. The owner/operator shall not cremate until the temperature in the secondary chamber of S- Cremator is at least 1650 degree Fahrenheit. (Basis: Regulation 6-1-301, 6-1-310; TBACT)

5. The owner/operator shall fire the S- Cremator with natural gas only. (basis: Cumulative Increase; TBACT)

6. The owner/operator shall use the S- Cremator to cremate only human remains. No other material contaminated with toxic air contaminants as listed by Air Resources Board, including radioactive and biohazardous waste shall be incinerated in this cremator without prior approval of the Air District. (basis: Cumulative Increase; Toxics)

7. The owner/operator shall have an operator present at all times during cremations. (Basis: Regulation 6-1-301)

8. The owner/operator shall keep the S- Cremator in good working condition. (basis: Regulation 6-1-301, 6-1-310)

9. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including but not limited to daily record of the following information:
   a. Operating hours
   b. Number of human cremations for each day
   c. Number of human cremations summed monthly and for each consecutive twelve-month period
   d. Any maintenance performed on S- Cremator

   The owner/operator shall keep all records on site for at least two years from the date of data entry, and the records shall be made available to the Air District staff for inspection. (basis: Cumulative Increase, TBACT; Regulation 6-1-301, 6-1-310)

   [Add Source Test Conditions after part 9 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Crushing and Grinding Operations:

1. The owner/operator shall operate A- Baghouse to abate S- during all times of operation of the source. The owner/operator shall ensure that the outlet PM10, as defined in Regulation 2, Rule 2, grain loading for A- Baghouse shall not exceed 0.01 grains per dry standard cubic foot. [basis: Cumulative Increase]

2. The owner/operator shall properly maintain and keep in good operating condition A- Baghouse at all times. The owner/operator shall equip the A- Baghouse with a device for measuring the pressure drop across the baghouse. (basis: Regulation 6-1-301, 6-1-310, 6-1-3111, 2-1-403)

3. The owner/operator shall inspect Baghouse, A- weekly to ensure proper operation. The following items shall be checked:
   a. The pressure drop across the baghouse shall be checked weekly. The pressure drop shall be no lower than 2 inches of water and no greater than 12 inches of water.
   b. The baghouse exhaust shall be checked weekly for evidence of particulate breakthrough. If breakthrough is evident from plume observations, dust buildup near the stack outlet, or abnormal pressure drops, the filter bags shall be checked for any tears, holes, abrasions, and scuffs, and replaced as needed.
   c. All hoppers shall be discharged in a timely manner to maintain compliance with 3(a) above.
   d. The pulsejet, shaker cleaning system shall be maintained and operated at sufficient intervals to maintain compliance with 3(a) above.

   (basis: Regulation 2-1-403)

4. The owner/operator shall not exceed the following throughput limits in any consecutive 12-month period:

   S- tons/yr

   (basis: Cumulative Increase)

5. The owner/operator shall not discharge an air contaminant into the atmosphere for a period or periods aggregating more than 3 minutes in any hour, which is as dark or darker than a Ringelmann 1.0. (basis: Regulation 6-1-301)

6. The owner/operator shall abate stockpiles, conveyors and unpaved roads as necessary with A- Water Sprays to maintain compliance with Part 4 of this condition.

7. The owner/operator shall maintain an Air District approved log on a monthly basis for material throughput at each source. Monthly throughput shall be totaled for each consecutive twelve-month period. The owner/operator shall keep this log on site for at least two years from the date of entry and make it available to Air District staff upon request. (basis: Cumulative Increase)

Permit Conditions for Methyl Bromide Fumigation:

1. The owner/operator of S- shall only use methyl bromide at S- . (Basis: Regulation 2-5 Toxics, Title 3 CCR Section 6412)

2. The owner/operator of S- shall not exceed emissions of pounds of methyl bromide in any consecutive twelve-month period. (Basis: Cumulative Increase, Regulation 2-5)

3. The owner/operator of S- shall not exceed emissions of pounds of methyl bromide per hour. (Basis: Cumulative Increase, Regulation 2-5)

4. The owner/operator of S- shall not exceed emissions of pounds of methyl bromide per calendar day. (Basis: Cumulative Increase, BACT, Regulation 2-5)

5. If fumigation operations are vented through a stack, the owner/operator of S- shall maintain a minimum exhaust flow rate of cfm. (Basis: Cumulative Increase, Regulation 2-5)

6.

7. The owner/operator of S- shall maintain a valid Restricted Materials Permit at all times while S- is operational. (Basis: Cumulative Increase, Title 3 CCR Section 6412)

8. The owner/operator of S- shall only vent the fumigate during the hours of am to pm. (Basis: Regulation 2-5 Toxics)

   The owner/operator of S- shall only vent the fumigate during the hours of am to pm. (Basis: Regulation 2-5 Toxics)

9. To determine compliance with the above Parts, the owner/operator of S- shall maintain the following records and provide all the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:
   a. Emissions calculations of methyl bromide used at S- on a hourly basis.
   b. Emissions calculations of methyl bromide used at S- on a daily basis.
   c. Emissions calculations of methyl bromide used at S- on a monthly basis.
   d. Emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two-years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase, Regulation 2-5 Toxics)

10. If the owner/operator of S- uses a material other than those specified in Part 1, the owner/operator of S- shall submit a permit application to the Air District for approval prior to use. (Basis: Regulation 2-5 Toxics, Title 3 CCR Section 6412)

Permit Conditions for Phosphine Fumigation:

1. The owner/operator of S- shall only use phosphine at S- . (Basis: Regulation 2-5 Toxics, Title 3 CCR Section 6412)

2. The owner/operator of S- shall not exceed emissions of pounds of phosphine in any consecutive twelve-month period. (Basis: Regulation 2-5)

3. The owner/operator of S- shall not exceed emissions of pounds of phosphine in any consecutive twenty-four hour period. (Basis: Regulation 2-5)

4. The owner/operator of S- shall not exceed emissions of pounds of phosphine in any hour. (Basis: Regulation 2-5)

5. The owner/operation shall only use (type of phosphine gas: aluminum phosphide, magnesium phosphide, phosphine gas) for phosphine fumigation. (Basis: Regulation 2-5)

6. The owner/operator of S- shall maintain a valid Restricted Materials Permit for at all times while S- is operational. (Basis: Title 3 CCR Section 6412)

7. The owner/operator of S- shall only vent the fumigate during the hours of am to pm. (Basis: Regulation 2-5 Toxics)

8. To determine compliance with the above Parts, the owner/operator of S-1 shall maintain the following records and provide all the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:
   a. Emissions calculations of phosphine used at S- on a hourly basis.
   b. Emissions calculations of phosphine used at S- on a daily basis.
   c. Emissions calculations of phosphine used at S- on a monthly basis.
   d. Emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two-years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Toxics)

9. If the owner/operator of S- uses a material other than those specified in Part 1, the owner/operator of S- shall submit a permit application to the Air District for approval prior to use. (Basis: Regulation 2-5 Toxics, Title 3 CCR Section 6412)

Permit Conditions for Miscellaneous Organic Operations:

1. The owner/operator of S- shall not exceed the following usage limits during any consecutive twelve-month period:
   {Material #1} Gallons
   {Material #2} Gallons
   (Basis: Cumulative Increase)

2. The owner/operator may use an alternate material(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:
   a. Total POC emissions from S- do not exceed pounds in any consecutive twelve month period;
   b. Total NPOC emissions from S- do not exceed pounds in any consecutive twelve month period; and
   c. The use of these materials does not increase toxic emissions above any health risk assessment trigger level of Table 2-5-1 in Regulation 2-5.

   (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of coating and cleanup solvent used at this source on a monthly basis.
   b. If a material other than those specified in Part 1 is used, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
   c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for two years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase; Toxics)

Permit Conditions for Portable Equipment (to be included with source specific conditions):

1. The owner/operator of S- has been given a permit for a portable source and is subject to Regulation 2-1-413.

   The owner/operator shall not store or operate the sources in one location for more than 12 months, following the date of initial operation. The owner/operator shall not move the equipment and then return it to the same location in an attempt to circumvent the portable equipment time requirement. (basis: Regulation 2-1-220.1 through 2-1-220.3, and 2-1-220.10)

2. The owner/operator shall not operate within 1000 feet of the outer boundary of any K-12 school site nor within an overburdened community, as defined in Regulation 2-1-243.
   a. The owner/operator shall comply with all applicable provisions of Regulation 2-5.
   b. The owner/operator shall emit no more than 10 tons per year of each pollutant, including POC, CO, NOx, PM10, NPOC or SO2.
   c. To be able to operate within an overburdened community, as defined in Regulation 2-1-243, the owner/operator shall comply with the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302. This will require submittal and Air District approval of an application for a revised permit to operate.

   (Basis: Regulations 2-1-412, 2-1-413.3, and 2-5-302)

3. The owner/operator shall notify the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement), at least 3 days in advance, of the new location in which it intends to operate. The notification shall include:
   a. Permit number
   b. Brief description of the nature of the operation
   c. Estimated duration of the operation at the new location
   d. Name and telephone number of a contact person at the new location

   (basis: Regulation 2-1-403)

4. Within 30 days after the end of the calendar year, the owner/operator shall provide the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement) a year-end summary with the following information:
   a. The location(s) and dates at which the equipment was operated.
   b. The total amount of diesel fuel consumed in this operation for the previous 12 months (in gallons).
   c. The total hours of operation.

   (basis: Regulation 2-1-403)

Permit Conditions for Polyester Resin Manufacturing:

1. The owner/operator of S- shall not exceed the following throughput limits during any consecutive twelve-month period:
   {Resin #1} Gallons
   {Resin #2} Gallons
   {Resin #3} Gallons
   {Resin #4} Gallons
   {Cleanup Solvent #1} Gallons
   {Cleanup Solvent #2} Gallons
   (Basis: Cumulative Increase)

2. The Owner/Operator of S- may use materials other than the materials specified in Part 1, provided that the Owner/Operator can demonstrate that all of the following are satisfied:
   a. Total Precursor Organic Compound (POC) emissions do not exceed any of the following: pounds in any day and pounds in any consecutive twelve-month period. (Basis: Cumulative Increase)
   b. The use of these materials shall not increase toxic air contaminant emissions above any health risk assessment trigger level in Table 2-5-1 of Regulation 2-5. (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above part, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of component listed in Part 1 used at this source on a daily and monthly basis.
   b. If a material other than those specified in Part 1 is used, POC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a daily and monthly basis.
   c. Daily and monthly usage and/or emission calculations shall be totaled for each consecutive 12-month period.
   d. Demonstration that any toxic air contaminants in new solvents in Part 2, do not exceed the acute and chronic trigger levels in Table 2-5-1 of Regulation 2-5 by calculating toxic air contaminant emissions on a lb/hour and lb/year basis, respectively.

   All records shall be retained on-site for 36 month from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase; Regulation 8-50-500)

Permit Conditions for Gel Coat and Resin Application:

1. The owner/operator shall not apply more than gallons of gel coat at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

2. The owner/operator shall not apply more than gallons of resin at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

3. The owner/operator shall not use more than gallons of catalyst at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

4. The owner/operator shall not use more than gallons of cleanup solvent at S- in any consecutive twelve-month period. (basis: Cumulative Increase)

5. The Owner/Operator of S- may use materials other than the materials specified in Part 1 through 4, provided that the Owner/Operator can demonstrate that all of the following are satisfied:
   a. Total Precursor Organic Compound (POC) emissions do not exceed any of the following: pounds in any day and pounds in any consecutive twelve-month period. (Basis: Cumulative Increase)
   b. The use of these materials shall not increase toxic air contaminant emissions above any health risk assessment trigger level in Table 2-5-1 of Regulation 2-5. (Basis: Cumulative Increase; Toxics)

6. In order to demonstrate compliance with Parts 1 through 4, the owner/operator of S- shall maintain the following records and provide all of the data necessary to evaluate compliance, including the following information:
   a. Quantities of each type of component listed in Part 1 used at this source on a daily and monthly basis.
   b. If a material other than those specified in Part 1 is used, POC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a daily and monthly basis.
   c. Daily and monthly usage and/or emission calculations shall be totaled for each consecutive 12-month period. Monthly throughput shall be totaled for each consecutive twelve-month period.
   d. Demonstration that any toxic air contaminants in new solvents in Part 2, do not exceed the acute and chronic trigger levels in Table 2-5-1 of Regulation 2-5 by calculating toxic air contaminant emissions on a lb/hour and lb/year basis, respectively.

   All records shall be retained on-site for 36 months from the date of entry and made available for inspection by Air District staff upon request. (basis: Cumulative Increase, Rule 8-50-500)

Permit Conditions for Tub Grinder (powered by electricity & stationary):

1. The owner/operator shall power S- Tub Grinder exclusively with electricity. (basis: Cumulative increase, BACT, Toxics)

2. The owner/operator of S- Tub Grinder shall not operate for more than hours during any calendar day. The total operation is limited to hours of operation in any consecutive 12-month period. (basis: Cumulative increase, BACT, Toxics)

3. The owner/operator shall not process more than tons of wood in any consecutive 12-month period. (basis: Cumulative increase)

4. The owner/operator of S- Tub Grinder shall use A- Water Spray as necessary to prevent dust emissions from the tub grinder from violating any applicable provisions of Air District Regulation 6-1. (basis: Regulation 6-1)

5. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions.
   a. Daily hours of operation.
   b. Hours of operation and amount of wood processed shall be totaled on a rolling consecutive 12-month quarter basis.
   c. The owner/operator shall record all records in an Air District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations.

   (basis: Toxics, Cumulative Increase, Regulation 1-441)

Permit Conditions for Tub Grinder w/Diesel Engine (Stationary):

1. The owner/operator shall fire S- Tub Grinder with Diesel Engine exclusively with diesel fuel with sulfur content no greater than 0.05wt%. (basis: Cumulative increase, BACT, Toxics)

2. The owner/operator of S- Tub Grinder with Diesel Engine shall not operate for more than hours during any calendar day. The total operation is limited to hours of operation in any consecutive 12-month period. (basis: Cumulative increase, BACT, Toxics)

3. The owner/operator shall not process more than tons of wood in any consecutive 12-month period. (basis: Cumulative increase)

4. The owner/operator of S- Tub Grinder with Diesel Engine shall use A- Water Spray as necessary to prevent dust emissions from the tub grinder from violating any applicable provisions of Air District Regulation 6 ("Particulate and Visible Emissions"). (basis: Regulation 6-1)

5. The owner/operator shall equip the diesel engine of S- Tub Grinder with Diesel Engine with either:
   a. a non-resettable totalizing meter that measures hours of operation for the engine; or
   b. a non-resettable fuel usage meter, the maximum hourly fuel rate shall be used to convert fuel usage to hours of operation.

   (basis: Cumulative Increase)

6. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions.
   a. Daily hours of operation.
   b. Daily consumption of diesel fuel (in gallons).
   c. Hours of operation and amount of diesel fuel in parts a) and b) shall be totaled on a rolling consecutive 12-month quarter basis.

   The owner/operator shall record all records in an Air District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations. (basis: Toxics, Cumulative Increase, Regulation 1-441)

Permit Conditions for Portable Tub Grinder w/Portable Diesel Engine:

1. The owner/operator of S- Tub Grinder with Diesel Engine abated by A- Water Spray has been given a permit for a portable source and is subject to Regulation 2-1-220. (basis: Cumulative Increase; Regulation 2-1-413)

   The owner/operator shall not store or operate the sources in one location for more than 12 months, following the date of initial operation. The owner/operator shall not move the equipment and then return it to the same location in an attempt to circumvent the portable equipment time requirement. (basis: Regulation 2-1-220.1 through 2-1-413)

2. The owner/operator shall not operate within 1000 feet of the outer boundary of any K-12 school site nor within an overburdened community, as defined in Regulation 2-1-243.
   a. The owner/operator shall comply with the all applicable provisions of Regulation 2, Rule 5. (basis: Regulation 2-1-413.2)
   b. The owner/operator shall emit no more than 10 tons per year of each pollutant, including POC, CO, NOx, PM10, NPOC or SO2.
   c. To be able to operate within an overburdened community, as defined in Regulation 2-1-243, the owner/operator shall comply with the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302. This will require submittal and Air District approval of an application for a revised permit to operate.

   (Basis: Regulations 2-1-412, 2-1-413.3, and 2-5-302)

3. The owner/operator shall fire S- Tub Grinder with Diesel Engine exclusively with diesel fuel with sulfur content no greater than 0.05wt%.
   (basis: Cumulative increase, BACT, Toxics)

4. The owner/operator of S- Tub Grinder with Diesel Engine shall not operate for more than hours during any calendar day. The total operation is limited to hours of operation in any consecutive 12-month period.
   (basis: Cumulative increase, BACT, Toxics)

5. The owner/operator shall not process more than tons of wood in any consecutive 12-month period.
   (basis: Cumulative increase)

6. The owner/operator of S- Tub Grinder with Diesel Engine shall use A- Water Spray as necessary to prevent dust emissions from the tub grinder from violating any applicable provisions of Air District Regulation 6-1
   (basis: Regulation 6-1)

7. The owner/operator shall equip the diesel engine of S- Tub Grinder with Diesel Engine with either:
   a. a non-resettable totalizing meter that measures hours of operation for the engine; or
   b. a non-resettable fuel usage meter, the maximum hourly fuel rate shall be used to convert fuel usage to hours of operation.

   (basis: Cumulative Increase)

8. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions.
   a. Daily hours of operation.
   b. Daily consumption of diesel fuel (in gallons).
   c. Hours of operation and amount of diesel fuel in parts a) and b) shall be totaled on a rolling consecutive 12-month quarter basis.

d. The owner/operator shall record all records in an Air District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations.

(basis: Toxics, Cumulative Increase, Regulation 1-441)

9. The owner/operator shall notify the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement) at least 3 days in advance, of the new location in which it intends to operate. The notification shall include:
   a. Permit number
   b. Brief description of the nature of the operation
   c. Estimated duration of the operation at the new location
   d. Name and telephone number of a contact person at the new location

   (basis: Regulation 2-1-403)

10. Within 30 days after the end of the calendar year, the owner/operator shall provide the Compliance and Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement)a year-end summary with the following information:
   a. The location(s) and dates at which the equipment was operated.
   b. The total amount of diesel fuel consumed in this operation for the previous 12 months (in gallons).
   c. The total hours of operation.

   (basis: Regulation 2-1-403)

Example of Permit Condition for Portable Oil/Water Separator and Sludge Dewatering Operation at Refineries:

S-1	Portable Tank, up to 21,000 gallon capacity abated by A-1 Thermal Oxidizer, and/or A-2 Carbon Adsorption Cannisters, and/or A-3 Scrubber
S-2	Portable Tank, up to 21,000 gallon capacity abated by A-1 Thermal Oxidizer, and/or A-2 Carbon Adsorption Cannisters, and/or A-3 Scrubber
S-3	Sludge-Dewater Centrifuge, Flottweg#8055, 48'X8'6"X14', 200 gpm, abated by A-1 Thermal Oxidizer, and/or A-2 Carbon Adsorption Cannisters, and/or A-3 Scrubber
A-1	Thermal Oxidizer, Event Model EMTOS 3500, 10 MMBtu/hr
A-2	Carbon Adsorption Cannisters (minimum 2 in series, minimum 1,000 lbs carbon per cannister)
A-3	Scrubber, Event Model ESCRUB, 1,000 SCFM

A. **General Requirements**

A1. The owner/operator shall not emit more than 10 tons per year of any regulated air pollutant, including POC, CO, NOx, PM2.5, PM10, NPOC or SO2 for all locations in any consecutive 12-month period. For PM2.5 and PM10, fugitive particulate emissions from associated haul road traffic shall not be counted toward the annual limit. (Basis: Regulation 2-1-413.1)

A2. The owner/operator of any source listed above shall ensure that the permitted operation is in compliance with the applicable provisions of Regulation 2, Rule 5. (Basis: Regulation 2-1-413.2)

A3. The owner/operator shall not operate any source listed above within 1000 feet of the outer boundary of any K-12 school site, unless the applicable notice requirements of Health and Safety Code Section 42301.6 have been met. The owner/operator shall not operate this equipment within an overburdened community, as defined in Regulation 2-1-243, unless the applicable public noticing requirements of Regulation 2-1-412 and the applicable project risk limits of Regulation 2-5-302 have been met. This will require submittal and Air District approval of an application for a revised permit to operate. (Basis: Regulations 2-1-412, 2-1-413.3, and 2-5-302)

A4. The owner/operator of any source listed above shall not cause a public nuisance per Regulation 1-301. (Basis: Regulation 2-1-413.4)

A5. The owner/operator of any source listed above shall ensure that the permitted operation is exempt from CEQA or covered by a chapter in the Air District's Permit Handbook. (Basis: Regulation 2-1-413.5)

A6. The owner/operator of the equipment listed above shall ensure that the permitted operation above will not cause a Synthetic Minor Facility to exceed a federally enforceable emission limit. (Basis: Regulation 2-1-413.6)

A7. The owner/operator of any source listed above shall not remain at the same facility for more than 12 consecutive months following initial operation (or, in the case a source that is used in seasonal operations that last less than 12 months, for more than the full length of a normal operating season). If multiple temporary sources are used in succession at the facility to serve the same function at the same facility source, the total time period that all such temporary sources remain at the facility is counted towards the 12-month (or operating season) limit. (Basis: Regulation 2-1-413.7)

A8. If the owner/operator of any source or operation listed above no longer satisfies the requirements of Parts A1 through A7 above, the multiple-facility permit is no longer valid and the source(s) and operation(s) will require permitting subject to the requirements of Regulation 2, Rules 1, 2 and 5 as new source(s). The Multiple Location Permit expires at the time of non-compliance. To continue operation without interruption, the owner/operator shall submit a permit application to secure a Permit to Operate at least 60 days prior to the expiration of the Multiple Location Permit. (Basis: Regulation 2-1-413)

A9. The owner/operator shall not operate any source or operation listed above in a manner to circumvent any of the requirements of A1 through A8. (Basis: Regulation 2-1-413, Regulation 1-104)

A10. The owner/operator shall not operate any source or operation listed above as a replacement or in combination of a current permitted source or operation unless the applicable requirements of the currently permitted source or operation are satisfied. (Basis: Regulation 1-104)

A11. The owner/operator shall not operate any source or operation listed above in a manner that will alter, modify or debottleneck any currently permitted source or operation unless the impacts of the source or operation has been evaluated pursuant to, and satisfies the requirements of, Regulation 2, Rules 1, 2 and 5. The owner operator cannot allow the sludge to be processed on-site at the facility location unless the processing operation is specifically permitted by the owner/operator of the on-site facility. (Basis: Regulation 1-104, Regulation 2, Rules 1, 2 and 5)

A12. The owner/operator shall not operate any source listed above at a Major Facility subject to the requirements of Regulation 2, Rule 6, unless all of the requirements of Regulation 2, Rules 1, 2 and 6, and the applicable requirements of Regulation 12, Rules 11 and 12, have been met. (Basis: Regulation 1-104, Regulation 2, Rules 1, 2 and 6, Regulation 12, Rules 11 and 12)

A13. The owner/operator shall not operate any source listed above in an operation <u>*not*</u> listed above without first submitting and completing a permit application and receiving approval for the new operation by the Air District. (Basis: Regulation 2-1-301)

B. **Source and Operation Standards** – Sludge Treatment

B1. The owner/operator of S- through S- , A- through A- shall not exceed gallons of sludge processing limits during any consecutive twelve-month period. Sludge is limited to wastewater treatment and tank cleaning: (Basis: cumulative increase, Offsets, Reg. 2-5-110)

B2. The owner/operator of S- through S- , A- through A- shall not exceed gallons of sludge processing limits during any clock hour period. Sludge is limited to wastewater treatment and tank cleaning: (Basis: Cumulative increase, Regulation 2-5-110)

B3. The owner/operator of S- through S- , A- , A- and/or A- shall not exceed the following emissions limits.

For Operation abated by A- Thermal Oxidizer
POC (process) = 10 ppmv
Benzene = ppmv
Ethyl benzene = ppmv
Hydrogen Sulfide (H2S) = ppmv
Ammonia = ppmv
Hydrogen Chloride = ppmv

For Operation abated by A- Carbon Adsorber and/or A- Scrubber
POC (process) = 10 ppmv
Benzene = ppmv
Ethyl benzene = ppmv
Hydrogen Sulfide (H2S) = ppmv
Ammonia = ppmv
Hydrogen Chloride = ppmv
(Basis: cumulative increase, Regulation 2-5-110)

B4. The owner/operator shall abate sources S- through S- by A- Thermal Oxidizer and/or A- Carbon Cannisters, and/or A- Scrubber whenever these sources are operated. (Basis: cumulative increase, offsets, toxics)

B5. The owner/operator of S- through S- shall place sludge removed from a storage tank subject to Regulation 8, Rule 5 (at any time since it was last put into service) directly into a sludge container that meets the following requirements:

a. The sludge container shall allow no liquid leakage
b. The sludge container shall have no measurable gap exceeding 1.3 cm (1/2 in.) except when the container is being loaded or unloaded, and except during sludge sampling or treatment.

(Basis: Regulation 8-5-332)

B6. The owner/operator of S S- through S- , A- through A- processing sludge from wastewater treatment, shall not operate any sludge-dewatering unit, equipment, machinery, apparatus, or device unless it is totally enclosed and vented to a control device which has a minimum combined collection and destruction efficiency of 95 percent by weight; or shall have vapor-tight covers on the unit, conveyer belts, and storage bins or tanks except during inspection, maintenance or when the solids storage bin is in use. (Basis: Regulation 8-8-304)

B7. The owner/operator of S- through S- , A- through A- processing sludge from wastewater treatment, must ensure sludge is maintained in vapor-tight containers during storage. Vapor-tight is determined as any leak of less than 500 ppm (expressed as methane) above background, measured at the interface of the component using a portable gas detector as prescribed in EPA Reference Method 21. (Basis: Regulations 8-8-303, 8-8-204, 8-8-603)

B8. The owner/operator of S- through S- , A- , and/or A- , and/or A- shall ensure each permitted source and operation comply with the applicable provisions of New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants. (Basis: NSPS, NESHAP)

B9. The owner/operator of sources S- through S- , abated by A- shall not exceed scfm. The owner/operator of sources S- through S- abated by A- and/or A- shall not exceed scfm and/or scfm, respectively. (Basis: cumulative increase)

C. Toxic Emissions

C1. The owner/operator of S- through S- , A- through A- shall ensure the toxic emissions emitted do not exceed any toxic trigger specified in Regulation 2, Rule 5. (Basis: Regulation 2-5-110)

C2. The owner/operator of S- through S- and A- , Thermal Oxidizer shall not exceed hours of all operations at all host locations in a consecutive 12-month period. This limit applies to the permitted operation and includes any and all intermittent operation even if different equipment (either source or abatement devices) are commissioned in the operation. (Basis: Regulation 2-5-110)

D. **Fugitive Emissions Requirements**

D1. The owner/operator shall not operate S-13 through S-19 abated by A4 through A-6 unless the total fugitive emissions component count does not exceed the following:

Valves
Pump seals
Connectors
Compressors and others 5

(Basis: Regulation 8-18)

D2. The owner/operator shall ensure the fugitive Total Organic Compounds (TOC) emissions at sources S- through S- , A- through A- shall comply with the leak repair requirement of Regulation 8-18 for any leak exceeding 100 ppmv as methane at any valves or connections within the system, and shall not exceed 500 ppm as methane at any pumps or compressors within the system. (Basis: Cumulative Increase, Regulation 8-18)

E. Monitoring Requirements

E1. In order to demonstrate compliance with Parts D1 and D-2 above, the owner/operator shall measure fugitive emissions using a Portable Hydrocarbon Detector approved by the APCO (Basis: Regulation 8-18-501)

E2. For short term operation lasting less than a month, to determine compliance with the leak standards of Regulation 8, Rule 18, the owner/operator shall initially monitor all fugitive components one time, no longer than 48 hours after startup, and again anytime there are lineup, valve or other fugitive component changes for the operation. For projects lasting longer than a month, owner/operator shall not operate any equipment unless the fugitive components are monitored as the facility LDAR program. (Basis: Regulation 8-18)

E3. In order to demonstrate compliance with Part B3 POC limit above, Parts H6 and H7 below, if the total operation duration at a single project site is longer than 45 days in any 12-month period, owner/operator shall perform an Air District approved source test within 7 days of initial operation of S- through S- , and A at each host location, in accordance with the Air District's Manual of Procedures. The owner/operator shall notify the Manager of the Air District's Source Test Section at least seven (7) days prior to the test, to provide the Air District Staff the option of observing the testing. Within 45 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the Air District's Source Test Section for review and disposition. If the total operation duration at a single project site is less than 45 days in any 12-month period, then the owner operator may elect the Air District approved monitoring method detailed in Part E4 with a monitoring frequency of hourly throughout the operation. (Basis: Regulation 2-1-403)

E4. The owner/operator shall monitor the vapor stream at the outlet of each abatement device (A- through and A-), as specified below, for volatile organic compounds (POC) and for all toxic air contaminants listed in Part B3, in parts per million by volume (ppmv), measured on a dry basis as methane. Once approved by the Air District, the owner/operator shall use one of the following methods for this monitoring:

A. Diffusion sensors.
B. Flame ionization methods calibrated with or correlated to methane or hexane.
C. Photo ionization systems calibrated with or correlated to methane or hexane.
D. Instantaneous sampling with colorimetric detector tubes.
E. Instantaneous sampling with laboratory analyses
F. Continuous monitoring that satisfies the requirements of Regulation 1-522 or 1-523.
G. Other approved monitoring system

When the system is operating with forced air flow or truck vented, the monitoring frequency shall be once each hour for the first 6 hours of operation. If the project lasts over 6 hours, daily measurements shall be taken. If the project duration last more than a week, weekly measurement shall be taken. If the equipment is operated with no forced air flow, the monitoring frequency shall be weekly. The project duration is defined as the period of each operational mode with the same equipment processing the same material. (Basis: Cumulative Increase, Regulation 2-1-403)

E5. The owner/operator shall also perform initial laboratory analyses for any duration period to confirm the monitoring method results of Part E4. If the operation duration is for a week or less, an initial confirmation is required. If the operation duration is longer than a week, but less than a month, the laboratory analysis confirmation shall also be required once every two weeks. If the operation duration is longer than a month, the laboratory analysis confirmation shall also be required monthly. The duration is defined as the period of each operational mode with the same equipment processing the same material. Changes to the operational mode (e.g., storing a different material or cleaning or processing sludge from a different tank) initiates a new operational duration for the purposes of confirming the monitoring with laboratory analyses. (Basis: Regulation 2-5-110)

E6. In order to determine compliance with Part B9, the owner/operator shall install and maintain in accordance with manufacturer's recommendations, a flow meter that continuously measures the vapor flow to A- , and/or A- , and/or A- . (Basis: cumulative increase)

E7. In order to determine compliance with Part H5, the owner/operator shall continuously monitor the operating temperature of A- Thermal Oxidizer. (Basis: Cumulative Increase, Regulation 2-1-403)

E8. The owner/operator of Carbon Canisters A- shall monitor the non-methane hydrocarbon concentration (NMHC) at the following exhaust points at a frequency specified in E3 to verify compliance with Part B3. Monitoring shall be performed with a flame-ionization detector (FID), Photoionization Detector (PID) or other method approved in writing by the Air District:

a. inlet to the second to last carbon vessel in series
b. outlet of the second to last carbon vessel in series
c. outlet of the last carbon vessel in series

When using an FID to monitor A- , readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane and not counted as a NMHC. (Basis: Cumulative Increase)

E9. The owner/operator of Carbon Canisters A- may propose a change in monitoring schedule based on a demonstration that the rate of required carbon replacement does not warrant daily monitoring. (Basis: Recordkeeping)

F. Recordkeeping Requirements

F1. The owner/operator shall maintain in an Air District-approved log all records necessary to determine compliance with these permit conditions. The records shall include, at a minimum, for each permitted source, the following:

a. Air District plant number for each location of the equipment
b. Service or operation of the equipment
c. The address of each location, a facility map, and the duration of each operation
d. The name and phone number of a contact person for each location the equipment is operated
e. Daily throughput of the equipment in units consistent with the limits in Section B
f. Daily fuel usage for the equipment (if applicable)
g. Results of any source tests
h. Daily emission estimates and calculations for the equipment, including toxic emissions
i. All monitoring data, including the equipment and fugitive components

All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the Air District for at least two (five for operation at a major facility or a facility subject to a synthetic minor operating permit) years following the date the data is recorded.
(Basis: Recordkeeping)

F2. The owner/operator of this source shall maintain the following records at each host facility daily (if operate less than a week), weekly (if operate less than a month), monthly of operation of the Thermal Oxidizer A- :

a. The hours and times of operation and which source S- through S- is/are controlling
b. Operating Temperature of A-
c. The type and amount of fuel usage at A-

All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the Air District for at least two (five for major facility or a facility subject to a synthetic minor operating permit) years following the date the data is recorded. (Basis: Recordkeeping)

F3. For each Allowable Temperature Excursion of Part H5 that exceeds 20° F and 15 minutes in duration, the owner/operator shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of two years (five years if operated at a major facility) from the date of entry, and shall be made available to the Air District upon request. Records shall include at least the following information:

Temperature controller set point
Starting date and time, and duration of each Allowable Temperature Excursion
Measured temperature during each Allowable Temperature Excursion
Number of Allowable Temperature Excursions per month, and for the current calendar year.
All strip charts or other temperature records.

All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the Air District for at least two (five for operation at a major facility or a facility subject to a synthetic minor operating permit) years following the date the data is recorded.
(Basis: Recordkeeping)

F4. The owner/operator shall maintain the following records at each host facility daily (if operate more than a week), weekly (if operate more than a month), monthly of operation of the Carbon Adsorption system A- and/or A- :

a. The hours and times of operation and which source A- and/or A- is/are controlling
b. Each monitor reading or analysis result for the day of operation they are taken
c. The number of carbon beds removed from service.

All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the Air District for at least two (five for operation at a major facility) years following the date the data of entry, and be made available to the Air District upon requests.
(Basis: Recordkeeping)

G. Reporting Requirements

G1. The owner/operator shall notify the Air District, in writing, at least 3 days in advance, of the new location in which they intend to operate the portable equipment. The notification shall include:

a. Air District plant number for the portable equipment
b. Brief description of the general nature of the operation and identification of the equipment used
c. The address of the new location and facility map, estimated duration of the operation at this site, and the Air District Plant number for the site
d. The name and phone number of a contact person where the equipment will be operated.

(Basis: Regulation 2-1-220)

G2. In addition to the monitoring/recordkeeping requirements listed, all instances of non-compliance with the permit shall be reported in writing to the Air District's Compliance and Enforcement Division within 10 calendar days of the discovery of the incident. Within 30 calendar days of the discovery of any incident of non-compliance, the facility shall submit a written report including the probable cause of non-compliance and any corrective or preventative actions. (Basis: MOP Volume II, Part 3, §4.7)

G3. Within 30 days after the end of every calendar year, the owner/operator shall provide to the Air District a year-end summary showing the following information:

a) The location(s) and duration(s) at which S- through S- abated by A- , and/or A- , and/or A- was operated including the dates operated
b) If the dates and durations are not the same, the down-time durations and the status and disposition of each source during the down-time
c) Total material throughputs for each source summarized by location and durations, in units consistent with the limits in Section B
d) Total fuel usage, if applicable, for each source or abatement device, summarized by location and operating periods

e) Total emission calculations, summarized by source and location, totalized for the calendar year

This annual report shall be provided to the Air District's Compliance and Enforcement Division within 30 days of the end of the calendar year.
(Basis: Regulation 2-1-403)

G4. If the owner/operator of S- through S- abated by A- , and/or A- , and/or A- operates at any Facility subject to Regulation 12, Rule 15, the annual report required by F1 above shall also be provided to the owner/operator of the Facility and to the Air District's Engineering Division (Basis: Regulation 12, Rule 15 Section).

H. Additional Requirements for Thermal Oxidizer

H1. The owner/operator sources S- through S- shall operate A- to meet 10 ppmv VOC concentration or less; or overall collection and destruction efficiency of 99% of VOC for sludge de-watering operation. (Basis: BACT, Cumulative Increase)

H2. The owner/operator of Thermal Oxidizer A- shall not use natural gas (combined total usage for permitted operation) or propane (combined total usage for permitted operation) that exceed the following limits during any consecutive 12-month periods. (Basis: cumulative increase)

Device	Operation	Fuel	Limit	Units
A-	Sludge Dewatering	Natural Gas		Therms; or
A-	Sludge Dewatering	Propane		Gallons

H3. The owner/operator of Thermal Oxidizer A- shall install a non-resettable totalizing fuel flow meter and recorder to demonstrate compliance with Part H2. (Basis: Regulation 2-1-403)

H4. The owner/operator of Thermal Oxidizer, A- , shall install a temperature measuring device capable of continuously measuring and recording the temperature in A- . The owner/operator shall install, operate and maintain the equipment in accordance with manufacturer's recommendations. The minimum operating temperature of A- shall be at least 1400 degree F. This minimum temperature may be adjusted by the Air District prior to or after issuing Permit to Operate if source test data demonstrate that an alternate temperature is necessary for or capable of maintaining compliance with Part H1. (Basis: Regulation 2-1-403)

H5. The minimum temperature requirement of Part H4 shall not apply during an "Allowable Temperature Excursion" below the minimum temperature, provided that the controller set temperature is at or above the minimum temperature requirement. An Allowable Temperature Excursion is one of the following:

a. A temperature excursion not exceeding 20° F.
b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour.
c. A temperature excursion for a period or periods which when combined are more than 15 minutes in any hour, provided that all three of the following criteria are met.
   i. the excursion does not exceed 50 degrees F;
   ii. the duration of the excursion does not exceed 24 hours; and
   iii. the total number of such excursions does not exceed 12 per calendar year (or any consecutive 12-month period)

Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12 excursion limit. (Basis: Regulation 2-1-403)

H6. The owner/operator shall not operate sources S- through S- if Nitrogen oxides (NOx) emissions from the Thermal Oxidizer, A- , exceed 50 ppmvd at 15% O2 (0.2 lb/MMBtu) fired on only on natural gas or LPG. (Basis: RACT, Cumulative Increase, Source Test Method 13A)

H7. The owner/operator shall not operate sources S- through S- if Carbon monoxide (CO) emissions from the Thermal Oxidizer, A- , exceed 350 ppmvd at 15% O2 (0.80 lb/MMBtu). (Basis: RACT, Cumulative Increase, Source Test Method 6)

H8. The owner/operator shall maintain and properly operate Thermal Oxidizer A- so that good combustion practice can be achieved as recommended by the manufacturer. (Basis: BACT)

H9. The owner/operator shall operate Thermal Oxidizer A- only when the flow rate is higher than 500 scfm or when the vapor with 10% LEL or higher VOC concentration. (Basis: BACT)

I. Additional Requirements for Carbon Absorption Systems

For Systems with two carbon vessels (2 canisters in series, lb carbon minimum in each canister)
I1. The owner/operator of Carbon Canisters A- shall replace the carbon in the first vessel in series with new or downstream carbon when the non-methane hydrocarbon (NMHC) concentration exceeds 10 ppmv at the outlet of the first vessel (measured on a dry basis as methane). (Basis: Cumulative Increase, BACT, Regulation 2-5-110)

For systems with more than two carbon vessels (2 or more canisters in series, lb carbon minimum in each canister)
I2. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the outlet of the second to the last carbon vessel, of the higher of the following:

a. 10 % of the inlet stream concentration to the Carbon vessel.
b. 10 ppmv or greater (measured on a dry basis as methane).

The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at the last carbon vessel outlet of 10 ppmv or greater (measured on a dry basis as methane).
(Basis: Cumulative Increase, BACT, Regulation 2-5-110)

Permit Conditions for Landfill Gas Flares:

1. All landfill gas collected by the gas collection system for S- shall be abated at all times by the on-site enclosed flares, A- or A- , or shall be vented to for gas processing and control. A sufficient amount of landfill gas shall be collected at all times to prevent violation of the applicable landfill surface leak limits. Under no circumstances shall raw landfill gas be vented to the atmosphere. This limitation does not apply to unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair performed in compliance with Regulation 8, Rule 34 Sections 113, 116, 117, or 118 or to inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303. (Basis: Regulations 8-34-301, 8-34-303, 40 CFR 60.752(b)(2)(ii-iii), 60.753(d-f), and 60.755(e))

2. The combustion zone temperature of the A- Flare shall be maintained at a minimum temperature of (1400) degrees F, averaged over any 3-hour period. The combustion zone temperature of the A- Flare shall be maintained at a minimum temperature of 1400 degrees F, averaged over any 3-hour period. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise these minimum temperature requirements in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415 and the following criteria. The minimum combustion zone temperature for the flare shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1400 degrees F. (Basis: Regulations 2-5-301 and 8-34-301, RACT, and 40 CFR 60.758(c)(1)(i))

3. NOx emissions from the A- Flare(s) shall not exceed (0.06) lb NOx/MMBTU. (Basis: RACT)

4. CO emissions from the A- Flare(s) shall not exceed (0.2) lb CO/MMBTU. (Basis: RACT)

5. In order to demonstrate compliance with Parts 3 and 4 above, Regulations 8-34-301.3 and 8-34-412, 40 CFR 60.8, and 40 CFR 60.752(b)(2)(iii)(B), the owner/operator shall conduct a source test at each flare once every year. The source tests shall be conducted no sooner than 9 months and no later than 12 months after the previous source test. The first source test for A- shall be conducted no later than 60 days from the startup of A- . The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. Each annual source test shall determine the following:
   a. landfill gas flow rate to the flare (dry basis);
   b. concentrations (dry basis) of carbon dioxide (CO_2), nitrogen (N_2), oxygen (O_2), methane (CH_4), and total non-methane organic compounds (NMOC) in the landfill gas;
   c. stack gas flow rate from the flare (dry basis);
   d. concentrations (dry basis) of NO_x, CO, NMOC, and O_2 in the flare stack gas;
   e. NMOC destruction efficiency achieved by the flare;
   f. NO_x and CO emission rates from the flare in units of pounds per MM BTU,
   g. average combustion zone temperature in the flare during the test period.
   h. PM grain loadings (grains/dscf) in the flare stack gas should be tested every 5 years for A- .

   (Basis: Regulation 8-34-301.3, RACT, 40 CFR 60.752(b)(2)(iii), Regulation 6-1-504)

6. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

7. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

8. The heat input to the flares shall not exceed the following limits: (a) million BTU per day and million BTU per year for A- and (b) million BTU per day and million BTU per year for A- . In order to demonstrate compliance with this part, the owner/operator shall calculate and record on a monthly basis the maximum daily and total monthly heat input to each flare based on the landfill gas flow rate recorded, the average methane concentration in the landfill gas based on the most recent source test, and a high heating value for methane of 1013 BTU/scf. The records shall be retained for two years (five years if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit) and shall be made available to the Air District staff upon request. (Basis: Offsets, Cumulative Increase, and Regulation 2-1-301)

Permit Conditions for Material Recovery Operations:

1. Throughput Limits: The owner/operator shall not exceed any of the following feedstock (not including biofilter media) throughput limits in wet tons in any calendar day and/or any consecutive 12-month period:

Source No.	Description	Daily Throughput (TPD)	Rolling 12-month Throughput (TPY)
S-			
S-			
S-			

(Basis: Cumulative Increase)

2. Allowable Materials: The owner/operator shall only store the following materials for each source:

Source No.	Materials allowed for storage
S-	
S-	
S-	

The facility shall submit an application for Air District approval prior to accepting any new material for storage. (Basis: Cumulative Increase)

3. Processing Time Limit: The owner/operator of S- shall process the material within the following time frames from when the material is placed into the stockpile. The owner/operator shall be subject to the record keeping requirements in Part 17. (Basis: Cumulative Increase)

Source No.	Description	Processing Time Limit
S-	Green waste Stockpiles	2 days
S-	Ground Material Stockpiles	3 days
S-	Organic Soil Amendment Stockpiles	3 days
S-	Food waste Stockpiles	1 days

4. Emission Limits: The owner/operator shall ensure that:

a. Precursor organic compounds emissions for S- shall not exceed any of the following limits:
   i. pounds per wet ton of material processed,
   ii. pounds per hour, and/or
   iii. tons per consecutive 12-month period.

b. The emissions of the following toxic air contaminants for S- shall not exceed any of the following limits:

TAC	Hourly Emissions (lb/hr)	Consecutive 12-month Total (lb/yr)
Acetaldehyde		
Ammonia		
IPA		
Methanol		
Naphthalene		
Propylene		

c. Any toxic air contaminants not listed in Part 4b detected during a source test shall not equal or exceed the respective trigger levels contained in Regulation 2-5.

d. If the owner/operator of S- exceeds any of the limits in Part 4b and/or 4c, the exceedances shall not be considered a violation if the owner/operator can demonstrate compliance with the requirements of Regulation 2-5.
e. If the emissions limits per Parts 4b and 4c comply with the requirements of Regulation 2-5, the owner/operator may submit a written request to the Air District to revise the TAC emission limits in Part 4b within 60 days of receipt of approved results from the source tests conducted provided that the provisions within 4d are satisfied.

(Basis: Cumulative Increase and Regulation 2-5)

5. The owner/operator of source S- shall ensure all conveyors, screens, and processing equipment are completely covered. (Basis: Cumulative Increase)

6. The owner/operator shall ensure dry, dusty material from the material handling operations such as loading, unloading, stockpiling, conveying, sorting, screening, and other separation processes be abated by A- water spray as necessary to comply with Part 8. (Basis: Regulations 6-1-301 and 6-1-305)

7. The owner/operator of S- shall operate and maintain in good condition water trucks and/or sweeping trucks with built-in water spray inside and ouside of all buildings, indoor tipping floor and tipping floor truck entrance driveways, turnaround yard, and roadways to remove debris and organic residues at least 2 times per day (especially when trucks exit the facility). (Basis: Cumulative Increase)

8. The owner/operator of S- shall ensure visible dust emissions from any operation occurring outside the building housing these sources (S-) shall not exceed a Ringelmann 0.5 or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-301. To ensure compliance with this Part, the owner/operator shall visually observe all MRF-related material handling operations around the MRF building daily by following applicable procedures in Regulation 6-1-601 and shall immediately initiate corrective actions, if any visible dust emissions are detected that persist for longer than 3 minutes in an hour. (Basis: Regulations 1-301, 6-1-601, 6-1-301, 6-1-305, and cumulative increase)

9. The owner/operator of S- shall employ best management practices for good housekeeping and maintenance at the standards identified in the Organic emissions and Odor Management Plan (OMP) to reduce the quantity of organic and odorous materials. Good housekeeping shall include maintaining all outside work areas and outdoor pavement associated with this facility, by removing material including, but not limited to, debris or sludge at the end of each working day. Leachate shall be collected, handled, and disposed of in accordance with best management practices. The Air District may administratively revise these permit conditions to incorporate any requirement contained within the approved OMP that the Air Districts deems necessary for compliance. (Basis: Regulation 1-301)

10. The owner/operator of S- shall install high speed rollup doors at all bays and doorways. The owner/operator shall maintain all high speed rollup doors in good working order. All rollup doors shall be closed at all times except when material is being transferred in and out. (Basis: Cumulative Increase, Regulation 1-301)

11. The owner/operator of S- shall maintain all paved and unpaved roadways associated with this facility in a clean or wetted condition, by using water spray to suppress dust. Vehicle speed inside the facility shall not exceed 15 MPH. When on-site, all vehicles hauling material shall be enclosed/tarped and the material shall remain covered at all times while in the vehicle. All refuse trucks shall be maintained in condition to prevent leakage of solid or liquid material. Trucks shall be cleared of any debris to minimize nuisance emissions at the end of each working day. The owner/operator shall ensure that the number of trucks that travel on-site shall not exceed trucks per day. (Basis: Regulation 1-301 and Regulation 6-1-305)

12. The owner/operator of S- shall process all material (other than food waste and any other material that has the potential to cause putrescible organic emissions and odors) received at S- within 24 hours of receipt. Material shall not be stockpiled outside of the MRF building. The owner/operator shall perform

daily organic emissions and odor monitoring of the stockpiled material at S- as applicable and maintain records of the corrective measures undertaken if adverse organic emissions and odors are found. Any material that is deemed to be odorous by an Air District inspector shall be removed immediately or no later than 4 hours upon discovery. Records of the time of discovery, time of removal, quantity and method of disposal shall be maintained. (Basis: Cumulative Increase, and Regulation 1-301)

13. Within 90 days of issuance of the Authority to Construct permit, the owner/operator of S- shall develop and maintain an Air District approved organic emissions and odor management plan (OMP) detailing all processes and procedures, equipment, management practices, abatement and control measures that are employed or are scheduled to be implemented to minimize fugitive emissions of POC and odors. The owner/operator shall correct any identified deficiencies and resubmit the proposed OMP within 45 days of Air District comments. The owner/operator shall revise and continue to re-submit the OMP for APCO review until it is approved. The owner/operator shall update the OMP as needed to address any confirmed odor complaints and shall submit an updated OMP to the APCO within 45 days of notification by the APCO. The updated OMP shall be made available for Air District inspection upon request. The updated OMP shall be certified and signed by a Responsible Manager and shall include, but not be limited to:

a. Table of contents
b. Company Description
c. Company organizational chart and schedule of management operators
d. Description of facility operations
e. Management practices to reduce organic emissions and odors. A description and evaluation of odor prevention measures.
f. Description of abatement and control equipment
g. Technical data that includes a process flow diagram and facility layout/floor plan that provides a complete description of facility operations, including locations of all processing equipment (exempt and permitted equipment) and associated monitoring and control equipment.
h. Description of all employee training to minimize organic emissions and odors and frequency of any ongoing training.
i. A description of the equipment, processes and procedures installed or implemented within the last 5 years to reduce emissions, including the year of installation for each device.
j. A description and schedule of future plans to implement additional organic emissions and odor reduction measures.
k. Information pertinent to the process operating parameters requested by the APCO as necessary to enable determination of compliance with applicable provisions of this permit. The Air District may administratively amend these permit conditions in order to incorporate any requirement contained within the approved BMP that are deemed necessary for compliance by the Air District.
l. Correction actions taken to prevent future repetition.

Failure to implement and maintain equipment, processes, procedures or organic emissions and odor prevention measures in accordance with the APCO approved OMP is a violation of this permit. (Basis: Regulation 1-301)

14. The owner/operator of S- shall update the OMP and submit an updated plan to the APCO within 12 months following the approval of the initial plan and annually thereafter. The owner or operator shall review the OMP and update the plan to incorporate any new prevention measures to further reduce organic emissions and odors. The updates shall be approved and signed by a Responsible Manager. The APCO shall approve the updated OMP if it is determined that the OMP meets the requirements of this permit, and shall provide written notification to the owner or operator. The facility is responsible to provide an updated OMP that meets the requirements of Part 13. The Air District may administratively revise these permit conditions to incorporate any requirement contained within the approved BMP that are deemed necessary for compliance by the Air District. (Basis: Regulation 1-301, 2-1-403)

15. If the owner/operator of S- receives more than 2 Notices of Violation (NOVs) for "public nuisance" from the Air District in any consecutive 12-month period and the MRF is confirmed to be the source of the organic emissions and nuisance odors, the owner/operator shall propose additional control measures to the Air District in an updated OMP within 60 days of the second NOV, including

implementation timelines for the additional control measures. Organic emissions and odor control measures may include one or more of the measures suggested in the OMP or other measures agreed upon by the owner/operator and the Air District. If notified by the Air District, the owner/operator shall submit a permit application to the Air District to modify the Permit to Operate and/or this permit condition within 30 days of Air District notification. (Basis: Regulations 1-301 and 2-1-403)

16. The owner/operator shall maintain the following records:
a. Document the active exit locations monitored each workday;
b. Document each occasion when the trackout exceeds cumulative 25 linear feet and all trackout control and cleanup actions initiated as a result of monitoring Part a of this condition; and
c. Maintain the records required by Part b and Part c of this condition for two years, in electronic, paper hard copy or logbook format, and make them available to the APCO upon request.
(Basis: Regulation 6-6-501)

17. The owner/operator of S- shall maintain the following records:
a. On a daily basis: Documentation of the amount of material received at and removed from each source and processing times for putrescible materials and operating hours as needed to demonstrate compliance with the throughput, processing time, and emissions limits listed in Parts 1-4.
b. On a monthly basis: Summarize process throughput rates for each month and for each consecutive rolling twelve-month period to demonstrate compliance with the throughput, processing time, and emissions limits listed in Parts 1-4.
c. Maintain records of vehicle trip data (in vehicle miles traveled per day, VMT/day) for vehicles used for green waste, food waste, transfer, processing, and pickup; paved and unpaved road distances; vehicle fleet weights; and associated emissions calculations.
d. Maintain daily records of the number of trucks that travel on-site.

The owner/operator shall maintain all records in an Air District-approved log. The owner/operator shall retain the records for at least five years from the date of entry and make them available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase)

Permit Conditions for Composting Operations:

1. Throughput Limits: The owner/operator shall not exceed any of the following feedstock (not including biofilter media) throughput limits in wet tons in any calendar day and/or any consecutive 12-month period:

Source No.	Description	Daily Throughput (TPD)	Rolling 12-month Throughput (TPY)
S-			
S-			
S-			

[Basis: Cumulative Increase]

2. Allowable Feedstocks: The owner/operator shall only store the following materials for each source:

Source No.	Materials allowed for storage
S-	
S-	
S-	

The facility shall submit an application for Air District approval prior to accepting any new material for storage or composting.

[Basis: Cumulative Increase]

3. Processing Time Limit: The owner/operator of S- , S- , and S- shall process and transfer the material to S- and S- within hours from when the material is received at the facility. The owner/operator shall be subject to the record keeping requirements in Parts 18b and 18d.

[Basis: Cumulative Increase]

4. Emission Limits: The owner/operator shall ensure that:
   a. Precursor organic compounds (POC) emissions from S- shall not exceed either
      i. pounds per hour, and/or
      ii. tons per consecutive 12-month period.
   b. Precursor organic compounds emissions from S-11 shall not exceed either
      i. pounds per hour, and/or
      ii. tons per consecutive 12-month period.
   c. Precursor organic compounds emissions for S- shall not exceed any of the following limits:
      i. pounds per wet ton of material composted,
      ii. pounds per hour, and/or
      iii. tons per consecutive 12-month period.
   d. The emissions of the following toxic air contaminants for S- shall not exceed any of the following limits:

TAC	Hourly Emissions	Consecutive 12-month Total

	(lb/hr)	(lb/yr)
Acetaldehyde		
Ammonia		
IPA		
Methanol		
Naphthalene		
Propylene		

e. Any toxic air contaminants not listed in Part 4d detected during a source test shall not equal or exceed the respective trigger levels contained in Regulation 2-5.

f. If the owner/operator of S- exceeds any of the limits in Part 4d and/or 4e, the exceedances shall not be considered a violation if the owner/operator can demonstrate compliance with the requirements of Regulation 2-5.

g. If the emissions limits per Parts 4d and 4e comply with the requirements of Regulation 2-5, the owner/operator may submit a written request to the Air District to revise the TAC emission limits in Part 4d within 60 days of receipt of approved results from the first two initial source tests conducted provided that the provisions within 4f are satisfied.

[Basis: Cumulative Increase and Regulation 2-5]

5. Active Pile Construction and Operation: For the S- active phase, the owner/operator shall ensure the construction and operation meets the following specifications:

   a. A minimum of at least 6-inches of either wood chips or wood screened overs will be placed over the top of the perforated pipe.

   b. The length of each active pile shall not exceed feet in distance along the aeration pipe from the blower.

   c. The maximum height of the active piles shall not exceed feet.

   d. The owner/operator of S- shall cover the finished sections of the active pile during the construction of each active pile with a biofilter. The surface of each active pile shall be covered by a cured compost biofilter with a minimum thickness of 6 inches. Any partially constructed active piles shall be covered with a biofilter by the end of each business day.

   e. Feedstock for each active phase pile shall maintain a moisture content of at least 50% and not to exceed 65%. The moisture content shall be tested weekly at a minimum of 10 locations equally spaced for each pile using the oven/dry method or using the squeeze test method, as described below:

Squeeze Test Observation	**% Moisture Content Description**
Water flows freely out of hand	65% or more
A few drops of water are visible between fingers	60-65%
No water visible between the fingers, but when the hand is opened a sheen of moisture is clearly visible	55-60%
No sheen is visible, and a ball of material remains in the hand. If the ball is tapped gently, the ball stays intact	50-55%
A ball of material forms but breaks apart during tapping	45-50%

After squeezing, the material does not remain in a ball when opening the hand	40-45%
No ball forms and a dry talcum-like feeling remains on the hand after discarding the material	Below 40%

f. The maximum temperature of the active phase pile shall not exceed 170 degrees Fahrenheit.

g. The oxygen content of the active phase pile shall be a minimum of 10%. The owner/operator shall monitor each active phase pile weekly at a minimum of 10 locations equally spaced for each pile. If a field instrument is used to determine the oxygen content, the owner/operator shall maintain records that demonstrates the field instrument is properly maintained and properly calibrated daily per manufacturer's specifications prior to use.

h. To ensure that S- meets the emissions limits in Part 4 of this Permit Condition, the owner/operator shall properly install, properly operate, and properly maintain an aeration system in such a manner to meet following minimum requirements:

  i. Operate one blower, with a minimum rated capacity of 1,000 cfm for each zone with 3 cells in each zone at all times.

  ii. Ensure that the blowers are operating and there is air flow out of all orifices in the aeration piping prior to placing waste feedstock on the aeration pipe.

i. To ensure that S- meets the emissions limits in Part 4 of this Permit Condition, the owner/operator shall install, operate, and maintain a cured compost biofilter in such a manner to meet following minimum requirements:

  i. The owner/operator shall provide an irrigation spray system with sufficient capacity and coverage to maintain moisture content required per 5e of the cured compost and cover the entire surface of each activated pile or zone.

  ii. Moisture content of the biofilter media measured at 2 inches below the biofilter cover's top surface, and lower, shall be maintained at a minimum of 50% at all locations across each covered positively aerated static pile throughout the duration of the active phase.

  iii. The owner/operator of A- biofilter shall measure and ensure the pH of A- is between 5.5 and 8.5 prior to placement on the active composting pile.

[Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

6. Active Pile Temperature Monitoring: The owner/operator of S- shall equip the S- active piles with a temperature monitoring system with an alarm that shall be set to trigger when the temperature at any probe exceeds 170 degrees Fahrenheit. If the temperature exceeds 170 degrees Fahrenheit at any location, the owner/operator of S- shall immediately initiate corrective action, such as watering the pile, breaking the pile and spreading or turning the material, or other appropriate corrective actions to reduce the temperature. The owner/operator of S- shall maintain in an Air District-approved log records of any corrective actions taken, time the corrective actions were initiated, and the duration for which temperature exceeded 170 degrees Fahrenheit. If an active compost pile continues to exhibit temperature above 170 degrees Fahrenheit and does not exhibit a decreasing trend in temperature within 72 hours after the corrective actions are taken to reduce the temperature, then the owner/operator of S- shall reduce the height of that active pile to not exceed 6 feet.

   [Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

7. Shutdown of the Aeration System: The owner/operator of S- may shut down the compost pile aeration system only under the following circumstances:

a. For unplanned shutdown of primary blower(s) or other parts of aeration system, the owner/operator of S- shall maintain a backup blower and/or sufficient spare parts on the site at all times to replace or repair the primary blower(s) or other malfunctioning part(s) of the aeration system. The owner/operator of S- shall restore forced aeration within 24 hours from the time the primary blower(s) or other part(s) of the aeration system is(are) inoperative. The owner/operator shall notify the Air District's Compliance and Enforcement Division of any unplanned aeration system shutdown within 2 hours from the beginning of the shutdown or by 8am the next business day if the shutdown occurs outsides of normal business hours. The owner/operator shall record forced aeration system downtime or the duration for which forced aeration was not provided to any piles or zones, the cause of shutdown, and the corrective actions taken to restore forced aeration.

b. For planned shutdown of primary blower(s) or other parts of aeration system for S- , the owner/operator shall not place nor have in place any waste feedstock for active composting in the zones served by the shutdown aeration system or shall provide forced aeration by using a backup aeration system. The owner/operator shall record aeration system downtime and purpose of the planned shutdown.

c. The owner/operator of S- may discontinue forced aeration prior to the completion of active phase only for the purpose of preventing or abating fires, odors, or other improper composting or biofilter cover conditions. The owner/operator of S- shall restore forced aeration immediately, but not exceeding 24 hours from the time it is discontinued, after taking corrective actions to prevent or abate fires, odors, or other improper composting or biofilter cover conditions. To demonstrate compliance with this requirement, the owner/operator of S- shall record the date and time of discontinuation of forced aeration in an Air District- approved log and shall identify the reason for any premature discontinuation of forced aeration and when it returns to normal operation.

d. The owner/operator shall increase the surface irrigation frequency, as applicable, to mitigate excess emissions whenever the aeration system is shutdown for a period not to exceed 24 hours.

[Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, and 2-5; Cumulative Increase]

8. Completion of Active Phase Composting: Prior to moving the composting material from the active phase to the curing phase, the owner/operator of S- shall ensure at least two (2) of the following parameters are met:

   a. The active pile shall be maintained in the active phase for a minimum of 22 consecutive days from when the construction of the active pile is completed; or

   b. The organic material respiration rate is no more than 20 milligrams of oxygen consumed per gram of volatile solids per day as measured by direct respirometry using the TMECC Method 05-08-A – Specific Oxygen Uptake Rate (April 7, 2002); or

   c. The organic material emits no more than seven (7) mg carbon dioxide per gram of organic material (CO2-C) per day, as measured using the TMECC Method 05-08-B – Carbon Dioxide Evolution Rate (April 7, 2002); or

   d. The organic material has a Solvita® Maturity Index of five (5) or greater as measured using the TMECC Method 05-08-E – Solvita® Maturity Test (April 7, 2002); or

   e. The temperature of the active phase pile is below 122 degrees Fahrenheit for a minimum of 3 consecutive days.

   [Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

9. Curing Piles Construction and Operation: The owner/operator of S- shall ensure that the curing piles meet the following requirements:

a. The width of each curing pile shall not exceed feet at the base.

b. The height of each curing pile shall not exceed feet at any location in the curing pile. S- shall be considered to be in violation of this permit condition if the height of any curing pile exceeds feet at any location in any curing pile.

c. The owner/operator of S- shall provide access to the Air District staff to the top of the curing piles, upon request.

d. The owner/operator shall provide an irrigation/water spray system that must be capable of covering the exposed surface of each curing pile.

e. The owner/operator of S- shall maintain a minimum moisture content of at least 50% at a depth of 2 inches to 6 inches at all locations in each curing pile throughout the duration of the curing phase.

f. The owner/operator of S- shall measure and record in an Air District-approved log the moisture content at a minimum of 10 locations at a depth of at least 2 inches and not to exceed 6 inches from the top surface of each curing pile on a weekly basis in the months of July through October and on a monthly basis in other months. The owner/operator of S- shall measure the moisture content by the squeeze method or other Air District-approved method.

[Basis: Regulations 1-301, 2-1-403, 2-2-301, and 2-5; Cumulative Increase]

10. Curing Piles Temperature Monitoring: The owner/operator of S- curing piles shall manually measure the temperature at each pile at a minimum depth of 48 inches from the top surface of each curing pile, at a minimum of every 25 feet length of each curing pile after weeks 1, 2, and 5 of retention period. In addition, the owner/operator of S- shall inspect the entire length of each curing pile prior to 10 AM once per week for hot spots or water vapor and measure the temperature at the hot spots. If weekly manual monitoring indicates hot spots with temperatures above 122 degrees Fahrenheit, the owner/operator of the curing pile shall increase the manual temperature monitoring at hot spots to at least once every 24 hours or until the temperature drops below 122 degrees Fahrenheit for at least a 24-hour period. If the temperature at the hot spot remains above 122 degrees Fahrenheit for a 72 hour period or exceeds 170 degrees Fahrenheit at any location, the owner/operator of the curing pile shall immediately initiate corrective action(s), such as watering the pile, breaking the pile and spreading or turning the material, or other appropriate corrective actions to reduce the temperature. After taking the corrective action, the owner/operator of S- shall continue to monitor the temperature of the hot spots at least once every 24 hours until the temperature reduces below 122 degrees Fahrenheit for a 72 hour period. If the temperature at the curing pile continues to have hot spot locations with temperatures above 122 degrees Fahrenheit for a 72 hour period or exhibit temperatures above 170 degrees Fahrenheit at any location 24 hours after the corrective actions are taken to reduce the temperature, then the owner/operator of S- shall either permanently reduce the dimensions of the curing pile to a maximum of 6 feet in height and 15 feet wide at the base or place the material back in to the S- active composting pile with a A-10 biofilter cover. Following the implementations of the corrective actions to reduce the temperature below 122 degrees Fahrenheit or the temperature remains below 122 degrees Fahrenheit for at least a 24 hour period, the owner/operator of S- curing piles shall resume weekly manual monitoring and hot spot monitoring for the curing pile. The owner/operator of S- shall maintain records in an Air District-approved log of any corrective actions taken, the time taken, the temperature readings resulting in any corrective actions, the temperature readings following the corrective actions to demonstrate compliance with this part.

If after the first quarter the data indicates that monitoring frequency warrants adjustments, the owner/operator may request an alternate monitoring frequency. Conversely, if the data shows more frequent monitoring is warranted, the Air District may administratively increase the monitoring frequency.

[Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

11. Curing Pile Storage Requirements. The owner/operator of S- curing piles shall store the material for a period up to 60 days. If the curing pile requires additional retention time that exceeds 60 days, the owner/operator shall measure the curing pile using the TMECC Method 05-08-E – Solvita® Maturity Test (April 7, 2002). If the curing pile has a Solvita® Maturity Index less than seven (7), the owner/operator may store the material for an additional 30 days. The cumulative retention time for each curing piling shall not exceed 90 days. If the curing pile does not satisfy the requirements for the Solvita® Maturity Test as specified in this part, the owner/operator of the S- curing pile shall remove the material from the site within 72 hours of the test results.

    [Basis: Regulations 2-1-320, 2-1-403, and 6-1; Cumulative Increase]

12. General Operating Requirements: The owner/operator shall install, operate, and maintain the active composting and curing phases of S- in accordance with the following minimum requirements:

    a. Prior to creating or initiating any new active composting pile, the owner/operator of S- shall inspect the air orifices in the forced aeration pad for clogging and take necessary corrective actions to unclog the orifices. The owner/operator of S- shall not place waste feedstock in any active zone, where the forced aeration system or its parts are not functioning properly.

    b. The owner/operator shall visually inspect the water sprayers, water pumps, air ducts/spargers, dampers, blowers and other process control and monitoring devices monthly and take necessary corrective actions within 24-hours of detection of any problems with the above equipment in order to ensure that the equipment is operating properly in accordance with the system design and manufacturer specifications. The owner/operator of S- shall maintain records of the date and time of inspection, results of inspection, the date and time of any corrective action and record any corrective action(s) taken.

    c. The owner/operator of S- shall ensure that sufficient spacing or gap is provided between an active pile that is being broken down or harvested and adjacent active piles in each extended bed, so that the material in adjacent active piles is not prematurely removed prior to stabilization of the material and completion of the active phase.

    d. If the feedstock has not reached and maintained temperatures above 122 degrees Fahrenheit to demonstrate active composting has occurred, and if the owner/operator of S- has determined the feedstock will not achieve this temperature, the owner/operator of S- may remove the entire material from S- . The owner/operator of S- shall maintain records of the quantity removed, date removed, and final disposition of the material.

    [Basis: Regulations 1-301, 2-1-403, 2-2- 301, 2-2- 302, 2-5, and 6-1; Cumulative Increase]

13. Visible Emissions: The owner/operator of S- , S- , and S- shall abate particulate emissions from all material handling and composting operations, such as turning composting piles and transferring feedstock, biofilter material, and compost product at sources S- , S- , and S- using A- water spray. Prior to placing the material in S- , the owner/operator shall wet the waste material feedstock, as necessary, to prevent visible emissions and moisture condition the feedstock. The owner/operator shall ensure that visible dust emissions from S- , S- , and S- do not exceed 10% opacity and/or do not exceed a Ringelmann 0.5 for longer than three (3) minutes in an hour or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-301.

    [Basis: Regulations 1-301, 2-1-403, 2-2-301, and 6-1; Cumulative Increase]

14. POC Emissions Monitoring: To demonstrate compliance with Regulation 8, Rule 2, Section 301, the owner/operator of S- shall ensure that the average surface concentration above any active phase pile and any curing phase pile does not exceed 300 ppmv of total carbon, on a dry basis and 15 pounds per day. The owner/operator shall measure the total carbon concentration at the interface

(not to exceed 0.5 inch) from the surface of each pile on a quarterly basis at a minimum 10 equally-spaced locations along at the top surface of each compost pile and 15 equally-spaced locations along at the top surface of each curing pile and record the measured concentrations in an Air District-approved log.

[Basis: Regulation 8, Rule 2]

15. Source Testing: To demonstrate compliance with Part 4, the owner/operator shall perform two initial source tests within 365 days from the issuance date of Application # for S- , S- , and S- . At least one of the source tests shall be conducted during the harvest season and shall include emissions from grape pomace and winery sludge. The two source tests shall be conducted at least 4 months apart. In the source test, the owner/operator of S- , S- , and S- shall test for total carbon as defined in Regulation 8-2, POC, non-precursor organic compounds (NPOC), ammonia, acetaldehyde, isopropyl alcohol, methanol, naphthalene, propylene, and all other compounds listed in EPA Method TO-15. During each source test, the owner/operator shall also measure and record operating parameters, including but not limited to, pile temperature, oxygen content, moisture content of feedstock and biofilter, and carbon to nitrogen ratio, the biofilter thickness bulk density, and pH of initial feedstock mix. The owner/operator shall calculate POC, NPOC, and TAC emission factors (in pounds per ton) based on the results of Air District-approved source tests and Air District-approved methodology. The owner/operator shall use these emission factors (in pounds per ton) to calculate the maximum hourly, daily, and annual emissions based on the maximum hourly, daily, and annual throughputs (in tons per hour, day, and year) for each source to demonstrate compliance with the emissions limits in Part 4. In the event the operating parameters applied during the two initial source tests are necessary to demonstrate compliance with Part 4, the Air District may administratively revise the parameters required in Parts 5 and 9.

    [Basis: Regulations 2-1-403, 2-2-301, and 2-5; Cumulative Increase]

16. Source Test Protocol: For the source test required in Part 15 of this Permit Condition, the owner/operator of S- , S- , and S- shall submit a source test protocol to the Air District's Engineering Division and to the Source Test Section, at least 45 days prior to conducting the source test. The protocol shall describe how, where, and when the testing will be conducted and shall identify all the sampling and analysis methods that will be used for the source tests. The owner/operator of S- , S- , and S- shall provide the Air District with the source test protocol and all analysis and reporting procedures prior to initiating any test. The owner/operator of S- , S- , and S- shall notify the Air District's Source Test Section and the assigned permit engineer in the Engineering Division at least 30 days prior to the test. Within 60 days of test completion, a report of the test results shall be submitted to the Air District's Source Test Section for review and disposition.

    [Basis: Regulations 2-1-403, 2-2-301, 2-5, and 8-2-301; Cumulative Increase]

17. General Monitoring Requirement: The owner/ operator of S- , S- , and S- shall conduct all monitoring and testing required by this Permit Condition, at the required frequencies using only Air District-approved methods and properly calibrated instruments. The owner/ operator of S- , S- , and S- shall calibrate all devices or instruments used for monitoring annually or at manufacturer-recommended frequency, whichever is more frequent.

    [Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2- 302, 2-5, and 6-1; Cumulative Increase]

18. Monitoring and Recordkeeping: To demonstrate compliance with this Permit Condition, the owner/operator of S- shall maintain dated records in an Air District-approved log of the following on a daily basis or at the monitoring frequency specified in other parts of this permit condition for the specific parameter:

    a. The owner/operator of S- and S- shall track and record the weight of each and type of material feedstock delivered as permitted in Part 2 to S- and S- for composting on a tons per day basis.

b. Date and time for material received for S- and S- .

c. Date and time blowers and orifices in the aeration piping are verified to be operating properly prior to placing the feedstock.

d. Date and time the piles are created.

e. Date, time and pH measurement of the biofilter for each active pile.

f. Measure the moisture content and pH of the biofilter cover at a minimum of 10 locations on each active pile prior to placement. The owner/operator of S- shall measure the moisture content by squeeze method or other Air District-approved method on a weekly basis. Record locations and the moisture content of biofilter material at those locations in each active pile. Record each instance of deviation of operating parameters, corrective actions taken, time corrective action was taken, and the duration for which the operation deviated from any part listed above.

g. The owner/operator of S- shall monitor and record the air flow provided to each active pile on a quarterly basis. Parameters to be monitored shall include visual and auditory inspection of all ducts to ensure that flex duct connections are made and no leaks have developed.

h. Locations and readings of temperature and oxygen measurements at those locations in each active pile, the date and time of any corrective actions in active pile, the corrective action taken, and the duration for which temperature exceeded 170 degrees Fahrenheit.

i. Date, time, and results of inspection of aeration system and irrigation system, and any corrective actions taken.

j. The owner/operator of S- shall monitor and record forced aeration system downtime or the duration for which forced aeration was not provided to any piles or zones, the cause of shutdown, and the corrective actions taken to restore forced aeration and the time corresponding to restored forced aeration.

k. Forced aeration discontinuation, record the date and time for any premature discontinuation of forced aeration and reason for any premature discontinuation of forced aeration for each active compost pile.

l. Results of tests and/or monitored parameters indicating active compost material's stability at the time of harvesting.

m. Quantity, age, active compost stability, and final disposition of the material prematurely removed/harvested from active phase.

n. Quantity and final disposition of the feedstock that has not undergone active composting.

o. Pile initiation/creation date and harvest date for each active pile and each curing pile.

p. Curing pile identification, measurement locations, and the moisture at those locations in curing piles.

q. Initial moisture content and pH of material placed in the curing pile.

r. Locations and readings of manual temperature measurements at those locations in each curing pile. Any corrective actions to demonstrate compliance with Part 10 in curing pile, the occurrence when the temperature exceeded 170 degrees Fahrenheit or the duration when the temperature exceeded 122 degrees Fahrenheit, and the temperature readings following the corrective action and the dates of these readings.

s. Surface concentration of total carbon to demonstrate compliance with Regulation 8-2-301.

t. Source test reports and emission calculations.

u. Records of maintenance and/or calibration logs for each field instrument including, but not limited to, oxygen content, pH, temperature, and POC emissions monitoring used to demonstrate compliance with any of the above conditions.

v. Instances of excursions from the requirements in any part of this Permit Condition, applicable Air District regulation, duration of excursion, and corrective actions taken to address the problem or excursion and the time the corrective action was taken and time returned to compliance with the applicable part.

The owner/operator of S- shall maintain these records and any related correspondence with any division of the Air District in an Air District-approved log and shall retain the records onsite for at least two years from the date of entry and shall make the records available to Air District staff for review upon request.

[Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, 6-1, and 8-2-301; Cumulative Increase]

19. Deviations, excursions, and/or Non-Compliance: The owner/operator of S- shall operate as specified in the above parts of this permit condition. Upon discovery of deviation, excursion, and/or non-compliance from any requirement in this permit condition or in an applicable Air District regulation, the owner/operator of S- shall immediately take all necessary corrective actions to restore compliance with that requirement and maintain records of the instance of the deviation, excursion, and/or non-compliance, corrective actions taken, timing of corrective action and the duration of the deviation, excursion, and/or non-compliance. If the source continues to deviate from or not comply with any requirement in this permit condition or in any applicable Air District regulation for more than 24 hours from discovery of deviation, excursion, and/or non-compliance, or longer, as allowed by a specific part of this Permit Condition, the owner/operator of S- shall immediately notify the Air District's Compliance and Enforcement Division. If corrective actions taken by the owner/operator of S- do not restore compliance with the requirements within 24 hours of discovery of deviation, excursion, and/or non-compliance then the deviation, excursion, and/or non-compliance shall be considered a violation of this permit condition and/or applicable Air District regulation.

    The owner/operator of S- shall immediately suspend any new composting activities, such as creating new active composting or curing piles in the event one or more of the following occurs:

    a. Biofilter is out of compliance with the requirements in this permit condition.

    b. Aeration system is out of compliance with the requirements in this permit condition.

    c. Fire in S- active or curing piles.

    [Basis: Regulations 1-301, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

20. In the event of any of the following at S- :
    (i) owner/operator of S- receives one or more Violation Notices for Regulation 1-301: Public Nuisance,
    (ii) two or more confirmed odor complaints within a 24-hour period,
    (iii) one or more incidences of fire, or
    (iv) owner/operator of S- receives one or more Violation Notices for non-compliance with any part of Condition #27297 or any applicable BAAQMD regulation.

    The owner/operator of S- shall implement one or more of the following control measures (as applicable), and shall implement any additional measures that the Air District deems necessary and appropriate within a period specified by the Air District:

    a. Air District-approved measure proposed by the owner/operator to address the violation.
    b. Reduce the permitted waste material throughput allowed in Part 1.
    c. Reduce the size of active composting or curing piles as allowed in Parts 5 and 9.
    d. Increase the thickness of the biofilter.
    e. Increase air flow through each pile.

If the owner/operator of S- receives a repeat Violation Notice or another incidence of fire occurs at S- within 24-months of receiving the first violation notice or first incidence of fire, then the owner/operator shall submit a request for administrative changes of these permit conditions or, if required by the Air District, shall submit a permit application for alteration or modification of S- to amend the Authority to Construct or the Permit to Operate and this permit condition within 30-days of receiving the repeat Violation Notice or second incidence of fire.

The Air District may also administratively change any of the above parts in order to address corrective actions taken per this part.
[Basis: Regulations 1-301, 2-1-233, 2-1-403, 2-2-301, 2-2-302, 2-5, and 6-1; Cumulative Increase]

Permit Conditions for Banking Certificates limited by Regulation 2-4-302.1:

1. The emission reduction credits (ERCs) can only be used to offset emission increases from other (same or closely related industries; i.e., power generating) sources. (Basis: Regulation 2-4-302.1)

Permit Conditions for Baghouse:

1. The owner/operator shall route all particulate matter emissions from Source S- to Baghouse, A- . (basis: Regulation 6-1-301, 6-1-310, 6-1-311)

2. The owner/operator shall equip Baghouse, A- with a device for measuring the pressure drop across the baghouse. Each device shall be checked for plugging at least every week. (basis: Regulation 6-1-301, 6-1-310, 6-1-311, 2-1-403)

3. The owner/operator shall inspect Baghouse, A- weekly to ensure proper operation. The following items shall be checked:
   a. The pressure drop across the baghouse shall be checked weekly. The pressure drop shall be no lower than 2 inches of water and no greater than 12 inches of water.
   b. The baghouse exhaust shall be checked weekly for evidence of particulate breakthrough. If breakthrough is evident from plume observations, dust buildup near the stack outlet, or abnormal pressure drops, the filter bags shall be checked for any tears, holes, abrasions, and scuffs, and replaced as needed.
   c. All hoppers shall be discharged in a timely manner to maintain compliance with 3(a) above.
   d. The pulsejet, shaker cleaning system shall be maintained and operated at sufficient intervals to maintain compliance with 3(a) above.

   (basis: Regulation 2-1-403)

4. In order to demonstrate compliance with the above permit conditions, the following records shall be maintained in an Air District approved log. These records shall be kept on site and made available for Air District inspection for a period of at least five years from the date on which a record is made.
   a. Records of all inspections and all maintenance work including bag replacement for the baghouse. Records of each inspection shall consist of a log containing the date of inspection and the initials of the personnel that inspects the baghouses.

   (basis: Regulation 1-441)

3. The owner/operator shall operate such that the outlet PM10, as defined in Regulation 2, Rule 1, grain loading for Baghouse A- not exceed 0.01 grains per dry standard cubic foot. (basis: Regulation 6-1-310, Best Available Control Technology or Cumulative Increase)

[Note: Limit usually 0.01 grains/dscf for new equipment, unless Best Available Control Technology requires a lower grain loading limit.]

4. The owner/operator shall not operate this Source S- more than hours in any rolling 12 consecutive month period. (Basis: Cumulative Increase)

5. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Total monthly hours of operation.
   b. The monthly hours of operation shall be totaled on a consecutive 12-month period.

   All records shall be retained on-site for two years, from the date of entry, and made available for inspection by Air District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District Regulations. (Basis: Cumulative Increase)

Permit Conditions for Carbon Abatement:

1. The owner/operator shall vent Source S- at all times to Abatement Device A- , two (200 lb minimum capacity) activated carbon vessels arranged in series. Influent vapor flow shall not exceed scfm. (basis: Regulation 8-40-302, Cumulative Increase, BACT/TBACT)

2. The owner/operator of this source shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air Pollution Control Officer at the following locations:
   a. At the inlet to the second to last carbon vessel in series.
   b. At the inlet to the last carbon vessel in series.
   c. At the outlet of the carbon vessel that is last in series prior to venting to the atmosphere.

   When using an FID to monitor breakthrough, readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purposes of these permit conditions. (basis: Cumulative Increase, BACT/TBACT)

3. The owner/operator shall record these monitor readings in a monitoring log at the time they are taken. The monitoring results shall be used to estimate the frequency of carbon change-out necessary to maintain compliance with conditions number 4 and 5, and shall be conducted on a daily basis. The owner/operator of this source may propose for Air District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the Air District's Permit Services Division must be received by the owner/operator prior to a change to the monitoring schedule. (basis: Cumulative Increase, BACT/TBACT)

4. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at its outlet of the higher of the following:
   a. 10 % of the inlet stream concentration to the Carbon vessel.
   b. 10 ppmv or greater (measured as C1).

   (basis: Cumulative Increase, BACT/TBACT)

5. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10 ppmv or greater (measured as C1). (basis: Cumulative Increase, BACT/TBACT)

6. The owner/operator of this source shall maintain the following records for each month of operation of the source:

   a. The hours and times of operation.
   b. Each monitor reading or analysis result for the day of operation they are taken.
   c. The number of carbon beds removed from service.

   All measurements, records and data required to be maintained by the owner/operator shall be retained and made available for inspection by the Air District for at least two years [Note: This is five years for Title V facilities] following the date the data is recorded. (basis: Cumulative Increase, BACT/TBACT)

7. The owner/operator shall report any non-compliance with parts 4 and/or 5 to the Director of the Compliance & Enforcement Division at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence. (basis: Cumulative Increase, BACT/TBACT)

Permit Conditions for Source Testing:

1. Not later than 60 days from the startup of S- , the owner/operator shall conduct Air District approved source tests to determine initial compliance with (the limits) in Part for . The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion. (basis: BACT, Cumulative Increase)

2. The owner/operator shall comply with all applicable testing requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols and projected test dates at least 30 days prior to testing. (basis: BACT, Cumulative Increase)

3. The owner/operator shall ensure that S- is equipped with source test sampling ports and safe access as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall obtain approval of the sampling ports locations, layout and access from the Air District's Source Test Section prior to installation. (Basis: BACT; Cumulative Increase)

Permit Conditions for "Allowable Temperature Excursions" of Thermal Oxidizers:

[Note: This template is not intended for Catalytic units or cyclic or batch operations, where the duration of the source operation may not exceed 15 minutes (i.e. storage tank loading, drum filling. at a bulk material handling facility).]

1. The temperature limit in Part shall not apply during an "Allowable Temperature Excursion", provided that the temperature controller setpoint complies with the temperature limit. An Allowable Temperature Excursion is one of the following:
   a. A temperature excursion not exceeding 20 degrees F; or
   b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour; or
   c. A temperature excursion for a period or periods which when combined are more than 15 minutes in any hour, provided that all three of the following criteria are met.
      i. the excursion does not exceed 50 degrees F;
      ii. the duration of the excursion does not exceed 24 hours; and
      iii. the total number of such excursions does not exceed 12 per calendar year (or any consecutive 12-month period).

   Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12-excursion limit. (basis: Regulation 2-1-403)

2. For each Allowable Temperature Excursion that exceeds 20 degrees F and 15 minutes in duration, the Permit Holder shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of five (or two years) years from the date of entry and shall be made available to the Air District upon request. Records shall include at least the following information:
   a. Temperature controller setpoint;
   b. Starting date and time, and duration of each Allowable Temperature Excursion;
   c. Measured temperature during each Allowable Temperature Excursion;
   d. Number of Allowable Temperature Excursions per month, and total number for the current calendar year; and
   e. All strip charts or other temperature records.

   (basis: Regulation 2-1-403)

Permit Conditions for Thermal Oxidizers:

1. The owner/operator shall abate emissions from Source S- with Abatement device A- , Thermal Oxidizer during all periods of operation. Vapor flow rate shall not exceed scfm. (basis: Cumulative Increase, BACT/TBACT)

2. The owner/operator shall operate A- to meet the following VOC destruction efficiency requirements:
   a. A- outlet VOC concentration of 10 ppmv or less; or
   b. All of the following standards depending on the applicable A- inlet VOC concentration:
   c. VOC destruction efficiency $\geq$ 98.5% if A- inlet VOC concentration > 2,000 ppmv;
   d. VOC destruction efficiency > 97% if A- inlet VOC concentration > 200 to < 2,000 ppmv;
   e. VOC destruction efficiency > 90% if A- inlet VOC concentration < 200 ppmv.

   (basis: Cumulative Increase; BACT/TBACT)

3. The owner/operator shall operate A- to be at least (typically 600 for catalytic and 1400 for other thermal oxidizers) degrees F. The Air District may adjust this minimum temperature, if source test data demonstrates that an alternate temperature is necessary for or capable of maintaining compliance with Part 2 above. (basis: Cumulative Increase; BACT/TBACT)

4. To determine compliance with the temperature requirement in these permit conditions, the owner/operator shall equip A- with a temperature measuring device capable of continuously measuring and recording the temperature in A- . The owner/operator shall install, and maintain in accordance with manufacturer's recommendations, a temperature measuring device that meets the following criteria: the minimum and maximum measurable temperatures with the device are degrees F and degrees F, respectively, and the minimum accuracy of the device over this temperature range shall be 1.0 percent of full-scale. (basis: Cumulative Increase; BACT/TBACT)

5. The owner/operator shall report any non-compliance with Part 3 of this condition to the Compliance & Enforcement Division by email to compliance@baaqmd.gov (Attention: Director of Compliance and Enforcement) at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence. (basis: Cumulative Increase, Toxics)

Example Permit Condition for RACT for Thermal Oxidizers,limits are based on your own RACT analysis

1. The owner/operator shall not emit more than 50 ppmvd NOx @ 15% O2 (0.20 lb/MMBTU) from A- Thermal Oxidizer. [basis: RACT, Source Test Method 13A]

2. The owner/operator shall not emit more than 350 ppmvd CO @ 15% O2 (0.80 lb/MMBTU) from A- Thermal Oxidizer. [basis: RACT, Source Test Method 6]

[Add Source Test Conditions after part 2 and renumber the Source Test Conditions, as needed.]

Permit Conditions for Water Spray System with throughput limit:

1. The owner/operator at this plant shall not exceed tons of total annual throughput of material processed in any consecutive 12-month period. (Basis: Cumulative Increase)

2. The owner/operator shall abate the particulate matter (PM-10) emissions from this Source S- using Water Spray System A- . (Basis: Regulation 6-1-301, Cumulative Increase and/or BACT)

3. The owner/operator shall maintain Source S- in a completely "surface wet" condition or shall not result in visible particulate matter emissions which exceed Ringelmann 0.5. (Basis: Regulation 6-1-301, Cumulative Increase and/or BACT)

4. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Total daily throughput of material.
   b. The daily throughput of material shall be totaled on a monthly basis.
   c. Monthly throughput shall be totaled for each consecutive twelve-month period.

   The owner/operator shall record all records in an Air District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by Air District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable Air District Regulations.
   (Basis: Cumulative Increase)

SOURCE-SPECIFIC GUIDANCE

1. General Instructions to Using These Guidelines
2. Combustion Equipment
    1. Boilers, Steam Generators & Process Heaters
    2. (deleted)
    3. Internal Combustion Engines
        1. Stationary Diesel Engines
        2. Stationary Natural Gas Engines
        3. Portable Diesel Engines
        4. Biogas Engines
    5. Turbines
        1. MicroTurbines (25 – 500 KW)
3. Petroleum Industry
    1. Bulk Loading Facilities
    2. Gasoline Dispensing Facilities
    3. Oil-water Separators
    4. Petroleum Refinery Fugitive Emissions
    5. Natural Gas Facilities and Crude Oil Facilities
4. Organic Liquid Storage Tanks
5. Coating Operations
    1. Spray Booths & Spray Guns
    2. Coatings and Ink Manufacturing
    3. Graphics Art Printing and Coating Operations
6. Solvent Cleaning
    1. Cold Solvent Cleaning
    2. Vapor and Conveyorized Solvent Cleaning
    3. Wipe Cleaning Operations
7. Electronic & Semiconductor Industry
    1. (deleted)
    2. Electronic Assembly & Wave Soldering Operations
    3. Flexible and Rigid Disc Manufacturing
    4. Semiconductor Manufacturing Operations
8. Waste Processing Industry
    1. (deleted)
    2. Sewage Treatment Facilities (POTWs)
9. Soil/Water Remediation
    1. Air Stripping
    2. Soil Vapor Extraction
    3. Sub-Slab Depressurization
10. Toxic Emitting Operations
    1. Chrome Plating
    2. Ethylene Oxide Sterilizers
    3. (deleted)
    4. Non-Halogenated Solvent Dry Cleaning
    5. Synthetic Solvent Dry Cleaning
11. Miscellaneous Operations
    1. Abrasive Blasting Operations
    2. Asphalt (Hot Mix) Facilities
    3. Coffee Roasters
    4. Cooling Towers
    5. Concrete Batch Plants
    6. Crematories
    7. Crushing and Grinding
    8. .1 Methyl Bromide Fumigation
       .2 Phosphine Fumigation

9. Misc. Organic Operations
10. Portable Equipment
11. Polyester Resin Manufacturing
12. Polyester Resin Operations
13. Tub Grinder
14. Landfill Gas Flares
15. Material Recovery Operations
16. Composting Operations

12. Procedures
    1. Banking

1. GENERAL INSTRUCTIONS TO USING THESE GUIDELINES

July 6, 2022

Each of the chapters has been written for ease of viewing and use. Most of the section headers are hyperlinked with reference documents.

The Completeness Determination section header has been hyperlinked with the Completeness Determination Checklist. Each of the form references has been hyperlinked with its word document-formatted form. The Emission Calculations section header has been hyperlinked with a spreadsheet or calculation procedure that is to be used for calculating emissions for the selected source type.

The Applicable Requirements section header and sub-headers has been hyperlinked with the Applicable Requirements section and sub-sections of the General Evaluation Guidance so that general guidance and source specific guidance is available at a glance (with a click of the mouse). Finally, the Permit Condition section header has been hyperlinked with the permit conditions that are to be used for the selected source type.

It should be noted that unless a particular requirement is mentioned then that requirement is not applicable. For example, if the Applicable Requirements section of a chapter for a source type does not mention an applicable ATCM, NSPS, or NESHAP, then for that source type, such requirements have been determined not to apply.

The evaluation templates can be obtained by clicking on the hyperlink of each source category heading.

2.1 BOILERS, STEAM GENERATORS & PROCESS HEATERS

December 31,2023

Process Description

This chapter is limited to external combustion equipment; such as boilers, steam generators, and process heaters; firing the commonly used conventional fuels such as natural gas, refinery gas, liquefied petroleum gas, landfill gas, distillate oil, residual oil, etc. Waste fuel combustion sources burning such fuels as municipal waste or refuse-derived fuel will require more detailed analysis and are not covered by this chapter. Boilers covered range from commercial (< 10 MMBTU/hr), small industrial (10 – 100 MMBTU/hr), to large industrial (100 – 250 MMBTU/hr), and utility boilers, generally rated above 250 MMBTU/hr. External combustion is when the combustion process heats a separate fluid, such as water or steam, which in turn is used.

Thorough explanations of the combustion of conventional fuels are available from AP-42 (Fifth Edition, Volume I):

Fuel Oil	Chapter 1.3, Fuel Oil Combustion
Natural Gas	Chapter 1.4, Natural Gas Combustion
LPG	Chapter 1.5, Liquefied Petroleum Gas Combustion
Wood	Chapter 1.6, Wood Residue Combustion in Boilers

Effective January 1, 2011, Regulation 9-7-404 requires boilers, steam generators, and process heaters meeting the following criteria to be registered with the Air District and comply with the emission limits set forth in the rule:

- the rated heat input is greater than 2 MM Btu/hr and less than 10 MM Btu/hr
- the boiler is fired using only natural gas or LPG
- the boiler is not located at a petroleum refinery
- the boiler is not used to generate electricity

A Regulation 9-7 Compliance Advisory is available for more information.

Any boiler, steam generators, and process heaters or similar combustion equipment; which burns exclusively natural gas, LPG, or combination and has a maximum firing rate of 10 million BTU per hour or greater, or which burns other fuels and has a maximum firing rate of 1 million BTU per hour or greater; is subject to permitting requirements per Regulation 2-1-114.1.

In general, natural gas is the most common fuel used. Fuel oil (such as diesel fuel) may be used as a backup fuel in the event of natural gas curtailment. Because the BACT requirements for wood combustion typically require add-on abatement equipment, wood combustion in new/modified combustion equipment is uncommon.

Completeness Determination

The following Air District forms should be completed and fees provided for the boilers. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form C (one per source). Make sure to include in source description if boiler is firetube or watertube boiler.
3. If combustion products exhaust into add-on abatement device, Form A (one per device).
4. If Health Risk Assessment is triggered, Form HRA (one per source).
5. Fees, calculated per Regulation 3 (Schedule B).

Emission Calculations

The ideal hydrocarbon products of combustion in which a fossil fuel is burned are water vapor and carbon dioxide. All other products are considered pollutants, consisting mainly of NOx (Nitrogen Oxides), CO (Carbon Monoxide), POC (Precursor Organic Compounds in the form of unburned hydrocarbons), SOx (Sulfur Dioxide), and PM10 (Particulate Matter).

Emission factors of criteria pollutants from external combustion of common fuels can be found in AP-42 (Fifth Edition, Volume I):

Fuel Oil	Chapter 1.3, Fuel Oil Combustion
Natural Gas	Chapter 1.4, Natural Gas Combustion
LPG	Chapter 1.5, Liquefied Petroleum Gas Combustion

Per Policy: Emission Factors for Toxic Air Contaminants from Miscellaneous Natural Gas Combustion Sources, when site specific or source category specific emission factors are not available, the following emission factors shall be used to calculate TAC emissions from miscellaneous natural gas combustion sources:

TAC Emission Factors for Miscellaneous Natural Gas Combustion		
TAC	Emission Factor (lb/MSCF)*	Emission Factor (lbs/therms)*
Benzene	2.1E-6	2.06E-7
Formaldehyde	7.5E-5	7.35E-6
Toluene	3.4E-6	3.33E-7

* based on 1020 BTU/SCF

Other fuels may use source test data from comparable equipment of similar design and configuration to estimate emissions. However, the permit conditions for these alternative fuel combustion sources should include start-up source testing requirements to validate the emission factors used.

In general, a new combustion source with a firing rate of 10 million BTU/hr or more will trigger BACT requirements. As a result, the BACT emission limits or the manufacturer's guaranteed NOx and CO emission rates, if they are lower than the BACT emission limits, should be used to calculate emissions. The permit conditions for these sources should include start-up source testing requirements to validate the emission factors used. The BACT emission limits for CO, NOx, and POC in flue gases are usually specified in parts per million (ppm) by volume corrected to 3% oxygen. Since the measurements are not always made under the same operating conditions, the measurements are often corrected to a standard operating point of 3% excess oxygen for comparison to the BACT and regulatory limits. The equation for making this correction is:

$$\text{ppm (3\%)} = \text{ppm}_{measured}*[(21-3)/(21-\%O_{2\ measured})]$$

To convert "ppm" to "lb/MMBTU":

$$\text{lb/MMBTU} = \text{ppm}_{measured}*[(21-0)/(21-\%O_{2\ measured})]*(MW)*F_d/V_M$$

where:

V_M = molar volume = 359 dscf/mole = 385.3 scf/mole (corrected to 68°F from 32°F)
MW = molecular weight of pollutant (i.e., 46.01 lb NO_2/mole or 28.0 lb CO/mole)
F_d = 8,710 dscf/MMBTU

This conversion may be done using the EPA "F_d" factor from 40 CFR Part 60 test methods, for example Method 19, Table 19-1-F. "F_d" is the ratio of the volume of dry flue gas to the heat value of the fuel used to produce the flue gas. F_d for natural gas is 8,710 dscf/MM BTU (from Method 19). The conversion assumes that the flue gas is ideal (since flue gas molar volume is assumed to be 359 cf/lbmole), which is a valid assumption because of the relatively high temperature and low pressure of the flue gas. The conversion includes a correction of the pollutant concentrations from the percent of oxygen (O_2) measured to 0% O_2 (in accordance with Air District procedure ST-13A) since the flue gas volume assumes stoichiometric combustion (zero excess air and O2). Additional F_d factors can be obtained from Table 19-2 of Method 19.

Applicable Requirements

Air District Rules and Regulations

Boilers, steam generators, and process heaters with a rated heat input of 2 million BTU/hr or greater, if fired exclusively with natural gas or liquified petroleum gas, or 1 million BTU/hr or greater, if fired with any other fuel, are subject to the requirements of Regulation 9-7, unless they are used in a petroleum refinery (then subject to Regulation 9-10) or public electric utilities. If a boiler, steam generator, or process heater has a maximum firing rate 250 MMBTU/hr and above, then it may also be subject to Regulation 9-3 and/or Regulation 9-11. The permit evaluator should review the proposed boiler application to determine which Air District rule(s) applies and that the proposed boiler complies with the applicable rule.

New Source Performance Standards (NSPS)

The NSPS for industrial-commercial-institutional steam generating units are outlined in the Code of Federal Regulations (CFR) under 40 CFR Part 60 Subparts Db and Dc. Subpart Db covers industrial-commercial-institutional steam generating units with heat inputs greater than 100 MMBtu/h of that commenced constructed after September 18, 1978. Subpart Dc covers smaller industrial-commercial-institutional steam generating units that commenced constructed after June 9, 1989. The key pollutants the EPA regulates from these sources includes particulate matter (PM), nitrogen oxides (NOx), and sulfur dioxide (SO2).The permit evaluator should review the proposed boiler application to ensure that the proposed boiler is either exempt from the NSPS or complies with the NSPS.

Best Available Control Technology (BACT)

BACT for Boilers, Steam Generators, and Process Heaters firing commonly used fuels is specified in Section 2: Combustion Sources of the BACT/TBACT Workbook. The BACT/TBACT Workbook references specific requirements for firetube and watertube boilers. A fire-tube boiler is a type of boiler in which hot gases pass from a fire through one or more tubes running through a sealed container of water to produce steam, while a water-tube boiler instead sends water through a series of tubes surrounded by combustion gases to produce steam. Firetube boilers are easy to clean and repair because maintenance can be performed from outside of the unit rather than inside. The main drawback of firetube boilers are that they tend to have smaller capacities. Water-tube boilers are generally a more complex design and require higher maintenance costs. Water-tube boilers are used in large power plants. Boilers, Commercial, Industrial, Institutional

- Boiler, Rental: On-site < 6 consecutive months
- Boiler: 5 to <33.5 MMBtu/hr
- Boiler: ≥33.5 to <50 MMBtu/hr
- Boiler: ≥50 MMBtu/hr
- Boiler, CO - Refinery
- Boiler or Water Heater - Landfill or Digester Gas Fired
- Boiler - Municipal Refuse Fired
- Boiler - Wood Fired

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for boilers are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

2.3.1 STATIONARY DIESEL ENGINES

December 15, 2023

Process Description

Stationary diesel engines are internal combustion (IC) engines used in generators, pumps, and material handling equipment (such as tub grinders). Additional background information is available from Chapters 3.3 Gasoline and Diesel Industrial Engines and 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines of AP-42 (Fifth Edition, Volume I). This chapter shall cover exempt, loss of exemption, emergency, and prime stationary diesel engines. Portable diesel engines are covered in Permit Handbook Chapter 2.3.3.

Exempt Engines – The following engines are exempt from Air District permitting requirements (Regulation 2-1-301 and 2-1-302):

1. IC engines which are less than or equal to 50 HP (exempt per Regulation 2-1-114.2.1); and
2. IC engines used for instructional purposes at research, teaching, or educational facilities (exempt per Regulation 2-1-114.2.3).

Loss of Exemption (LOE) Engines – On May 17, 2000, the general IC engine permit exemption was lowered from 250 to 50 HP. In addition, the exemption for portable and standby IC engines, and standby gas turbines was amended to allow equipment to operate for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) without triggering permit requirements. Subsequently, that permit exemption for portable and standby IC engines, and standby gas turbines was deleted on September 1, 2001. As a result, the following engines are considered LOE engines:

1. IC engine less than 250 HP installed prior to May 17, 2000 (LOE – Regulation 2-1-113.2.8);
2. Portable or standby IC engine installed prior to May 17, 2000, which was used on a temporary basis of no more than 30 days per calendar year at any one facility or used for the emergency pumping of water (LOE – Regulation 2-1-113.10); and
3. Portable or standby IC engine installed prior to September 1, 2001, which was used for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) and not subject to permits per Regulation 2-1-319 (LOE – Regulation 2-1-114.2.3)

Engines installed between May 17, 2000 and September 1, 2001 were subject to the existing Regulation 2-1-316 - New or Modified Sources of Toxic Air Contaminants or Hazardous Air Pollutants which required that - notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source required permits if it emitted one or more toxic air contaminants in quantities that exceed the limits listed in Table 2-1-316, unless the owner or operator of the source could demonstrate that the source would pass a health risk assessment analysis, as defined in Section 2-1-225, performed according to the current Heath Risk Assessment Procedure. Therefore, in order to obtain an exemption (and thus qualify as a LOE) during this period, sources were required to pass a Health Risk Assessment. Subsequently, the Table 2-1-316 was moved to Regulation 2-5 and became Table 2-5-1

Completeness Determination

The following Air District forms should be completed and fees provided for stationary diesel engines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form ICE (1 per engine).
3. Manufacturer specification data including: fuel consumption, rated horsepower output, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
4. CARB-certified emission data or if no CARB-certified data, then EPA-certified emission data. If no such certified data exists, then load adjusted data from D2 testing.
5. For engines installed after May 17, 2000, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule B). If engine is a LOE engine, then the fees shall be calculated according to the Procedure: Permitting Loss of Exemption Engines for LOE engines.

Emission Calculations

The primary pollutants from IC engines are oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM10). In calculating these emissions, emission factor data from CARB, EPA, and/or the manufacturer are used to estimate emissions for NOx, CO, POC, and PM10/PM2.5. If NOx and POC (hydrocarbon) have a combined emission factor, Air District Policy: CARB Emission Factors for Diesel Engines – Percent HC in Relation to NMHC + NOx is to estimate that 5% of the NMHC+NOx emission factor as the POC emission factor when the CARB HC emission factor isn't available independently. The SO2 emission factor is 0.001515 lb/MMBTU from EPA AP-42, Table 3.4-1, which is based on full conversion of fuel sulfur to SO2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.0015 wt% sulfur). Although there is a different SO2 emission factor indicated for engines under 600 HP from EPA AP-42, Table 3.3-1, it's been determined that this emission factor is not representative because it does not take sulfur content into consideration. PM10/PM2.5 certified level no greater than 0.1 g/bhp-hr means an emission level of 0.15 g/bhp-hr or less as determined during a steady-state engine certification test (ISO 8178).

Fire Pumps & Other Engines with No Emission Factor Data – Because of the special requirements of fire pumps, the engines on fire pumps are rarely CARB- or EPA- certified. In addition, the manufacturer rarely has emission factor data on these fire-pump modified engines. As a result, if no data exist, then emission factor data from EPA AP-42, Table 3.4-1, should be used.

The emission factors, which are typically in grams per brake-horsepower-hour (g/bhp-hr), are multiplied by the maximum annual hours of operations and the brake horsepower of the engine to determine the annual rates of emissions of the various criteria pollutants. Note that unless CARB or EPA certified emission factor data is used, the permit evaluator shall require source testing for any engine over 250 HP to verify the manufacturer's emission factors, per Air District Policy: When to Require Source Testing For Stationary Diesel Engines to Demonstrate Compliance With The Stationary CI Engine ATCM.

LOE Engines – In general, emission data on LOE engines often does not exist, because the engines predated existing emission standards. Because there is no cumulative increase associated with a LOE sources, per Regulation 2-2-208, emission calculations are not required for a LOE diesel engine.

Applicable Requirements

Air District Rules and Regulations

All stationary diesel engines are subject to the Ringelmann No. 2 limitations of Regulation 6-1-303 (emissions opacity limitations). Properly operated and maintained engines are expected to meet this requirement. All stationary diesel engines are also subject to the SO2 limitations of Regulation 9-1-301 (ground level concentration) and 9-1-304 (0.5% by weight in fuel). Compliance with both Regulations 9-1-301 and 9-1-304 is likely since California law mandates using diesel fuel with a 0.05% by weight sulfur. Any stationary diesel engine which operates exclusively using diesel fuel is not be subject to the requirements of Regulations 9-8-301, 9-8-302, and 9-8-502 per Regulation 9, Rule 8, Section 110.2. However, emergency standby engines are subject to the requirements of Regulation 9-8-330, while those emergency engines for essential public use, as defined in Regulation 9-8-233, are subject to Regulation 9-8-331. Regardless of the operating hours allowed in Regulation 9-8-330 or 9-8-331, the permit evaluator cannot approve engine-operating hours in excess of what would fail a Health Risk Assessment or any operating limitation specified in the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM).

ATCM

In implementing the ATCM, the Air District developed permit conditions (see Permit Condition Guidance) that applies to new engines effective January 1, 2005. New engines are those engines installed at a facility after January 1, 2005; section (d)(44) of the ATCM (page 10) provides the full definition. The permit evaluator cannot approve engine-operating hours in excess of what would fail a Health Risk Assessment or any operating limitation specified in the ATCM.

New Emergency Use Engines: Per Table 1 of the ATCM (page 17), if the PM emission rate is CARB-certified to be less than 0.15 g/bhp-hr, then a maximum of 50 hours is allowed for new engine reliability related activities. If the PM emission rate is CARB-certified to be less than 0.01 g/bhp-hr, then a maximum of 100 hours is allowed for new engine reliability-related activities. Source testing may be required to demonstrate compliance with the ATCM, per Air District Policy: When to Require Source Testing For Stationary Diesel Engines to Demonstrate Compliance With The Stationary CI Engine ATCM; the policy clarifies how to demonstrate the 0.01 g/bhp-hr standard.

In addition, if the engine is located within 500 feet of any school, there are further restrictions on use at and nearby school by Subsection (e)(2)(A)1. To incorporate these requirements of the ATCM, permit conditions have been developed for new stationary engines (see Permit Condition section). Permits for new stationary emergency standby diesel engines should include these permit conditions, unless they are exempt per Section (c) of the ATCM.

"In-Use" Emergency Engines: This category includes LOE engines. Per Table 2 of the ATCM (page 21), if the PM emission rate is CARB-certified to be less than 0.01 g/bhp-hr, then a maximum of 100 hours is allowed for "in-use" engine reliability related activities. Source testing may be required to demonstrate compliance with the ATCM, per Air District Policy: When to Require Source Testing For Stationary Diesel Engines to Demonstrate Compliance With The Stationary CI Engine ATCM; the policy clarifies how to demonstrate the 0.01 g/bhp-hr standard. However, if the PM emission rate is unknown, then only 20 hours is allowed for "in-use" engine reliability related activities. If the PM10 emission rate is CARB-certified to be between 0.01 and 0.4 g/bhp-hr, then the hours allowed are specified by the schedule in Table 2 of the ATCM (page 21). In addition, if the engine is located within 500 feet of any school, there are further restrictions on use at and nearby school by Subsection (e)(3)(B)2 of the ATCM.

New Prime Use Engines: The permit evaluator shall review the necessary emission test results and other documentation to determine compliance with the 0.01 g/bhp-hr PM emission limit of the ATCM prior to permit issuance. Source testing may be required to demonstrate compliance with the ATCM, per Air District Policy: When to Require Source Testing For Stationary Diesel Engines to Demonstrate Compliance With The Stationary CI Engine ATCM; the policy clarifies how to demonstrate the 0.01 g/bhp-hr standard. The ATCM PM emission limit, and the records to document compliance with this limit, are not needed as permit conditions. Note that the hours of operation may need to be limited to pass the Health Risk Assessment.

"In-Use" Prime Use Engines: According to the ATCM requirements for prime use engines (pages 25 and 26), must meet the emission standards indicated in Table 4 of the ATCM (page 25). The permit evaluator shall review the application information for compliance with the emission standards. Source testing may be required to demonstrate compliance with the ATCM, per Air District Policy: When to Require Source Testing For Stationary Diesel Engines to Demonstrate Compliance With The Stationary CI Engine ATCM.

BACT

Unless they are LOE engines, BACT for stationary diesel engines is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for diesel engines:

Internal Combustion Engines
- I. C. Engine - Compression Ignition, Prime > 50 hp
- I. C. Engine - Compression Ignition, Emergency > 50 hp and <1000 hp
- I. C. Engine – Compression Ignition, Emergency >= 1000 hp

Unless they are LOE engines, for non-emergency diesel engines (i.e., prime use engine), a diesel engine will be permitted only if a gas-fueled engine, or electric motor, is not practical (e.g., a remote location without natural gas availability or electric power, or only a diesel engine will meet the portability and/or power/torque/rpm requirements of the application under review, or the engine is used exclusively for emergency use during involuntary loss of power). The permit evaluator must ensure that the applicant explains why gas fueled engines are not practical for any non-emergency diesel engine under evaluation.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

LOE Engines – BACT review requirements are not triggered for LOE engines, because they are not considered new or modified sources.

CEQA
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

Health Risk Analysis
Unless they are LOE engines, typically any stationary diesel engine over 50 hp will require a health risk assessment because the toxics trigger level for diesel particulate is low (0.26 lbs/yr). Regulation 2-5-301 (New Source Review of Toxic Air Contaminants) TBACT standards generally applies. A permit applicant may apply alternative and/or additional emissions control (e.g., catalyst-based diesel particulate filters (DPFs), diesel oxidation catalysts, ultra-low sulfur diesel fuel) or other risk reduction measures (e.g., increasing stack height within what is considered Good Engineering Practice, maximizing source/receptor separation distances, modifying operating hours to minimize public exposure) as necessary to reduce risks to acceptable levels specified in the Regulation 2-5-302. All engines not equipped with a DPF must be "plumbed" to facilitate the installation of a DPF at a future date.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

LOE Engines – Offsets, PSD, and school notification requirements are not triggered for LOE engines, because they are not considered new or modified sources.

Permit Conditions
Standardized conditions for stationary diesel engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

2.3.2 STATIONARY NATURAL GAS ENGINES

December 15, 2023

Process Description
Stationary natural gas engines are generally reciprocating engines used in the natural gas industry at pipeline compressor and storage stations and at gas processing plants. However, recently, they have also been used as prime or emergency standby sources of power. Additional background information is available from Chapters 3.2 Natural Gas-fired Reciprocating Engines of AP-42 (Fifth Edition, Volume I).

Exempt Engines – The following engines are exempt from Air District permitting requirements (Regulation 2-1-301 and 2-1-302):

3. IC engines which are less than or equal to 50 HP (exempt per Regulation 2-1-114.2.1);
4. IC engines used for instructional purposes at research, teaching, or educational facilities (exempt per Regulation 2-1-114.2.2);
5. portable IC engines which are at a location for less than 72 consecutive hours (exempt per Regulation 2-1-114.2.3);
6. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship or barge (exempt per Regulation 2-1-114.2.4); and
7. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barrage, used to provide propulsion for any vehicle, train, ship or barge, and which is also used to supply mechanical or electrical power to ancillary equipment, which is affixed to or is a part of the vehicle, train, ship, boat, or barge (exempt per Regulation 2-1-114.2.5)

Completeness Determination
The following Air District forms should be completed and fees provided for stationary natural gas engines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form ICE (1 per engine).
3. Manufacturer specification data including: fuel consumption, rated horsepower output, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
4. If abated, manufacturer's specification data of abatement device abatement efficiency for pollutants abated.
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule B)

Emission Calculations
The primary pollutants from natural gas engines are the products of combustion, including oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM10). In calculating these emissions, emission factor data from the manufacturer may be used to estimate emissions for NOx, CO and POC. Particulate matter ($PM_{10}/PM_{2.5}$) and sulfur dioxide (SO_2) emission factors are based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3.2.4.1 Control Techniques for 4-Cycle Rich-Burn Engines and Table 3.2-3 Uncontrolled Emission Factors for 4-Stroke Rich-Burn Engines.[1] The $PM_{10}/PM_{2.5}$ emission factor is the total of filterable and condensable particulates. Abatement efficiencies for NOx and CO were obtained from the abatement device manufacturer. It is assumed that the abatement efficiency for POC is 50% by weight.

If the engine operates for essential public service, it will be limited to a maximum of 100 hours per year for maintenance and testing. If the engine will operate for prime service, then the engine operation should

[1] **SO_2** Emission Factor = 5.88 E-04 lb/MMBtu; calculations assume 100% of fuel sulfur conversion with the content in natural gas = 2000 gr/10^6scf. **$PM_{10}/PM_{2.5}$** fuel input emission factor = 9.50E-03 lb/MMBtu (filterable) + 9.91E-03 lb/MMBtu (condensable) = 1.94E-02 lb/MMBtu; aerodynamic particle diameter =< 1 µm, for the purposes of filterable emissions PM_{10}= $PM_{2.5}$. These emissions are expected to be negligible but included for completeness.

conservatively be estimated with the maximum number of hours per year (24 hour per day, 365 days per year).

The following are an example emissions calculation for an essential emergency 103 BHP engine with a POC emission factor of 0.26 g/bhp-hr which is abated with Non-Selective Catalytic Reduction:

$$0.26\ \frac{g}{bhp-hr} \times 103\ bhp \times 100\ \frac{hrs}{year} \times \frac{1}{454}\frac{lb}{g} = 5.9\frac{lb}{year}\ (unabated)$$

$$5.9\frac{lb}{year} \times (1-50\%) = 2.95\ lb/year\ (abated)$$

In addition, emission factors for criteria and toxic pollutants can be found in EPA AP-42, Chapter 3.2 Natural Gas-fired Reciprocating Engines and the California Air Toxics Emission Factors (CATEF) database (Internal Combustion Engines; Natural Gas). The permit evaluator may choose the most representative emission factors to calculate emissions. For toxic emissions, emissions factors from CATEF are generally preferred over those found in AP-42. If the AP-42 emission factor is based on the detection limit, the emission factor will equal 1/2 of the AP-42 emission factor. The emission factors should reflect any add-on abatement by reducing the emission factor by the abatement efficiency of the add-on device.

The following is a summary of the toxic emission factors from the California Air Toxics Emission Factors (CATEF) and the Compilation of Air Pollutant Emissions Factor: AP-42:

Toxic Air Contaminant for Engine

Compound	Emission Factor (lb/MMBtu)	Basis
1,1,2,2-Tetrachloroethane	2.53E-05	AP-42
1,1,2-Trichloroethane	7.65E-06	AP-42
1,1-Dichloroethane	5.65E-06	AP-42
1,3-Butadiene	1.02E-04	CATEF
Acetaldehyde	8.66E-04	CATEF
Acrolein	5.36E-04	CATEF
Benzene (no control)	1.87E-03	CATEF
Carbon Tetrachloride	8.85E-06	AP-42
Chlorobenzene	6.45E-06	AP-42
Chloroform	6.85E-06	AP-42
Ethylbenzene	1.14E-05	CATEF
Ethylene Dibromide	1.07E-05	AP-42
Formaldehyde (no control)	2.30E-03	CATEF
Methanol	3.06E-03	AP-42
Methylene Chloride	4.12E-05	AP-42
Naphthalene	7.50E-05	CATEF
PAH	2.12E-07	CATEF
Propylene	1.57E-02	CATEF
Styrene	5.95E-06	AP-42
Toluene	1.05E-03	CATEF
Vinyl Chloride	3.59E-06	AP-42

Compound	Emission Factor (lb/MMBtu)	Basis
Xylene (total)	6.45E-04	CATEF

The following are an example emissions calculation for benzene for the essential emergency 103 BHP engine (975 scf/hr fuel consumption rate) with Non-Selective Catalytic Reduction:

$$975\ \frac{scf}{hr} \times 1020\ \frac{BTU}{scf} \times \frac{1}{1E6}\frac{MMBTU}{BTU}\ x\ 1.87E-03\ \frac{lb}{MMBTU} = 1.86E-03\frac{lb}{hour}\ (unabated)$$

$$1.86E-03\frac{lb}{hour} \times 100\ \frac{hrs}{year} = 0.186\frac{lb}{year}\ (unabated)$$

Applicable Requirements

Air District Rules and Regulations

Stationary natural gas engines are subject to the Ringelmann No. 1 limitations of Regulation 6-1-301 (emissions opacity limitations) and Regulation 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). From Regulation 9-1-301, the ground level concentrations of SO_2 will not exceed 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Properly operated and maintained engines are expected to meet this requirement. In addition, natural gas engines are subject to the emission requirements of Regulations 9-8-301.

New Source Performance Standards NSPS)

The New Source Performance Standard (NSPS) in 40 CFR 60, Subpart JJJJ apply if the engine will be installed after January 1, 2011. The permit evaluator should verify that the engine will comply with the following limits in Table 1 for emergency spark-ignited engines less than 130 hp:

Pollutant	Emission Factor	NSPS Standard
NOx	0.15 g/bhp-hr	10.0 g/bhp-hr
CO	0.90 g/bhp-hr	387.0 g/bhp-hr

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The engine will be subject to the Reciprocating Internal Combustion Engine (RICE) National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 63, Subpart ZZZZ) if it is a new source and installed after 2007. A new RICE at an area source that is subject to 40 CFR Part 60, Subpart JJJJ, has no further requirements under 40 CFR Part 63, Subpart ZZZZ pursuant to 40 CFR Part 63.6590(c). Therefore, the engine should comply with the NESHAP by meeting the requirements under 40 CFR Part 60, Subpart JJJJ.

BACT

BACT for stationary natural gas engines is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for natural gas engines:

- I. C. Engine - Spark Ignition, Natural Gas Fired Rich Burn Engine
- I. C. Engine - Spark Ignition, Natural Gas Fired Lean Burn Engine
- I. C. Engine - Spark Ignition, Natural Gas Fired Emergency Engine

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

CEQA

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for stationary natural gas engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

2.3.3 PORTABLE DIESEL ENGINES

December 15, 2023

Process Description

Portable diesel engines are internal combustion (IC) engines used in generators, pumps, and material handling equipment (such as tub grinders) that will meet the criteria of portable as defined in Regulation 2-1-413; such as to remain at any single location (facility boundaries) for less than twelve consecutive months, not be within 1000 feet of a school, will comply with Regulation 2-5, and will not cause a public nuisance. This chapter shall cover exempt, loss of exemption, emergency, and prime portable diesel engines. Stationary diesel engines are covered in Permit Handbook Chapter 2.3.1.

These engines are considered to be non-road engines defined by 40 CFR 89.2 as follows:

> *Nonroad engine means:*
> (1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:
> (i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or
> (ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or
> (iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.
> (2) An internal combustion engine is not a nonroad engine if:
> (i) the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act; or
> (ii) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or
> (iii) the engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location

Non-road engines are not subject to Air District regulations that contain emission limits per Federal Clean Air Act Section 209(e). The exception is standards and other requirements imposed by the State of California necessary to achieve attainment of air pollution standards. The portable engine ATCM and PERP regulations are examples of these standards. Therefore, BACT, TBACT, and Regulations 6 and 9 cannot be imposed.

However, 40 CFR 89, Appendix A to Subpart A, does acknowledge that states can regulate the use and operation of non-road engines, and limit hours of operation and mass emissions. Therefore, limitations on hours of operation and location based on risk can be imposed.

The limitations in Regulation 2-1-413, Permits for Operation of Equipment at Multiple Locations Within the Air District, can also be imposed if the source does not remain at one facility, and the owner/operator wishes to obtain a portable (multi-location) permit.

The following Air District policy should be reviewed as part of the evaluation for the portable engine: Applicable Requirements for Portable Engines, dated 5/8/20.

Each evaluation for a non-road engine should have the following boilerplate language in the background of the evaluation:

> Portable engines are non-road engines as defined by 40 CFR 89.2. Section 209(e) of the Federal Clean Air Act and Appendix A to Subpart A of 40 CFR 89 do not allow states "or political subdivisions" to impose emission control on non-road engines. The exception is standards and other requirements imposed by the State of California necessary to achieve attainment of air pollution standards. The regulatory analysis for this application will take this into account.

Exempt Engines – The following engines are exempt from Air District permitting requirements (Regulation 2-1-301 and 2-1-302):

8. IC engines which are less than or equal to 50 HP (exempt per Regulation 2-1-114.2.1);
9. IC engines used for instructional purposes at research, teaching, or educational facilities (exempt per Regulation 2-1-114.2.2);
10. portable IC engines which are at a location for less than 72 consecutive hours (exempt per Regulation 2-1-114.2.3);
11. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship or barge (exempt per Regulation 2-1-114.2.4); and
12. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barrage, used to provide propulsion for any vehicle, train, ship or barge, and which is also used to supply mechanical or electrical power to ancillary equipment, which is affixed to or is a part of the vehicle, train, ship, boat, or barge (exempt per Regulation 2-1-114.2.5)

Loss of Exemption (LOE) Engines – On May 17, 2000, the general IC engine permit exemption was lowered from 250 to 50 HP. In addition, the exemption for portable and standby IC engines, and standby gas turbines was amended to allow equipment to operate for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) without triggering permit requirements. Subsequently, that permit exemption for portable and standby IC engines, and standby gas turbines was deleted on September 1, 2001. As a result, the following engines are considered LOE engines:

4. IC engine less than 250 HP installed prior to May 17, 2000 (LOE – Regulation 2-1-113.2.8);
5. Portable or standby IC engine installed prior to May 17, 2000 which was used on a temporary basis of no more than 30 days per calendar year at any one facility or used for the emergency pumping of water (LOE – Regulation 2-1-113.10); and
6. Portable or standby IC engine installed prior to September 1, 2001 which was used for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) and not subject to permits per Regulation 2-1-319 (LOE – Regulation 2-1-114.2.3)

Completeness Determination

The following Air District forms should be completed and fees provided for portable diesel engines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for owner/operator). For facility address, indicate the physical address where the equipment will be operated initially, or the mailing address, if it is within the Bay Area counties that the Air District covers.
2. Form ICE (1 per engine).
3. Manufacturer specification data including: fuel consumption, rated horsepower output, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
4. CARB-certified emission data or if no CARB-certified data, then EPA-certified emission data. If no such certified data exists, then load adjusted data from D2 testing.
5. For engines installed after May 17, 2000, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule B). If engine is a LOE engine, then the fees shall be calculated according to the Procedure: Permitting Loss of Exemption Engines for LOE engines.

Emission Calculations
The primary pollutants from IC engines are oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM10). In calculating these emissions, emission factor data from CARB, EPA, and/or the manufacturer are used to estimate emissions for NOx, CO, POC, and PM10. If NOx and POC (hydrocarbon) have a combined emission factor, Air District Policy: CARB Emission Factors for Diesel Engines - Percent HC in Relation to NMHC + NOx is to estimate that 5% of the NMHC+NOx emission factor as the POC emission factor when the CARB HC emission factor isn't available independently. The SO2 emission factor (0.05 lb/MMBTU) is from EPA AP-42, Table 3.4-1, which is based on full conversion of fuel sulfur to SO2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.05 wt% sulfur). PM10 certified level no greater than 0.1 g/bhp-hr means an emission level of 0.15 g/bhp-hr or less as determined during a steady-state engine certification test (ISO 8178).

Fire Pumps & Other Engines with No Emission Factor Data– Because of the special requirements of fire pumps, the engines on fire pumps are rarely CARB- or EPA- certified. In addition, the manufacturer rarely has emission factor data on these fire-pump modified engines. As a result, if no data exist, then emission factor data from EPA AP-42, Table 3.4-1, should be used.

The emission factors, which are typically in grams per brake-horsepower-hour (g/bhp-hr), are multiplied by the maximum annual hours of operations and the brake horsepower of the engine to determine the annual rates of emissions of the various criteria pollutants. Note that unless CARB or EPA certified emission factor data is used, the permit evaluator shall require source testing for any engine over 250 HP to verify the manufacturer's emission factors.

LOE Engines – In general, emission data on LOE engines often does not exist, because the engines predated existing emission standards. Because there is no cumulative increase associated with a LOE sources, per Regulation 2-2-208, emission calculations are not required for a LOE diesel engine.

Applicable Requirements
Air District Rules and Regulations
Portable diesel engines are not subject to:

- BACT
- TBACT
- Regulation 6, Rule 1
- Regulation 9, Rule 1
- Regulation 9, Rule 8

Non-road engines are subject to Regulation 2-2-302 and 2-2-303, and therefore are subject to offsets if the facility is at an offset threshold.

Non-road engines can be subjected to hours of operation limits based on risk in accordance with Regulation 2, Rule 5, but are not subject to TBACT.

Non-road engines are not subject to Major Facility Review per Section 2-6-114 and are not included in Title V permits.

ATCM
Portable diesel engines are not subject to the new California Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM) that went into effect on January 1, 2005, as long as they meets the definition of a "portable CI Engine" of ATCM section 93115, title 17, CA Code of Regulations, subsection (d)(50) [i..e., capable of being carried or moved from one location to another and not at the same location for more than 12 consecutive months]. Portable diesel engines are exempt from the stationary ATCM per subsection (c)(1). However, portable diesel engines are subject to their own portable ATCM. The portable ATCM has different standards for "in-use" engines and "low-use" engines.

"In-Use"
"In-Use" engines are those engines operated under valid permits or registrations as of December 31, 2005. The standard for "in-use" engines becomes effective on January 1, 2010. The Air District is working on developing policy for implementing this newest ATCM standard by 2010.

"Low-Use"
A "low-use" engine is defined as an engine, which is operated for 80 hours or less in a calendar year. "Low-use" engines are subject to Section 93116.1(b)(2)(B), which specifies that engines used exclusively in emergency applications or qualifying as low-use engines are subject to satisfying Section 93116.1(b)(3) of the portable ATCM by January 1, 2020. The Air District is working on developing policy for implementing this newest ATCM standard by 2020.

"New" (i.e., non-"In-use" and non-"Low-use")
Those engines that have not been permitted or registered prior to January 1, 2006 and do not qualify as "low-use" are subject to Section 93116.1(b)(2)(A) of the portable ATCM, which requires that they meet the most stringent of the federal or California emission standard for nonroad engines. The EPA has provided a summary of emission standards that specifies the emission standards for nonroad engines (i.e., Tier level) based on permitting year.

The permitting engineer should identify the applicable ATCM standards affecting the proposed engine and ensure that the proposed engine will comply with the applicable requirements of the portable ATCM. Template permit conditions are available for each category of portable engine to ensure portable ATCM compliance.

BACT
Non-road engines are not subject to BACT.

CEQA
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
Heath Risk Assessment
Unless they are LOE engines, typically any portable diesel engine over 50 hp will require a health risk assessment because the toxics trigger level for diesel particulate is low (0.26 lbs/yr). For portable diesel engines, a worst-case scenario health risk assessment shall be performed, because it can potentially be moved to any location that is not within 1000 feet of a school. A Facility may get a permit that acknowledges that the engine is portable but does not leave the site. In this case, the worst-case analysis will be made with the assumption that the engine does not leave the site.

A permit applicant may apply alternative and/or additional emissions control (e.g., catalyst-based diesel particulate filters (DPFs), diesel oxidation catalysts, ultra-low sulfur diesel fuel) or other risk reduction measures (e.g., increasing stack height within what is considered Good Engineering Practice, maximizing source/receptor separation distances, modifying operating hours to minimize public exposure) as necessary to reduce risks to acceptable levels. All engines not equipped with a DPF must be "plumbed" to facilitate the installation of a DPF at a future date.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- School Notifications – this requirement is triggered if and when they locate portable equipment within 1000 feet of any school.
- Health Risk Assessment
- Overburdened Communities

LOE Engines – Offsets and school notification requirements are not triggered for LOE engines, because they are not considered new or modified sources.

Permit Conditions

Standardized conditions for portable diesel engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

2.3.4 BIOGAS ENGINES

December 15, 2023

Process Description
Biogas internal combustion engines are generally used in the organic waste recovery industry (i.e. landfills and wastewater treatment) to provide on-site power and/or heat. During the wastewater treatment process, the digesters break down sludge using microorganisms which produce digester gas. Similarly, landfills produce landfill gas when materials stored in the landfill breaks down. The biogas engines may be cogeneration engines used to provide heat to digesters or some other process. The engines use available biogas (i.e., digester or landfill gas), sometimes blended with natural gas (biogas has about half the heat content of natural gas) to generate and meet on-site power requirements. The engines will generally include a gas treatment system to remove hydrogen sulfide (H_2S) and siloxanes from the biogas before combustion in the engines to prevent damage to the engines and the catalyst in the exhaust emissions abatement system and to reduce sulfur dioxide emissions generated by combustion in the engines. If the engines are subject to BACT for NOx, the engines will be controlled with selective catalytic reduction (SCR). If the engines are subject to BACT for CO or POC, the engines will be controlled with an oxidation catalyst.

Completeness Determination
The following District forms should be completed and fees provided per Schedule B of Regulation 3. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form ICE (1 per engine).
3. Form A (1 per abatement device)
4. Manufacturer specification data including fuel consumption, rated horsepower output, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
5. Manufacturer specification data for abatement devices: SCR, oxidation catalyst, gas conditioning.
6. Biogas constituent profile.
7. Form HRA (one per source), useful for 9-2 analysis even if source not subject to Regulation 2-5.
8. Fees, calculated per Regulation 3 (Schedule B)

Emission Calculations
The primary pollutants from natural gas engines are the products of combustion, including oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM10). The biogas engines will generally include a gas treatment system to remove hydrogen sulfide (H_2S) and siloxanes from the biogas before combustion in the engines to prevent damage to the engines and the catalyst in the exhaust emissions abatement system and to reduce sulfur dioxide emissions generated by combustion in the engines. In calculating emissions, emission factor data from the manufacturer should be used to estimate emissions for NOx, CO, POC, SO2, and PM10. In addition, manufacturer or actual source test data, if available, may be used to estimate emissions of toxic air contaminants.

Emission factors for criteria and toxic pollutants can also be found in EPA AP-42, Chapter 3.2 Natural Gas-fired Reciprocating Engines and the California Air Toxics Emission Factors (CATEF) database (Internal Combustion Engines; Natural Gas). The permit evaluator may choose the most representative emission factors to calculate emissions. For toxic emissions, emissions factors from CATEF are generally preferred over those found in AP-42. The emission factors should reflect any add-on abatement by reducing the emission factor by the abatement efficiency of the add-on device. The template permit conditions will require source testing of the engine(s) after abatement to verify the emission factors are used.

The toxics in landfill gas are usually well-characterized. Use the analyses submitted by each landfill. An average destruction efficiency for engines for organic TACs in landfill gas is 85%.

The organics in digester gas are about 200 ppm and may not be TACs.

An average destruction efficiency for engines for H2S in landfill gas and digester gas is 95%.

Formaldehyde is formed in the engines and is the most significant TAC for landfill gas and digester gas engines. The applicant should provide a guarantee on the formaldehyde mass emission rate for HRA review.

Greenhouse Gas Emissions
GHG emissions are not a regulated New Source Review (NSR) pollutant under 40 CFR 52.21(b)(50), unless they are emitted from a facility that exceeds the 250 ton per year major PSD threshold for another pollutant besides GHGs. Landfills and waste water treatment facilities are not in one of the 28 PSD source categories.

However, if a landfill is subject to CARB's Landfill Gas Methane rule, the landfill gas engines are also subject. Greenhouse gas emissions should be calculated and recorded in the application.

Applicable Requirements
District Rules and Regulations
Stationary biogas engines are subject to the Ringelmann No. 1 limitations of Regulation 6-1-301, unless the displacement is less than 1500 cubic inches. In this case, the engine is subject to the Ringelmann No. 2 limitation in 6-1-303. Properly operated and maintained engines are expected to meet these requirements. Each stack is also subject to the Regulation 6-1-310, Section 6-1-310.1, particulate weight limitation of 0.15 grains/dscf. Note that the permit evaluator should also review Regulation 6-1-310.3 to determine whether the engine has a Potential to Emit TSP (as defined in Regulation 2-1-217) greater than 1,000 kg per year. If it does, it must meet the limits specified in Table 6-1-310.3 (Exhaust Gas Rate vs. Allowable TSP Concentrations). The process weight requirements in Section 6-1-311 do not apply, because the definition of process weight in Section 6-1-207 excludes gases and liquids used as fuels. The template permit conditions may require initial source testing at each engine and subsequent periodic testing of the engines. Any testing for Regulation 6, Rule 1, is done by Method 5 and measures total suspended particulate only.

In accordance to Regulation 9-1-301, a person shall not emit from sources, other than ships, SO_2 in quantities which result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. In accordance with Regulation 9-1-302, a person shall not emit from any source, a gas stream containing SO_2 in excess of 300 ppm (dry). The template permit conditions will require annual source testing and quarterly analyses of the fuel sulfur content to ensure compliance with the limits.

Regulation 9, Rule 2 limits ground level concentrations of hydrogen sulfide to 0.06 ppm averaged over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes at the fenceline or beyond. With the biogas gas treatment system prior to combustion in the engines, ambient concentrations of H_2S are expected to be small. Nonetheless, the H_2S emissions from the engine should be estimated and modeled to determine compliance at the fenceline and beyond. Once the maximum concentration has been established, the H_2S emissions should be tested and monitored to assure compliance with Regulation 9-2 as well as Regulation 2-5. This is particularly important for H_2S sources that operate continuously.

Biogas engines are subject to the emission requirements of Regulations 9-8-302. Biogas and blended biogas/natural gas qualifies as a waste-derived fuel per Regulation 9-8-302. In accordance with Regulation 9-8-302, a person shall not operate a spark-ignited stationary internal combustion engine fired on waste derived fuels or any combination of waste and fossil-derived gaseous fuels and liquid fuels unless the following emission limits are met:

- NOx emissions shall not exceed 70 ppmv as corrected to 15% O_2, dry basis.
- CO emissions shall not exceed 2,000 ppmv as corrected to 15% O_2, dry basis.

Since the biogas engines are prime engines, they are subject to the periodic monitoring in Regulation 9-8-503, which requires the NOx and CO concentrations to be measured with a portable analyzer on a quarterly basis.

The initial source test and quarterly monitoring required by the template permit conditions will satisfy the requirements of Regulation 9-8-501 and 9-8-503, respectively.

Regulation 8, Rule 34, Solid Waste Disposal Sites
Landfill gas engines are subject to the above rule. The engine requirements are in Sections 8-34-301.4. Engines must reduce the amount of NMOC in the collected gases by at least 98 percent by weight or emit less than 120 ppm by volume of NMOC at the outlet, dry basis, expressed as methane, corrected to 3% oxygen. Section 8-34-412

requires an annual source test. Sections 8-34-501 requires records. Section 8-34-508 requires gas flow meters for the landfill gas. 8-34-509 requires the monitoring of key system operating parameters.

Acid Rain Regulations, 40 CFR 72 through 78
The potential applicability of the Federal Acid Rain Regulations contained in 40 CFR 72 through 78 should be checked for engines that burn natural gas or liquid fossil fuel along with the biogas and that also produce electricity for sale.

If the engine is a cogeneration engine that generates steam and electricity and supplies less than 25 MW output, it is not subject per the definition of utility unit in 40 CFR 72.2. However, if the cogeneration unit produces usable heat, but not steam, it is still a utility unit. However, Section 40 CFR 72.6(b)(4)(ii) exempts cogeneration units, as defined in 40 CFR 72.2, under 219,000 MWe-hrs/yr.

If the unit is not a cogeneration unit, it may have a partial exemption under the procedures in 40 CFR 72.7, New Units Exemption, if the sulfur content of the gaseous fuel is less than 0.05% by weight. Check the applicability in Sections 40 CFR 72.6 and 72.7.

If the unit is not a cogeneration unit, it may have a partial exemption under the procedures in 40 CFR 72.7, New Units Exemption, if the sulfur content of the gaseous fuel is less than 0.05% by weight. Check the applicability in Sections 40 CFR 72.6 and 72.7.

New Source Performance Standards (NSPS)
The 40 CFR, Part 60, Subpart JJJJ NSPS for spark-ignition (SI) internal combustion engines (ICE) applies to both engine manufacturers and engine owners. This discussion covers the requirements for owners and operators. Section 60.4230(a)(4) indicates that Subpart JJJJ applies to owners/operators of engines that commence construction after June 12, 2006, on the following schedule:

- July 1, 2007, where the engine power rating is greater than 500 hp except for lean-burn engines between 500 hp and 1,350 hp
- January 1, 2008, for lean-burn engines between 500 hp and 1,350 hp
- July 1, 2008, for engines under 500 hp

In accordance with 40 CFR Part 60.4233(e), SI ICE meeting the above criteria must comply with the emission limits in Table 1 of Subpart JJJJ. For landfill/digester gas fired engines $\geq$ 500 bhp, the Subpart JJJJ, Table 1 standards below are effective as of 7/1/2010. For landfill/digester gas fired engines > 500 bhp, the Subpart JJJJ, Table 1 standards below are effective as of 1/1/2011.:

Pollutant	**NSPS Limits: 40 CFR Part 60, Subpart JJJJ, Table 1**	
	g/bhp-hr	ppmv at 15% O2
NOx	2.0	150
CO	5.0	610
VOC	1.0	80

For the proposed engines, the owner/operator is subject to Section 60.4243(b) and must demonstrate compliance with the Subpart JJJJ, Table 1 limits by complying with 60.4243(b)(2) and using the test procedures in 60.4244. Pursuant to 60.4243(b)(2)(ii), the operator must keep a maintenance plan and records of maintenance conducted. The operator must also conduct initial and subsequent performance tests (every 8,760 hours of operation or every 3 years, whichever comes first). The testing requirements in template permit conditions will satisfy these requirements.

In accordance with 40 CFR 60.4245(a), the operator must maintain records of: all notifications, all maintenance conducted on the engines, and all performances tests. Initial notification is required pursuant to 40 CFR 60.4245(c) and 60.7(a)(1). The record keeping and notification requirements in template permit conditions will satisfy these provisions.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The biogas engines are subject to NESHAP Subpart ZZZZ. The engines that are subject to 40 CFR 60, Subpart JJJJ comply with Subpart ZZZZ by meeting the requirements of the subpart..

Older engines must comply with the requirements of NESHAP Subpart ZZZZ. Since most of these engines are at area sources of hazardous air pollutants, these engines are generally subject to the limitations in Table 2d to Subpart ZZZZ of Part 63. For most biogas engines, the requirements are periodic oil and filter changes, inspections of air cleaners, and inspections of belts and hoses. These requirements are in line 13 of the table.

Federal Plan for Landfills
Some landfills are subject to the Federal Plan for Landfills. If the landfill is subject, the engine will also be subject. For an overview of the requirements, see the Title V permit for Plant 1840, West Contra Costa Sanitary District pursuant to Application 27287.

NESHAPS, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills
Some landfills are subject to the above NESHAPS. If the landfill is subject, the engine will also be subject. For an overview of the requirements, see the Title V permit for Plant 1840, West Contra Costa Sanitary District pursuant to Application 27287.

CARB Landfill Methane Rule (LMR), Methane Emissions from Municipal Solid Waste Landfills
If a landfill is subject to this rule, the engine will be subject to the following requirements:

- Section 95464(b)(3)(A)(1): Methane destruction of 99% by weight, or, if the engine is lean burn, an outlet methane concentration to less than 3,000 ppmv, dry basis, corrected to 15 percent oxygen.
- Section 95464(b)(4): Annual source test or source test every three years if engine has been in compliance for three years (See regulation for details.)
- Section 95469(b)(2): Monitoring of parameters
- Section 95470(a)(1)(B): Records of downtime (See regulation for details.)
- Section 95470(a)(1)(H): Records of source tests
- Section 95470(a)(1)(K): Records of parameters
- Section 95470(a)(2)(A): Engine vendor specifications
- Section 95470(a)(2)(C): Percent methane reduction
- Section 95470(a)(e): Record storage
- Section 95470(b)(3): Annual report
- Section 95471(f)(1): Control Device Destruction Efficiency Determination

BACT
BACT for stationary biogas engines is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for biogas fired engines:

- I.C. Engine – Biogas Fired >= 50 hp

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

CEQA
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Per Section 42314 of the California Health and Safety Code, the District may not require facilities to provide offsets for projects that burn biogas and generate electricity if they meet certain requirements. In this case, the offsets are provided by the Small Facilities Bank, if the offsets are available. If these credits are provided, the facility does not have the option to burn natural gas instead of biogas, to the extent of the offsets provided.

Permit Conditions
Standardized conditions for biogas engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

2.4.1 MICRO TURBINES (25-1000 KW)

December 15, 2023

Process Description
This chapter is limited to microturbines firing natural gas. Microturbines are small combustion turbines that produce between 25 kW and 1000 kW of power.

A thorough explanation of general turbine technology is available from Chapter 3.1 (Stationary Gas Turbines) of AP-42 (Fifth Edition, Volume I). An explanation of microturbine technology is available from the EPA.

Any turbine with a maximum output rating greater than 50 hp is subject to permitting requirements per Regulation 2-1-114.2.1. However, if the turbine is used solely for instructional purposes at research, teaching, or educational facilities, they may be exempt from permitting requirements per Regulation 2-1-114.2.2.

Completeness Determination
The following Air District forms should be completed and fees provided for the microturbines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility)
2. Form C (one per source)
3. If combustion products exhaust into add-on abatement device, Form A (one per device)
4. Form P (one per exhaust)
5. If a Health Risk Assessment is triggered, Form HRA (one per source)
6. Fees, calculated per Regulation 3 (Schedule B)

Emission Calculations
The ideal hydrocarbon products of combustion in which a fossil fuel is burned are water vapor and carbon dioxide. All other products are considered pollutants, consisting mainly of NOx (Nitrogen Oxides), CO (Carbon Monoxide), POC (Precursor Organic Compounds in the form of unburned hydrocarbons), SOx (Sulfur Dioxide), and PM10 (Particulate Matter).

Emission factors of criteria pollutants from turbines are usually based on California Air Resources Board (CARB) certified data for Distributed Generation for nitrogen oxides (NOx), carbon monoxide (CO), and precursor organic carbons (POC). Based on maximum Pacific Gas & Electric Natural Gas Specification for Sulfur of 1 grain per 100 standard cubic feet, PM10 (as $(NH_4)_2SO_4$) and SO_2 emission factors are calculated.

Compound	Emission Factor	Unit	Reference
NOx	***	lb/MW-hr	Distributed Generation Certification (ARB Executive Order DG-###)
CO	***	lb/MW-hr	Distributed Generation Certification (ARB Executive Order DG-###)
POC	***	lb/MW-hr	Distributed Generation Certification (ARB Executive Order DG-###)
PM10	5.78E-03	lb/MMBtu	Based on Max PG&E Natural Gas Specification for Sulfur of 1 gr/100 scf
SO2	2.80E-03	lb/MMBtu	Based on Max PG&E Natural Gas Specification for Sulfur of 1 gr/100 scf

Note:
*** = Based on Distributed Generation Certification data

PM10 = (1 gr/100 scf)(lb/7000 gr)(1/1020 BTU/scf)(1x10E6BTU/MMBTU)(132 lb $(NH_4)_2SO_4$/32 lb S)
PM10 = 0.00578 lb/MMBTU

SO_2 = (1 gr/100 scf)(lb/7000 gr)(1/1020 BTU/scf)(1x10E6BTU/MMBTU)(64 lb $(NH_4)_2SO_4$/32 lb S)

SO_2 = 0.00280

Toxic Air Contaminant emissions from microturbines may be calculated using AP-42 Emission Factors from Table 3.1-3 "Emission Factors for Hazardous Air Pollutants From Natural Gas-Fire Stationary Gas Turbines", unless there is actual source test data available.

Compound	Emission Factor	Unit	Acute Trigger Level (lb/hr)	Chronic Trigger Level (lb/yr)
1,3-Butadiene	4.30E-07	Lb/MMBtu	None	1.10E+00
Acetaldehyde	4.00E-05	Lb/MMBtu	None	6.40E+01
Acrolein	6.40E-06	Lb/MMBtu	4.2E-04	2.30E+00
Benzene	1.20E-05	Lb/MMBtu	2.9E+00	6.40E+00
Ethylbenzene	3.20E-05	Lb/MMBtu	None	7.70E+04
Formaldehyde	7.1E-04	Lb/MMBtu	2.1E-01	3.00E+01
Naphthalene	1.30E-06	Lb/MMBtu	None	None
PAH	2.20E-06	Lb/MMBtu	None	1.10E-02
Propylene Oxide	2.90E-05	Lb/MMBtu	6.8E+00	4.90E+01
Toluene	1.30E-04	Lb/MMBtu	8.2E+01	1.20E+04
Xylenes	6.40E-05	Lb/MMBtu	4.9E+01	2.70E+04

Applicable Requirements

Air District Rules and Regulations

A microturbine is not subject to the requirements of Regulation 9-9, per Regulation 9-9-110, because it will typically have a heat input rating of less than 5 MM Btu/hr. The microturbine may be subject to a limited exemption from Regulation 9, Rule 9 due to low fuel usage per 9-9-112.

A microturbine will be subject to and is expected to comply with the SO_2 ground level concentration and general emission limitations of Regulation 9, Rule1, because it will be fired on natural gas with a maximum sulfur content of 1 grain per 100 scf, which is the maximum PG&E natural gas specification for sulfur.

New Source Performance Standards (NSPS)

All stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired is subject to the Subpart GG of Part 60. However, a microturbine will typically have heat input rating much less than 10 million BTU per hour and therefore will not be subject to Subpart GG. The permit evaluator should review the microturbine application to confirm that the proposed microturbine is exempt from the NSPS.

Best Available Control Technology (BACT)

In general, a microturbine which has a CARB Distributed Generation certification (i.e., Executive Order DG-###) will not trigger a BACT review because criteria pollutant emissions will be less than 10 pounds per operating day. The permit evaluator should review the microturbine application to ensure that the proposed microturbine does not trigger BACT review. If BACT is triggered, the permit evaluator should conduct a BACT determination to ensure that the source meets BACT requirements.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration

- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
As long as the microturbine has a CARB Distributed Generation certification (i.e., Executive Order DG-###), there are no permit conditions required. Because emission calculations for each microturbine are based upon 24 hour per day, 365 day per year operation, the permit will not require permit conditions to limit fuel use or specify recordkeeping.

3.1 BULK LOADING FACILITIES

December 15, 2023

Process Description
EPA's Chapter 5.2 (Transportation and Marketing of Petroleum Liquids) of AP-42 provides information regarding the transportation and marketing of petroleum liquids. In addition, fugitive emissions from leaking process equipment and control systems include pumps, valves, compressors, and flanges. The emissions from these components should be identified and accounted for with the application bulk loading facility. The handling of fugitive emissions is covered in the chapter for Petroleum Refinery Fugitive Emissions. This chapter covers bulk loading terminals and plants and marine loading operations. A gasoline bulk terminal is a distributing facility which receives gasoline by other than tank truck or rail car, stores it in stationary tanks, and loads it into tank trucks for delivery to gasoline bulk plants, service stations or other distributing points. A gasoline bulk terminal is a distributing facility, which receives gasoline by tank truck, stores it in stationary tanks, and loads it into tank trucks for delivery to service stations or other distribution points.

Modifications, replacement, or addition of fugitive components (e.g., valves, flanges, pumps, compressors, relief valves, process drains) at existing permitted process units at petroleum refineries, chemical plants, bulk terminals or bulk plants are exempt from permitting requirements per Regulation 2-1-128.21, provided that the cumulative emissions from all additional components installed a given process unit during any consecutive twelve month period do not exceed 10 pounds per day, and that the components meet applicable requirements in Regulation 8-18. However, even if the proposed change in fugitive components is exempt per Regulation 2-1-128.21, an application for an "alteration" of the process unit is required, per Regulation 2-1-233 and 3-304.

Storage vessels, which contain hydrocarbon condensate, require a permit if the vessel is greater than 260 gallons in capacity, per Regulation 2-1-123.1 and contain an organic layer which is greater than 1 weight percent VOC per Regulation 2-1-123.6. The permitting of these storage tanks is covered in the permit handbook for Organic Liquid Storage Tanks.

Completeness Determination
The following Air District forms should be completed and fees provided for the bulk loading facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form T (one per loading rack).
3. Identification of the total number of components (pumps, valves, compressors, and flanges of bulk loading facility).
4. If the bulk loading rack exhausts into an add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule B) for compressor engines, (Schedule C) for condensate tanks; and (Schedule F) for dehydrators.

Emission Calculations
According to Chapter 5.2 of EPA's AP-42, loading losses are the primary source of evaporative emissions from rail tank, tank truck, and marine vessel operations.

Reasonable Achievable Control Technology (RACT) or Best Available Control Technology (BACT), if applicable, emission levels should be used to estimate bulk-loading losses with the proposed, maximum annual throughput. If a lower limit is demonstrated, a lower emission limit may be used to estimate bulk-loading losses:

POC = Maximum Projected Throughput (gal/yr)(Emission Factor lb/1000 gal)

Operation	Emission Factor (lb/1000 gal)
Gasoline Bulk Terminal	0.08 (RACT) *
	0.028 (BACT)
Gasoline Bulk Plant	0.50 (RACT) *
Gasoline Marine Loading	0.05 (RACT) *
Non-Gasoline Bulk Loading	0.17 (RACT) *

*
Regulation 8-6-301 limits non-gasoline bulk terminals losses to 0.17 lb per 1000 gallons; Regulation 8-33-301 limits bulk terminal losses to 0.08 pound per 1000 gallon; Regulation 8-39-302 limits bulk plant losses to 0.50 pounds per 1000 gallons, and Regulation 8-44-304 limits marine loading losses to 2 pounds per 1000 barrels (0.05 lb/1000 gal).

If other fuels (such as diesel or jet) are being distributed, the emission factors for these fuels can be obtained from Chapter 5.2 of EPA's AP-42. Fugitive emissions should also be estimated. The handling of fugitive emissions is covered in the chapter for Petroleum Refinery Fugitive Emissions.

The permit evaluator should request that the applicant provide a detailed breakdown of the components, which make up the gasoline. Generally, gasoline consists of the following compounds:

Toxic Pollutant	% by volume in gasoline	Health Risk Assessment (lb/yr)
Benzene	up to 5%	6.7
Toluene	up to 35%	39000
Xylenes	up to 25%	58000
n-Hexane	up to 8%	83000
Naphthalene	up to 1.1%	270
Styrene	up to 4%	140000

Then, based on the total organic emissions estimated and the toxics components breakdown, the permit evaluator should ensure that the emission calculations include the hourly and annual emission estimates for these TACs to determine whether an acute or chronic health risk assessment trigger level listed in Table 2-5-1 of Regulation 2-5 is exceeded.

Applicable Requirements

Air District Rules and Regulations

Non-gasoline bulk terminals and bulk plants are subject to Regulation 8-6 (Organic Liquid Bulk Terminals and Bulk Plants), while gasoline bulk terminals are subject to Regulation 8-33 (Gasoline Bulk Terminals and Gasoline Delivery Vehicles) and gasoline bulk plants are subject to Regulation 8-39 (Gasoline Bulk Plants and Gasoline Delivery Vehicles). Regulation 8-44 (Marine Tank Vessel Operation) regulates marine loading operations. Each applicable regulation specifies an emission limit. The permit evaluator should review the application and ensure that the applicant has or will demonstrate compliance with the applicable emission standards and operating requirements.

Best Available Control Technology (BACT)

The following are applicable BACT requirements for:

Bulk Loading Facilities
- Marine, Loading
- Tank Truck & Rail Car Bulk Loading (except Gasoline Bulk Terminals)
- Tank Truck & Rail Car Bulk Loading - Gasoline Bulk Terminals

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NSPS
Gasoline bulk terminals and bulk plants are subject to NSPS Subpart XX—Standards of Performance for Bulk Gasoline Terminals. In general, Air District Regulation 8-39 is more stringent than Subpart XX, and so compliance with Regulation 8-39 is also compliance with Subpart XX.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for bulk loading operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

3.2 GASOLINE DISPENSING FACILITIES

July 3, 2023

Process Description

This chapter covers the permitting of Gasoline Dispensing Facilities (GDFs). GDFs with a non-exempt storage capacity of 260 gallons or more must have a Permit to Operate, including those exempt from the vapor recovery standards in Regulation 8, Rule 7. Projects increasing non-exempt throughput involving the vapor recovery system at GDFs must be authorized prior to construction. This includes the replacement or installation of tanks and/or vapor recovery lines, dispenser modifications and the addition of nozzles to a facility. Replacement of individual dispensers due to end-user damage does not require authorization. Piping plans illustrating a California Air Resources Board (CARB) certified system are required.

CARB, under Health & Safety Code Section 41954, has sole authority for certifying vapor recovery systems and their components for use in California. Equipment vendors submit their systems to CARB for testing and evaluation. Approved systems are issued an Executive Order, which sets specifications for the installation and operation of the system and lists allowable components and configurations. There are currently more than 80 Executive Orders in force for Phase I (vapor recovery during transfer of gasoline between any cargo tank and any stationary tank at GDF), Phase II (vapor recovery during motor vehicle refueling operations from any stationary tank at GDF) systems and Standing Loss Control (SLC) (passive emissions from aboveground tanks). Stations with Phase II controls are required to have Phase I controls, while almost all stations with Phase I are also required to have Phase II recovery. Most aboveground tanks are required to have SLC. Regulation 8-7 includes several exemptions for Phase I and Phase II requirements based on size limitations and technical considerations. Most GDFs exempt from vapor recovery requirements are small, non-retail facilities with low throughputs that service a limited fleet of vehicles. Many refuel vehicles such as boats or aircraft for which Phase II vapor recovery is not effective.

Completeness Determination

The following Air District forms should be completed and fees provided for the gasoline dispensing facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-G (one for facility).
2. If Health Risk Assessment is triggered, Form HRA (one per facility).
3. Fees, calculated per Regulation 3 (Schedule D).

Emission Calculations

Emissions from GDFs are a function tank type (underground vs. aboveground) vapor recovery equipment installed (SLC, Phase I, Phase II) and characteristics of the fleet being refueled (ORVR penetration, Phase II compatibility). Emissions from individual compounds are a function of type of emissions (liquid phase emissions vs. vapor phase emissions) and speciation of liquid and vapor phases.

A spreadsheet containing emission factors for all commonly encountered permutations of the above variables is maintained. Overall VOC emission factors are based on CARB emission factors and allowable emission limits. Emission factors for individual components are based on speciation data of liquid and vapor phases. Emission factors are periodically updated to incorporate improved emissions data, new emissions standards, and changes in fuel composition. Emissions of VOCs and individual compounds are calculated by multiplying the GDF throughput by the appropriate emission factor. The spreadsheet can be found here.

Based on the total organic emissions estimated and the toxics components breakdown, the permit evaluator should ensure that the emission calculations include the hourly and annual emission estimates for these TACs to determine whether an acute or chronic risk screening trigger level listed in Table 2-5-1 of Regulation 2-5 is exceeded.

Applicable Requirements

Air District Rules and Regulations

Gasoline dispensing facilities are subject to Regulation 8-7 (Gasoline Dispensing Facilities). The permit evaluator should review the application and ensure that the applicant has or will demonstrate compliance with the applicable emission standards and operating requirements.

Best Available Control Technology (BACT)

BACT for gasoline dispensing facilities is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Gasoline Dispensing Facilities
- Gasoline Dispensing Facility

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NESHAPS

If the facility is a major source of HAPs, the gasoline dispensing facility may be subject to NESHAPS 40 CFR 63 (Subpart R): Gasoline Distribution MACT,. The NESHAP standards require submerged fill for the cargo and stationary tanks at the GDF. Regulation 8-7 is already more stringent than the NESHAP and compliance with Regulation 8-7 would ensure compliance with the NESHAP.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for gasoline dispensing operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

3.3 OIL-WATER SEPARATORS

December 15, 2023

Process Description

An oil-water separator is defined in Regulation 8-8 as any device used to separate liquid organic compounds from oil-water streams (excluding wastewater separator forebays, air floation units, sludge-dewater units, oil-water separator and/or AF Unit slop oil vessels, and junction boxes). Regulation 8-8 also contains the definitions of these excluded components.

Any wastewater (oil-water) separator as defined in Regulation 8-8, which processes less than 200 gallons per day of wastewater containing organic liquids is exempt from permitting requirements per Regulation 2-1-128.14.

Completeness Determination

The following Air District forms should be completed and fees provided for the oil-water separators. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per oil-water separator)
3. If oil-water separator is abated, then Form A (one per device).
4. If Health Risk Assessment is triggered, Form HRA (one per source).
5. Fees, calculated per Regulation 3 (Schedule F).

Emission Calculations

The primary pollutants from oil-water separators is organic compounds (POC). AP-42, Table 5.1-2 (Fugitive Emission Factors for Petroleum Refineries) includes an emission factor for oil-water separators:

Oil-Water Separator	Uncontrolled (lb/1000 gal)	Controlled (lb/1000 gal)
POC	5	0.2

Using the AP-42 factor (see table) with the maximum, annual projected throughput (gallons/year) of wastewater will estimate the annual estimated emissions of POCs from the proposed oil-water separator:

POC = Maximum Projected Throughput (gal/yr)(Emission Factor lb/1000 gal)

Applicable Requirements

Air District Rules and Regulations

Oil-water separators are subject to the standards of Regulation 8-8. The permit evaluator should review Regulation 8-8 and determine whether the proposed oil-water separator is indeed subject to its standards, because there are several rule exemptions that may exempt non-petroleum refinery-rated oil-water separators from the standards of the rule. If Regulation 8-8 is applicable, the permit evaluator should determine whether the proposed oil-water separator will comply.

Best Available Control Technology (BACT)

BACT for oil-water separators is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Water Treating - Oil/Water Separator
- < 250 Gallons/min
- >= 250 Gallons/min
- Water Treating - Sour Water Stripping

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NSPS
The oil-water separators at a petroleum refinery may be subject to the NSPS, Subpart QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems. The permit evaluator should review the proposed application to ensure that any proposed oil-water separator is either exempt from the NSPS or complies with the NSPS.

NESHAPS
If the facility is a major source of HAPs, the oil-water separators may be subject to NESHAPS 40 CFR 63 Subpart VV: National Emission Standards for Hazardous Air Pollutants for Oil-Water Separators and Organic-Water Separators. The permit evaluator should review the proposed application to ensure that any proposed dehydrator and/or storage vessels are either exempt from the NESHAPS or complies with the NESHAPS, if the facility is a major source of HAPs.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for oil-water separators are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

3.4 PETROLEUM REFINERY FUGITIVE EMISSIONS

December 15, 2023

Process Description
EPA's Chapter 5.1 (Petroleum Refining) of AP-42 provides information regarding the petroleum refining industry.

Fugitive emissions from leaking process equipment and control systems include pumps, valves, compressors, and flanges. The emissions from these components should be identified and accounted for in the application for the proposed change or addition of new process equipment at the petroleum refinery.

Modifications, replacement, or addition of fugitive components (e.g., valves, flanges, pumps, compressors, relief valves, process drains) at existing permitted process units at petroleum refineries, chemical plants, bulk terminals or bulk plants are exempt from permitting requirements per Regulation 2-1-128.21, provided that the cumulative emissions from all additional components installed a given process unit during any consecutive twelve month period do not exceed 10 pounds per day, and that the components meet applicable requirements in Regulation 8-18. However, even if the proposed change in fugitive components is exempt per Regulation 2-1-128.21, an application for an "alteration" of the process unit is required, per Regulation 2-1-233 and 3-304.

Storage vessels, which contain hydrocarbon condensate, require a permit if the vessel is greater than 260 gallons in capacity, per Regulation 2-1-123.1 and contain an organic layer which is greater than 1 weight percent VOC per Regulation 2-1-123.6. The permitting of these storage tanks is covered in the permit handbook for Organic Liquid Storage Tanks. However, the fugitive components that are added to route product from the refinery to and from the tank should be accounted for as described in the Emission Calculations section of this permit handbook.

Completeness Determination
The following Air District forms should be completed and fees provided for the petroleum refinery fugitive components. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per process vessel)
3. Identification of the total number of components (pumps, valves, compressors, and flanges added to petroleum refinery).
4. If process vessel or fugitive components are abated, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 Schedule G1 for alkylation units, asphalt oxidizers, benzene saturation, catalytic reforming, chemical treating units, converting units, distillation units (1000 barrels/hour or less), hydrogen manufacturing, hydrotreating or hydrofining, isomerization, MTBE process units, sludge converters, solvent extraction, sour water stripping, and miscellaneous process units; Schedule G2 for stockpiles and wastewater treatment at petroleum refineries; and Schedule G3 for waste gas flares, cracking units, and distillation units greater than 1000 barrel/hour

Emission Calculations
FUGITIVE EMISSIONS
Sources of emissions are from the fugitive emissions from fugitive components, such as valves, flanges, connectors, flanges, and pumps. The emission factors proposed for this installation are the "uncontrolled" emission factors from the "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities" prepared by the California Air Pollution Control Officers Association Engineering Managers Committee (CAPCOA) and the California Air Resources Board (ARB). The Average Emission Factor Method (Method 1) of the Guidelines may be used as the emission factors for the fugitive components (see Table IV-1b).

TABLE IV-1b: 1995 EPA PROTOCOL MARKETING TERMINAL AVERAGE EMISSION FACTORS[a]

Component Type	Service Type	THC Emission Factor (kg/hr/source)[b]
Valves	Gas Light liquid	1.3E-05 4.3E-05
Pump seals	Gas Light liquid	6.5E-05 5.4E-04
Others (compressors and others)[c]	Gas Light liquid	1.2E-04 1.3E-04
Fittings (connectors and flanges)[d]	Gas Light liquid	4.2E-05 8.0E-06

Each of the five major refineries (Chevron, ConocoPhillips, Shell, Tesero, and Valero) in the Bay Area already have Air District-approved fugitive emission factors derived from the Correlation Equation Method (Method 3) of the Guidelines, based on a comprehensive inspection program of the fugitive components at each of the refineries. When reviewing permits for these five refineries, the permit evaluator should use the refinery's Air District-approved refinery-specific fugitive emission factors.

The permit evaluator should ensure that the permit application includes all new or changing fugitive components counts so that they can estimate emissions of the proposed change or new installation.

Emissions (lb/hr) = # of Components x Emission Factor (kg/hr/source) x 2.2 lb/kg
Emissions (lb/day) = Emissions lb/hr x 24 hr/day
Emissions (lb/yr) = Emissions lb/day x 365 day/yr
Emissions (TPY) = Emissions lb/yr / 2000 lb/ton

The permit conditions will reiterate the number of fugitive components and require that upon startup a final count of the fugitive components be provided to the Air District. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts (and additional offsets provided, if necessarily).

The permit evaluator should request that the applicant provide a detailed breakdown of the components which make up the gasoline. Generally, gasoline consists of the following compounds:

Toxic Pollutant	% by volume in gasoline	Health Risk Assessment (lb/yr)
Benzene	up to 5%	6.7
Toluene	up to 35%	39000
Xylenes	up to 25%	58000
n-Hexane	up to 8%	83000
Naphthalene	up to 1.1%	270
Styrene	up to 4%	140000

Then, based on the total organic emissions estimated and the toxics components breakdown, the permit evaluator should ensure that the emission calculations include the hourly and annual emission estimates for these TACs to determine whether an acute or chronic health risk assessment trigger level listed in Table 2-5-1 of Regulation 2-5 is exceeded.

Applicable Requirements

Air District Rules and Regulations

Fugitive components are petroleum refineries are subject to Regulation 8-18 (Equipment Leaks). The permit evaluator should review the application and ensure that the applicant has or will demonstrate compliance with the applicable emission standards and operating requirements.

Best Available Control Technology (BACT)

BACT for petroleum refinery fugitive emissions s is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Petroleum Refinery Fugitive Emissions
- Flare - Refinery
- Flanges
- Pressure Relief Valves, Emergency - Process Units
- Process Valves
- Pumps
- Compressors

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NSPS

Fugitive components at petroleum refineries are subject to NSPS Subpart GGG - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, which requires compliance the equipment leak standards of NSPS Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. In general, Air District Regulation 8-18 is more stringent than Subpart VV and GGG, and so compliance with Regulation 8-18 is also compliance with Subparts VV and GGG.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions

Standardized conditions for petroleum refinery fugitive components are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

3.5 NATURAL GAS FACILITIES AND CRUDE OIL FACILITIES

July 5, 2023

Process Description

Natural gas production facilities engage in the production of natural gas, which is obtained from natural gas wells. Natural gas pumped from a well is first fed to an inlet separator that removes liquid water, heavy hydrocarbons, brine, and particulate matter from the incoming natural gas. The liquid and contaminants are stored in condensate storage tank(s). Organic emissions from the hydrocarbons are associated with the condensate tanks. Condensate is later removed via tank truck. The natural gas may then be sent to a compressor system to compress the gas to the required pressure to be sent to the natural gas pipeline.

Crude oil production facilities engage in the production of crude oil, which is obtained from crude oil wells. Crude oil pumped from a well is first fed to an inlet separator that removes contaminated water (containing hydrocarbons) and natural gas from the incoming crude oil. The contaminated water is stored in storage tank(s) and/or is pumped for disposal into a water injection well. The natural gas is sent to a compressor system for disposal into a gas injection well, or the gas may also be used as fuel in engines to provide power at the facility. The crude oil may then be pumped to the crude oil pipeline and/or stored in a sales tank. Materials stored in tanks may be loaded into tank trucks for delivery off-site for further processing.

The potential sources of air pollution at these facilities include production and injection wells, compressor engines, fugitive emissions from leaking process equipment, storage and separator vessels for hydrocarbon condensate and/or crude oil, truck loading operations, and if present, glycol dehydrators. Glycol dehydrators are used at natural gas facilities to further remove water from natural gas streams to prevent the formation of hydrates and corrosion in the pipelines. Triethylene glycol (TEG) is used in 95% of natural gas dehydrators, while the remaining 5% use ethylene glycol (EG) or diethylene glycol (DEG).

In the dehydrator, the “lean” (low water content) glycol contacts the “wet” (high water content) natural gas stream and absorbs water from the gas. The glycol exiting the bottom of the absorber is now “rich” and has higher water content. The gas exiting the top of the absorber has lower water content and is referred to as dry gas. The rich glycol is sent to the regenerator (reboiler and stripping column) where it is heated to drive off the absorbed water and is recycled to the absorber. The reboiler supplies heat to regenerate the rich glycol in the still by simple distillation. The separation is relatively easy because of the wide difference in boiling points of water and glycol. A still or stripping column is used in conjunction with the reboiler to regenerate the glycol. On many dehydrators, the still is placed vertically on top of the reboiler so that vapors from the reboiler directly enter the bottom of the distillation column. To prevent excessive glycol losses due to vaporization at the top of the column, a condenser usually controls reflux. A phase separator (flash tank) between the absorber and the still may exist to remove the lighter dissolved gases from the warm rich glycol, which thereby reduces VOC emissions from the still. The glycol-circulating pump moves the glycol through the system. Hydrocarbons in the natural gas are removed with the water and the rich glycol stream can contain as much as 1%-dissolved hydrocarbons. These hydrocarbons are driven off in the regenerator and are emitted into the atmosphere along with the water, unless the exhaust from the regenerator is abated using a reboiler and/or condenser. The VOCs from the regenerator vent contain benzene, toluene, ethylbenzene, and xylene isomers (collectively known as BTEX).

Production and injection wells require a permit per Regulation 2-1-128.15. Production wells may be grouped as a single source if the wells are located in the same general area. Injection wells may be grouped as a single source if the wells are located in the same general area. The source description for each group of wells should include the total number of wells and identification numbers.

Any internal combustion engine over 50 HP requires a permit per Regulation 2-1-114.2.1. Most natural gas and crude oil production facilities use natural gas engines to run their compressors; and such engines are generally greater than 50 HP. Hence, most compressor engines require air permits.

The natural gas heaters used in mechanical separators typically have firing rates less than 1 MMBTU/hr. Hence, such heaters are exempt from permitting requirements per Regulation 2-1-114.1.2 provided that the emissions are only from combustion and the backstop provisions contained in Regulation 2-1-319 are not exceeded.

Fugitive emissions from leaking process equipment and control systems include pumps, valves, compressors, and flanges. The emissions from these components should be identified and accounted for with the application for the natural gas or crude oil production facility.

Storage vessels and separator vessels, which contain hydrocarbon condensate, require a permit if the vessel is greater than 260 gallons in capacity, per Regulation 2-1-123.1 and contain an organic layer which is greater than 1 weight percent VOC per Regulation 2-1-123.6. The permitting of oil/water separators is covered in the permit handbook chapter for Oil/Water Separators. The permitting of these storage tanks is covered in the permit handbook chapter for Organic Liquid Storage Tanks. In addition to emissions from tank breathing and working losses (as described in the permit handbook chapter for Organic Liquid Storage Tanks), tanks containing produced liquid (crude oil or condensate) are also expected to also release emissions from flash losses. Further information is provided in the section below entitled "Storage and Separator Tanks"),

The loading of crude oil, produced water, and/or hydrocarbon condensate into tank trucks requires a permit unless an exemption in Regulation 2-1-123.3 is applicable. Truck loading operations are covered in the chapter for Bulk Loading Facilities.

Completeness Determination

The following Air District forms should be completed and fees provided for the natural gas facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form C (one per compressor engine and per heater)
3. Form G (one per dehydrator, one per group of production wells, and one per group of injection wells).
4. Form T (one per tank and per truck loading operation).
5. Natural Gas Analysis of "wet" gas.
6. Dehydrator Specifications, if present.
7. Identification of the total number of components (pumps, valves, compressors, and flanges of natural gas or crude oil production facility).
8. Identification of the total number of high-bleed and low-bleed pneumatic devices.
9. Water analysis of the condensate.
10. If compressor engine, dehydrator, or condensate tank exhausts into add-on abatement device, Form A (one per device).
11. If Health Risk Assessment is triggered, Form HRA (one per source).
12. Fees, calculated per Regulation 3 (Schedule B) for compressor engines, (Schedule C) for condensate tanks; and (Schedule F) for dehydrators.

Emission Calculations

WELL EMISSIONS

Emissions associated with production and injection wells are from fugitive components. Fugitive emissions from component leaks occurring at wells shall be included under the fugitive emissions calculations.

COMPRESSOR EMISSIONS

Emissions from the compressor engines are estimated using the emission factors associated with that engine. Refer to the chapter 2.3.2.

DEHYDRATOR EMISSIONS

Emissions from the dehydrator are from the reboiler stack and the flash drum. The flash drum gases are typically used to fuel the reboiler. A VOC control efficiency of 98% is expected for the reboiler. A condenser usually abates the vent from the reboiler stack. The resulting emissions from the reboiler burner exhaust (from the flash gas) and the reboiler stack and condenser should be estimated using the Gas Research Institute's GRI-GLYCalc Program as recommended by EPA. To use this program, the applicant must provide the following information:

1) Dehydrator specifications
2) Wet gas analysis

The permit should contain a limit on hourly mass emission rates for VOC and benzene to ensure that the stated destruction efficiencies are achieved. In addition, an initial source test and additional annual source tests in the summer months should also be required in the permit conditions. The permit evaluator should summarize and include a copy of the results in the evaluation report.

FUGITIVE EMISSIONS

Additional sources of emissions are from the fugitive emissions from valves, flanges, connectors, compressors, and pumps. For each source in a permit application, the applicant must provide the number of fugitive components in each of the different service lines (i.e., wet gas, dry gas, rich glycol, lean glycol). These fittings are exempt from the Natural Gas and Crude Oil Production rule as per Regulation 8-37-111, since this is not a distribution, storage, or transportation facility. The fittings are also exempt from the Valves and Flanges at Chemical Plants rule as per Regulation 8-22-113, since only natural gas or crude oil is being handled. Therefore, the emission factors proposed for this installation are the "uncontrolled" emission factors from the "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities" prepared by the California Air Pollution Control Officers Association Engineering Managers Committee (CAPCOA) and the California Air Resources Board (ARB). The applicant will be limited to 10,000 ppmv of total hydrocarbons (THC) at the fugitive components so that the "<10,000 ppm" emission factors of Table IV-2C "CAPCOA Oil and Gas Production Screening Value Range Emission Factors" may be used. The annual fugitive emission estimates for a given facility shall include emissions from a single pegged (>10,000 ppm) component leak occurring for 90 days, as allowed under Regulations 8-37-301 and 8-37-305. The ">10,000 ppm" emission factors may be used for this single pegged leaking component. For a conservative emission estimate, the highest ">10,000 ppm" emission factor may be used for the single pegged leaking component. Other Air District-approved methodologies for estimating emissions may be acceptable provided that the calculated emissions are enforceable through permit conditions.

Component Type	Service Type	< 10,000 ppmv THC Emission Factor (kg/hr/source)[b]	≥ 10,000 ppmv THC Emission Factor (kg/hr/source)[b]
Valves	Gas/Light Liquid	3.5E-05	1.386E-01
	Light Crude Oil	1.90E-05	7.07E-02
	Heavy Crude Oil	1.40E-05	N/A
Pump seals	Gas/Light Liquid	9.96E-04	8.9E-02
	Light Crude Oil	2.65E-04	8.9E-02
	Heavy Crude Oil	N/A	N/A
Others[c]	Gas/Light Liquid	1.47E-04	1.376E-01
	Light Crude Oil	1.31E-04	7.1E-03
	Heavy Crude Oil	5.7E-05	N/A
Connectors	Gas/Light Liquid	1.20E-05	2.59E-02
	Light Crude Oil	1.0E-05	2.34E-02
	Heavy Crude Oil	8.0E-06	N/A
Flanges	Gas/Light Liquid	2.80E-05	6.1E-02
	Light Crude Oil	2.4E-05	2.6E-01
	Heavy Crude Oil	2.3E-05	N/A
Open-ended lines	Gas/Light Liquid	2.4E-05	5.49E-02
	Light Crude Oil	1.8E-05	2.22E-02
	Heavy Crude Oil	1.5E-05	7.11E-02

[a]Source: Fax Transmittal from STAR Environmental, dated December 17, 1997, entitled *Comparison of Screening Value Range Factors for Oil and Gas Production Operations*. These factors were developed using the separated oil and gas production default zero factors and pegged factors. Correlation equations for the petroleum industry (revised to reflect the technical corrections and adjustments discussed in Section III of the implementation guidelines) were used for components with screening values between background and 9,999 ppmv.
[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities.
[c]The "Others" component type was derived from compressors, diaphragms, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods stuffing boxes, relief valves, and vents. This "Others" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps, or valves.

To determine the VOC or NMHC emissions and toxic air contaminant emissions from the fugitives associated with the dehydrator, the composition of each stream from the GRI-GLYCalc program is used. Combustion emissions from the reboiler are determined using AP-42 Emission Factors from Table 1.4-1 for Natural Gas Combustion for Boilers less than 100 MMBtu/hr for criteria pollutant emissions and BAAQMD Toxic Air Contaminant (TAC) Emission Factor Guidelines Appendix A Default TAC Emission Factors for Specific Source Categories (August 2020) for TAC emissions. Refer to the chapter 2.1 and https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_appendixa_august_2020-pdf.pdf?la=en. However, for the section 2-1-114.1 exemption, section 2-1-316 is not applicable.

To determine the VOC or NMHC emissions and toxic air contaminant emissions from the fugitives associated with other sources (i.e. engines, tanks, etc.), use the composition of each stream associated with the given source.

PNEUMATIC DEVICE EMISSIONS
Natural gas powered pneumatic devices operate valves automatically and control pressure, flow, temperature, and liquid levels. As part of normal operation, these devices release natural gas to the atmosphere. Pneumatic devices are categorized as continuous bleed, actuating/intermittent bleed, and self-contained devices. A continuous bleed device is used to modulate flow, liquid level, or pressure and will generally vent gas at a steady rate. An actuating or intermittent bleed device performs snap-acting control and release gas only when it strokes a valve open or closed or as it throttles gas flow. A self-contained device releases gas into the downstream pipeline, not to the atmosphere. According to an EPA guidance document "Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry," any pneumatic device that bleeds in excess of 6 scf/hr is categorized as a high-bleed device. As described in the EPA document and based on industry trends, most existing high-bleed devices can be replaced with low-bleed devices or retrofitted or configured for low-bleed operation.

For each source in a permit application, the applicant must provide the total number of high-bleed and low-bleed pneumatic devices. Emissions for a given pneumatic device may be determined by applying the wet gas analysis data to the gas bleed rate for the device. For facilities that do not use high-bleed devices, the default bleed rate of 6 scf/hr may be assumed in the emission calculations in lieu of device-specific bleed rates. Facilities that use high-bleed devices must provide device-specific bleed rates and supporting documentation for each high-bleed device, and such facilities may be subject to additional fugitive monitoring and/or control requirements. The aforementioned EPA document contains a list of bleed rates for various pneumatic devices.

STORAGE AND SEPARATOR TANKS
The storage or separator tank emissions are estimated using AP-42 Chapter 7.1 (Organic Liquid Storage Tanks). The tank contains condensate with a layer of volatile hydrocarbons. The hydrocarbons float to the top of the tank and emissions should be calculated assuming that the tank contents are 100%. Based on analysis of the condensate from natural gas production wells within the District, it has been determined that the hydrocarbon is similar to gasoline with a RVP of 9. This is a very conservative estimate. Refer to chapter 4.

As described previously, tanks containing produced liquid (crude oil or condensate) also expected to also release emissions from flash losses. Flash losses occur when the pressure of a liquid is decreased, or the temperature is increased. Flash emissions occur when produced liquid is exposed to temperature increases or pressure decreases during the transfer from the production separators (or similar sources) into atmospheric storage tanks. To determine emissions from flash losses, gas samples of the headspace of such storage tanks (either on-site or a representative sample) must be obtained and tested. Such gas samples shall be obtained in accordance with CARB flash test procedure (in Appendix C on page 50 of the CARB Oil and Gas Regulation). Results of these condensate and water phase flash tests provide the composition (weight fractions) of each compound (which may be inert, NPOC, POC, TOC, or TAC) and molecular weight of flash gas.

Annual emissions of given compound (POC/NPOC/TAC) from condensate phase flash = (Maximum Annual Liquid Throughput, gallons/year) * (volume % of Condensate in Liquid, obtained from applicant) * (GOR (gas oil ratio) from test, scf/bbl) * (1/ 386 scf/mol) * (Molecular Weight of Flash Gas from test lb/lb-mol) * (Weight Fraction of compound in flash gas from test)

Annual Emissions of given compound (POC/NPOC/TAC) from water phase flash = (Maximum Annual Liquid Throughput, gallons/year) * (volume % of water in Liquid, obtained from applicant) * (GWR (gas water ratio) from test, scf/bbl) * (1/386 scf/mol) * (Molecular Weight of Flash Gas from test, lb/lb-mol) * (Weight Fraction of compound in flash gas from test)

MECHANICAL SEPARATOR HEATER EMISSIONS
Emissions associated with mechanical separator heaters are from combustion of natural gas and are estimated determined using AP-42 Emission Factors from Table 1.4-1 for Natural Gas Combustion for Boilers less than 100 MMBtu/hr for criteria pollutant emissions and BAAQMD Toxic Air Contaminant (TAC) Emission Factor Guidelines Appendix A Default TAC Emission Factors for Specific Source Categories (August 2020) for TAC emissions. Refer to the permit handbook chapter 2.1 and https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_appendixa_august_2020-pdf.pdf?la=en.. Re However, for the section 2-1-114.1 exemption, section 2-1-316 is not applicable.

Health Risk Assessment:
Emissions of hexanes, benzene, toluene, ethyl benzene, and xylene may be emitted from the dehydrator, fugitive, combustion, and condensate tanks. The permit evaluator should ensure that the emission calculations include the hourly and annual emission estimates for these TACs to determine whether an acute or chronic health risk assessment trigger level listed in Table 2-5-1 of Regulation 2-5 is reached or exceeded.

Applicable Requirements
Air District Rules and Regulations
Natural gas compressor engines at natural gas or crude oil production facilities are generally subject to the nitrogen oxides and carbon monoxide emission limits of Regulation 9-8-301 because they are generally greater than 250 HP per Regulation 9-8-110.2.

Glycol Natural Gas Dehydrators are generally not subject to the standards of Regulation 8-2 because it is a natural gas operation per Regulation 8-2-110. In addition, it is also not subject to the fugitive provision of Regulation 8-37, because the rule does not apply to natural gas distribution, transportation, and storage facilities per Regulation 8-37-111. However, the facility must apply for this exemption per Regulation 8-37-403 by submitting a written petition for exemption to the APCO.

In addition, the other fugitive components associated with the natural gas or crude oil production facility are not subject to the fugitive provisions of Regulation 8-37 for any facility, which processes natural gas streams that contain more than 90% methane by volume per Regulation 8-37-112. Similarly, the facility must also apply for this exemption by submitting a written petition for exemption to the APCO. The facility must submit this petition annually. The facility must show by gas analysis, on an annual basis, that the percentage of methane in the natural gas stream is more than or equal to 90% by volume. The fittings are also exempt from the Valves and Flanges at Chemical Plants rule as per Regulation 8-22-113, since only natural gas is being handled. However, these exemptions do not exempt fugitive emissions from permitting requirements. Therefore, for the purposes of determining cumulative increase and TAC emissions, these fugitive component emissions must be included and shall be determined using the calculation methods described above

The storage and separator tanks are generally subject to the provisions of Regulation 8-5 because the condensate usually (or almost always) contains a layer of hydrocarbon, which has a vapor pressure greater than 0.5 psia. As a result, as long as the storage tank is greater than 260 gallons (per Regulation 8-5-110.1), it is subject to the standards of Regulation 8-5. The glycol natural gas dehydrators and tanks are not expected to be significant sources of particulates or sulfur dioxide. As a result, the natural gas production facilities are expected to comply with Regulation 6-1 and Regulation 9-1.

Best Available Control Technology (BACT)
BACT for Natural Gas Production Facilities are not yet specified in the BACT/TBACT Workbook.

The following are applicable BACT requirements for:

Internal Combustion Engines
- I.C. Engine – Spark Ignition, Natural Gas Fired Rich Burn Engine
- I.C. Engine – Spark Ignition, Natural Gas Fired Lean Burn Engine

Organic Liquid Storage Tanks
-Storage Tanks – Fixed Roof, Organic Liquids, < 20,000 gal
-Storage Tanks – Fixed Roof, Organic Liquids, >=20,000 gal

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NSPS
The glycol natural gas dehydrators may be subject to the NSPS, Subpart KKK: Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants, if it is located at a an onshore natural gas processing plant as defined in the NSPS. The permit evaluator should review the proposed application to ensure that any proposed dehydrator is either exempt from the NSPS or complies with the NSPS.

Furthermore, if the facility does contain a sweetening unit or sulfur recovery unit, the facility is subject to NSPS, Subpart LLL: Standards of Performance for Onshore Natural Gas Processing: SO2 Emissions.

A facility that commences construction, reconstruction, or modification after August 23, 2011 may be subject to NSPS Subpart OOOO: Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution. The permit evaluator should review the proposed application to ensure that any affected sources are either exempt from the NSPS or complies with the NSPS.

NESHAPS
If the facility is a major source of HAPs, the glycol natural gas dehydrators, storage vessels, and ancillary equipment at natural gas production facilities may be subject to NESHAPS 40 CFR 63 Subpart HH: National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities; while the dehydrators at natural gas transmission and storage facilities may be subject to the NESHAPS 40 CFR 63 Subpart HHH: National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities. The permit evaluator should review the proposed application to ensure that any proposed dehydrator and/or storage vessels are either exempt from the NESHAPS or complies with the NESHAPS, if the facility is a major source of HAPs.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for natural gas facilities are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

4.0 ORGANIC LIQUID STORAGE TANK

July 3, 2023

Process Description

A storage tank is defined in Regulation 8-5-202 as any container, reservoir, or tank used for the storage of organic liquids, excluding tanks, which are permanently affixed to mobile vehicles such as railroad tank cars, tanker trucks or ocean vessels. Storage tanks require a permit if they have a capacity of 260 gallon or greater and store liquids with 1 wt% or greater organic compounds or concentrated acids. Regulation 2-1-123 provides the specific permit exemptions for storage tanks.

Completeness Determination

The following Air District forms should be completed and fees provided for organic liquid storage tanks. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form T (one per source).
3. Material Safety Data Sheet for each organic liquid used, if it is a mixture of compounds.
4. If storage tank exhausts into add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule C).

Emission Calculations

TankESP is a Windows-based computer software program that estimates volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions from fixed- and floating-roof storage tanks. TankESP is based on the emission estimation procedures from Chapter 7 of EPA's Compilation Of Air Pollutant Emission Factors (AP-42),which is an Air District approved tank emissions calculations method. The permit evaluator should include a copy of the printed, detailed TankESP report with their evaluation report. The permit evaluator should request and obtain copies of any pertinent material safety data sheets (MSDS) to verify parameters for emission calculations. Otherwise, default values are provided in Table I of Regulation 8-5. The permit evaluator should inquire about fugitive components (see Fugitive Emissions section in Chapter 3.5 of this permit handbook) pursuant to Regulation 8-18, Regulation 8-22, cumulative increase, and/or Regulation 2-5.

Applicable Requirements

Air District Rules and Regulations

Storage tanks are subject to the requirements of Regulation 8-5. Regulation 8-5-301 requires a vapor loss control device based on the tank capacity of the storage tank and the true vapor pressure of the organic contents of the tank. The highest vapor pressure material stored will indicate the level of control for compliance. The other standards of Regulation 8-5 specific the equipment requirements of the vapor loss control devices and the tank itself. Storage tanks located at bulk plants may also be subject to the requirements of Regulation 8-6 (Subsection 8-6-304, Deliveries to Storage Tanks), Regulation 8-18, Regulation 8-33, and Regulation 8-39. The permit evaluator should review the proposed storage tank application to ensure that the proposed storage tank will have complying vapor loss control devices and that the TankESP program includes such devices as inputs in the program in estimating emissions of VOCs and HAPs or use Chapter 7 of EPA's Compilation Of Air Pollutant Emission Factors (AP-42).

New Source Performance Standards (NSPS)

Storage tanks may be subject to the NSPS, if it has a capacity greater than or equal to 75 cubic meters (m3) (19,815 gallons) that stores volatile organic liquids for which construction, reconstruction, or modification is started after 23 July 1984. The following are the NSPS requirements:

Volatile Organic Liquid Storage Vessels Including Petroleum Storage Vessels -1973-1978 (PDF)	40 CFR 60 Subpart K
Volatile Organic Liquid Storage Vessels Including Petroleum Storage Vessels - 1978-1984 (PDF)	40 CFR 60 Subpart Ka

Volatile Organic Liquid Storage Vessels Including Petroleum Storage Vessels	40 CFR 60 Subpart Kb

National Emission Standards for Hazardous Air Pollutants (NESHAP)
Storage tanks may be subject to the NESHAP Subpart CC, if it is an affected source that meets applicable standards defined in paragraphs (c)(1) through (9) of the standard.

The permit evaluator should review the proposed storage tank application to ensure that the proposed storage tank is either exempt from the NSPS and NESHAP or complies with the NSPS and NESHAP. There is Policy: NSPS and Permitting of New Storage Tanks regarding NSPS requirements for Slotted Gauge Wells and Automatic Bleeder Vents on New External Floating Roof Tanks.

Best Available Control Technology (BACT)
BACT for Storage Tanks is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for:

Storage Tanks
- Storage Tanks - External Floating Roof, Organic Liquids
- Storage Tanks - Fixed Roof, Organic Liquids, <20,000 gal
- Storage Tanks - Fixed Roof, Organic Liquids, >=20,000 gal
- Storage Tanks - Internal Floating Roof, Organic Liquids

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

See Fugitive Emissions section in Chapter 3.5 of this permit handbook for more information regarding Fugitive Emissions BACT.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Health Risk Assessment
- ❑ Prevention of Significant Deterioration
- ❑ Overburdened Communities
- ❑ School Notification

Permit Conditions
Standardized conditions for storage tanks and fugitive components are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

5.1 SPRAY BOOTHS & SPRAY GUNS

December 15, 2023

Process Description

Any facility, which uses 30 or more gallons per year of coating containing more than 1 weight percent VOC on a facility-wide basis or emits more than 150 pounds per year of VOC on a facility-wide basis, is subject to permitting requirements, per Regulation 2-1-119.2. Powder coating and coating operations using ultraviolet or electron beam energy for curing, aerosol cans may be exempt from permitting requirements per Regulation 2-1-119.1 and Air District Policy: Section 2-1-119.1 Permit Exemptions for Powder and Radiation Cured Coating Operation. Architectural and industrial maintenance coating operations that are exclusively subject to Regulation 8-3, are exempt from permitting requirements per Regulation 2-1-113.2.5.

Additional detailed background information is available from Chapter 4.2.2.1 General Industrial Surface Coating of AP-42 (Fifth Edition, Volume I).

All surface coating curing and drying ovens will be included as part of the surface coating process, per policy, Permitting of Surface Coating Curing Ovens. Emissions from the ovens will be accounted for on the surface coating S-form. Combustion emissions from the oven, if any, will be included as part of the combined source's emissions. These emissions shall be reported on a separate C-form with the same source number as the surface coating operation.

Two or more coating operations (including graphic arts) which are less than or equal to 3,000 pounds per year VOC may be grouped together as one source per the policy, Grouping of Coating, Adhesive or Printing Operations into a Single Permitted Source. Spray gun cleaners that are associated with coating sources (i.e., cleaning of coating application equipment or cleaning of surfaces prior to their coating) are to be permitted, as part of a coating operation.

Printing operation are covered in Graphic Arts Printing and Coating Operations.

Completeness Determination

The following Air District forms should be completed, and information and fees provided for coating operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form P101-B (one for facility).
2. Form S (one per source).
3. Form CD (one per source or facility).
4. Form C (if using natural gas fired coating oven)
5. Material Safety Data Sheet for the coatings and cleanup solvent used, if it is a mixture of compounds.
6. If coating operation exhausts to add-on abatement device, Form A (one per device).
7. If Health Risk Assessment is triggered, Form HRA (one per source).
8. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

Using the material balance method, for VOC-containing materials, the amount of pollutant emitted is often assumed to be 100 percent of the amount of pollutant contained in the material, unless a control device is used to remove or destroy the VOC in the exhaust stream. To estimate the VOC emissions from vented operations where a VOC control device is present, it is necessary to estimate the efficiency of both the capture (exhaust) system and the control device.

The material balance method may also be used to calculate PM10 emissions if engineering judgment is made regarding the transfer efficiency of the application equipment and the control efficiency of any PM10 control devices (for vented operations). These data are used in conjunction with the manufacturer's data or calculated solids content of the coating to estimate PM10 emissions using the formula below.

$E_{PM} = Q \times S \times (1 - TE) \times (1 - CE)$

Where:

E_{PM} = Emissions of particulate matter (lbs)
Q = Quantity of coatings applied (gallons)
S = Solid content in coatings (lb/gal)
TE = Transfer efficiency of applicator (wt. %)
CE = Control system efficiency (wt. %)

Transfer efficiency typically varies from 0.25 to 0.75 depending on a multitude of factors including: the size of the substrate being sprayed, the spray gun type, and/or the distance between the substrate and spray gun. HVLP guns are typically assumed to have a transfer efficiency of 0.65.

If coating is performed inside a spray booth, which is equipped with a filter system to control PM emissions, the following control efficiency (CE) can be used depending on the type of filter:

Conventional filters: CE = 0.90
3-Stage aerospace NESHAP-compliant filters: CE = 0.95
High efficiency particle arrestor (HEPA): CE = 0.9997

Applicable Requirements
Different Air District requirements apply for different source classifications of surface coating operations. In addition, New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) and Airborne Toxic Control Measures may apply for certain surface coatings classifications. A table has been developed summarizing these different requirements. For Air District requirements, the permit evaluator shall review the VOC limits and any transfer efficiency requirements found in the 300's section of each applicable coating rule and ensure that the applicant complies with those sections with the use of complying coatings and/or cleanup solvents and spray equipment. Next the permit evaluator shall ensure that the applicant complies with the recordkeeping requirements noted in the 500's section of each applicable coating rule by ensuring that the permit conditions specify recordkeeping in accordance with the permit handbook. If a spray booth or spray gun has been deemed subject to NSPS or NESHAP requirements, then CEQA review is also triggered because elements of discretion are involved in complying with the applicable NSPS or NESHAP requirements. The permit evaluator shall follow the CEQA instructions specified in the permit handbook. Finally, Regulation 6 should apply to all coating operations with any particulate matter emissions, as approximated by the above equation.

Best Available Control Technology (BACT)
BACT for coating sources is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Aerospace Assembly & Component Coating Operations
- <25 lb/day Emissions (Uncontrolled)
- >=25 lb/day Emissions (Uncontrolled)

Spray Booth - Coating of Flatwood Paneling & Wood Flat Stock
- <50 lb/day Emissions (Uncontrolled)
- >=50 lb/day Emissions (Uncontrolled)

Spray Booth - Coating of Wood Products
- Spray Booth - Coating of Wood Products

Metal Container, Closure, and Coil Coating
- Metal Container, Closure, and Coil Coating Operation

Misc. Metal Parts and Products Coating
- <50 lb/day Emissions (Uncontrolled)
- >=50 lb/day Emissions (Uncontrolled)

Misc. Solvent and Surface Coating Operations
- <36 lb/day Emissions (Uncontrolled)
- >=36 lb/day Emissions (Uncontrolled)

Motor Vehicle and Mobile Equipment Coating
Spray Booth - Coating of Motor Vehicle & Mobile Equipment, Rework or Bodyshop
- <40 lb/day Emissions (Uncontrolled)
- >=40 lb/day Emissions (Uncontrolled)

Plastic Parts and Products Coating
Spray Booth - Coating of Misc. Plastic Parts and Products
- <50 lb/day Emissions (Uncontrolled)
- >=50 lb/day Emissions (Uncontrolled)

Motor Vehicle Assembly Plant Coating
Spray Booth - Coating of Motor Vehicles, Assembly Plant
- Spray Booth (Manual Zones)
- Spray Booth (Automatic Zones)
- Oven (Topcoat and/or Primer)
- Oven (Sealer and/or Elpo)

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports..

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for surface coating operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

Process Description	AP-42 Chapter 4.2	Air District Regulation	NSPS (40 CFR 60)	MACT (40 CFR 63)
Architectural Coatings – Coating source may be exempt from permits per Regulation 2-1-113.2.5 – See Permit Exemption Guidance. However, applicable regulation still applies.	4.2.1 Nonindustrial	Regulation 8-3	N/A	N/A
General Solvent and Surface Coating Operations*	4.2.2.1 General Industrial	Regulation 8-4	N/A	N/A

Process Description	AP-42 Chapter 4.2	Air District Regulation	NSPS (40 CFR 60)	MACT (40 CFR 63)
Metal Container, Closure and Coil Coating	4.2.2.2. Can Coating; 4.2.2.10 Metal Coil	Regulation 8-11	Can -Subpart WW; Coil - Subpart TT	Can -Subpart KKKK; Coil - Subpart SSSS
Paper, Fabric & Film Coating	4.2.2.6 Paper Coating; 4.2.2.7 Polymeric Coating of Supporting Substrates	Regulation 8-12	Subpart RR	Fabric - Subpart OOOO; Paper & Other Web - Subpart JJJJ
Light and Medium Duty Motor Vehicle Assembly Plants	4.2.2.8 Automobile and Light Duty Truck	Regulation 8-13	Subpart MM	Subpart IIII
Surface Preparation and Coating of Large Appliances and Metal Furniture	4.2.2.11 Large Appliance; 4.2.2.12 Metal Furniture	Regulation 8-14	Large Appliance - Subpart SS; Metal Furniture - Subpart EE	Large Appliance -Subpart NNNN; Metal Furniture - Subpart RRRR
Surface Preparation and Coating of Miscellaneous Metal Parts and Products	4.2.2.4 Other Metal Coating	Regulation 8-19	N/A	Subpart MMMM
Coating of Flatwood Paneling and Wood Flat Stock	4.2.2.5 Flat Wood Interior Panel Coating	Regulation 8-23	N/A	Subpart QQQQ
Magnetic Wire Coating Operation	4.2.2.3 Magnet Wire Coating	Regulation 8-26	N/A	N/A
Aerospace Assembly and Component Coating Operations		Regulation 8-29	N/A	Subpart GG
Surface Preparation and Coating of Plastic Parts and Products	4.2.2.14 Plastic Parts for Business Machines	Regulation 8-31	Subpart TTT	Subpart PPPP
Wood Products Coatings		Regulation 8-32	N/A	Wood Building Products - Subpart QQQQ; Wood Furniture – Subpart JJ
Surface Preparation and Coating of Marine Vessels		Regulation 8-43	N/A	Subpart II
Motor Vehicle and Mobile Equipment Coating Operations**	4.2.1 Nonindustrial	Regulation 8-45	Subpart MM	Subpart HHHHHH
Aerosol Paint Products – Coating source may be exempt from permits per Regulation 2-1-119.3 – See Permit Exemption Guidance.		Regulation 8-49	N/A	N/A

Process Description	AP-42 Chapter 4.2	Air District Regulation	NSPS (40 CFR 60)	MACT (40 CFR 63)
However, applicable regulation still applies.				

* If the surface coating operation is not specifically identified in the table above, then it is subject only to the "default" coating rule (Regulation 8-4).
**Motor Vehicle and Mobile Coating Operations are subject to ATCM 17CCR § 93112, *Emissions of Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings*

5.2 COATING, ADHESIVES, AND INK MANUFACTURING

December 15, 2023

Process Description

The manufacturer of coating (including adhesives) and ink involves the dispersion of a color oil or pigment in an oil or resin, followed by the addition of an organic solvent for viscosity adjustment. Only the physical processes of weighing, mixing, grinding, tinting, thinning, and packaging take place. These processes take place in large mixing tanks. Detailed descriptions of coating and ink manufacturing are provided in Chapter 6.4 (Paint and Varnish) and Chapter 6.7 (Printing Ink) of EPA AP-42.

Coating and ink manufacturing operations are generally made up a number of sources of air pollution which store, convey, measure, and discharge its constituents. The following sources at these plants shall be permitted:

Mixing Vats
Screening Mills
Storage Tanks (covered in Organic Liquid Storage Tank)

Completeness Determination

The following Air District forms should be completed and information and fees provided for coating operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form P101-B (one for facility).
2. Form G (one per mixing vat or screening mill)
3. Material Safety Data Sheet for the oil, resins, and solvents used.
4. If mixing vessel exhausts to add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

The primary pollutants from coating and ink manufacturing is particulate (from the handling of pigments) and organic compounds. AP-42, Table 6.4-1 and Table 6.7-1 provides emission factors for paint and varnish and ink manufacturing:

Type of Process	POC (lb/ton)	PM10 (lb/ton)
Paint	30	20
Varnish		
Bodying Oil	40	
Oleoresinous	150	
Alkyd	160	
Acrylic	20	
Printing Ink		
General	120	
Oils	40	
Oleoresinous	150	
Alkyds	160	
Pigment Mixing		2

Using the AP-42 factor (see table) with the maximum, annual projected throughput (gallons/year) of product produced will estimate the annual estimated emissions of POCs and PM10 from the proposed coating and ink manufacturing operation.

Applicable Requirements

Rules and Regulations

Coating, ink, and adhesive manufacturing are subject to the standards of Regulation 8-35. The permit evaluator should review the proposed operations and determine any proposed mixing vats will meet the mixing vat requirements of Regulation 8-35-301 and 305, cleaning operations for the mixing vats will comply with the requirements of Regulation 8-35-302, and screening mills will comply with the requirements of Regulation 8-35-304.

Best Available Control Technology (BACT)

BACT for coating and ink manufacturing is currently NOT specified in the BACT/TBACT Workbook. Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for coating and ink manufacturing operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

5.3 GRAPHIC ARTS PRINTING AND COATING OPERATIONS

December 15, 2023

Process Description
Any graphic arts operation that emits less than 400 pounds of VOC emissions per month on a facility-wide basis is exempt from permitting requirements per Regulation 2-1-119.5. However, if the graphics arts operation emits a minimum of 75 pounds but less than 400 pounds of VOC per month, it is subject to registration requirements for small graphic arts facilities, per Regulation 8-20-408. This Air District's registration program for small graphic arts facilities is on-line at the Air District's web site.

The term "graphic art" is made up of 4 basic processing of the printing industry: web offset lithography, web letterpress, rotogravure, and flexography. These processes and their estimated emissions are described in detail in Chapter 4.91 General Graphic Printing of AP-42 (Fifth Edition, Volume I). Additional information including screen-printing is available from Graphic Arts, Volume III: Chapter 7, November 1996 and Preferred and Alternative Methods for Estimating Air Emissions from Printing, Packaging and Graphic Arts Industry, May 2002.

Two or more printing presses which are less than or equal to 3,000 pounds per year VOC may be grouped together as one source per the policy, Grouping of Coating, Adhesive or Printing Operations into a Single Permitted Source.

Completeness Determination
The following Air District forms should be completed and fees provided for graphic arts operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source).
3. Form SS (one per source or facility).
4. Material Safety Data Sheet for the inks and press washes used, if it is a mixture of compounds.
5. If graphic arts operation exhausts to add-on abatement device, Form A (one per device).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations
Using the material balance method, for VOC-containing materials, the amount of pollutant emitted is often assumed to be 100 percent of the amount of pollutant contained in the material as applied, unless a control device is used to remove or destroy the VOC in the exhaust stream. In addition, for lithographic printing operations, a retention factor of 95% is used for lithographic inks, per Regulation 8-20-605. The 95% retention factor equates into a 5% release factor and was established. To estimate the VOC emissions from vented operations where a VOC control device is present, it is necessary to estimate the efficiency of both the capture (exhaust) system and the control device.

Applicable Requirements
In general, graphic arts operations are subject to the operating standards of Regulation 8-20, unless the facility meets the definition of a Small User, per Regulation 8-20-110. The Air District permit evaluator should review the material to ensure that the source meets applicable operating standards or else request such information from the applicant.

Best Available Control Technology (BACT)
BACT for coating sources is specified in the BACT/TBACT Workbook. A procedure has been developed for BACT1 review of adding an automatic blanket wash system to a lithographic operation. The following are applicable BACT requirements for:

Graphic Arts Printing and Coating Operations
- Flexographic Printing Line
- Lithographic Offset Printing - Heatset
- Lithographic Offset Printing - Non-Heatset

- Rotogravure Printing - Publication and Packaging
- Screen Printing and Drying

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Health Risk Assessment
- Prevention of Significant Deterioration
- Overburdened Communities
- School Notification

Permit Conditions
Standardized conditions for graphic arts printing and coating operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

6.1 COLD SOLVENT CLEANING

July 6, 2022

[Note: The current Permit Handbook's source-specific guidance for Cold Solvent Cleaning Operations was deleted on 8/4/2020. It is replaced by the conditions found in the new prototype all-inclusive chapter on Cold Solvent Cleaning, which is available in Appendix G of this document.]

6.2 VAPOR SOLVENT & CONVEYORIZED SOLVENT CLEANING

December 15, 2023

Process Description

A vapor solvent cleaner is defined in Regulation 8-16-228 as any solvent cleaner which cleans through the condensation of hot solvent vapor on colder parts and boils liquid solvent producing solvent vapor, while conveyorized solvent cleaner is defined in Regulation 8-16-207 as any continuously loaded, conveyorized cold or vapor solvent cleaner. Additional background information is available from Chapter 4.6, Solvent Degreasing, of AP-42 (Fifth Edition, Volume I).

Completeness Determination

The following Air District forms should be completed and fees provided for vapor solvent and conveyorized solvent cleaner(s). Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source).
3. Form SC (one per source).
4. Material Safety Data Sheet for each solvent used, if it is a mixture of compounds.
5. If cleaner exhausts into add-on abatement device, Form A (one per device).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

Net organic solvents used in the solvent cleaners are assumed to be 100 percent volatile and emitted into the atmosphere. Annual emissions are calculated by multiplying the annual net solvent usage by the density of the organic solvent.

Applicable Requirements

Air District Rules and Regulations

In general, vapor solvent cleaners are subject to the operating standards of Regulation 8-16-301, while conveyorized solvent cleaners are subject to the operating standards of Regulation 8-16-302. The Air District permit evaluator should review the applicant's SC Form to ensure that the source meets applicable operating standards or else request such information from the applicant.

40 CFR 63 Subpart T (NESHAP) may apply for those cleaners using halogenated cleaning solvents specified in Regulation 8-16-216 at a total concentration of 5 percent or more by weight.

Best Available Control Technology (BACT)

BACT for vapor and conveyorized solvent cleaners is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Vapor Solvent Cleaning
- Degreaser - Film Cleaning Machine
- Degreaser - Solvent Spray Booth
- Degreaser - Vapor, Conveyorized
- Degreaser - Vapor, Open Top

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration

- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for vapor and conveyorized solvent cleaners are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

6.3 WIPE CLEANING OPERATIONS

December 15, 2023

Process Description
Wipe Cleaning is defined in Regulation 8-16-232 as that method of cleaning which utilizes a material such as a rag wetted with a solvent, coupled with a physical rubbing process to remove contaminants from surfaces. Any wipe cleaning operation, which uses 20 or more gallons per year of net cleanup solvent or having emissions to the atmosphere greater than 150 pounds per year from all facility wide wipe cleaning operation, is subject to permitting requirements, per Regulation 2-1-118.9. Wipe cleaning operations may be combined as one facility-wide source or other convenient groupings per Regulation 2-1-401.4.

Wipe cleaning operations that are associated with coating sources (i.e., cleaning of coating application equipment or cleaning of surfaces prior to their coating) are to be permitted, as part of a coating operation, therefore this permit chapter does not apply -- See Spray Booths & Spray Guns.

Completeness Determination
The following Air District forms should be completed, and fees provided for the wipe cleaning operation. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source).
3. Form SC (one per source).
4. Material Safety Data Sheet for each solvent used
5. If wipe cleaning operation exhausts into add-on abatement device, Form A (one per device).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations
Any organic solvents used for wipe cleaning are assumed to be 100 percent volatile and emitted into the atmosphere. Annual emissions are calculated by multiplying the annual gross solvent usage by the density of the organic solvent.

Applicable Requirements
Air District Rules and Regulations
Wipe cleaning operations are subject to the storage and disposal requirements of Regulation 8-1-320, 321, and 322 and the recordkeeping requirements of Regulation 8-16-501 and Regulation 8-4-501. In addition, each wipe cleaning operation is subject to either 1) Regulation 8-4-302.1 (≤ 5 TPY/source) or 2) Regulation 8-4-302.2 (85% overall control) and 3) Regulation 8-4-312 (the evaporative loss minimization requirements). Moreover, wipe cleaning operations for surface preparation are subject to the surface preparation standards of Regulation 8-4-313, unless specifically exempt by Regulation 8-4-116. The Air District permit evaluator should ensure that the applicant is exempt per Regulation 8-4-113 & Regulation 8-4-116 prior to approval of any wipe cleaning permit application.

Best Available Control Technology (BACT)
BACT for Wipe Cleaning is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Wipe Cleaning
- Wipe Cleaning Operation
- Solvent Reclamation

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for wipe cleaning operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

7.2 ELECTRONIC ASSEMBLY AND WAVE SOLDERING OPERATONS

December 15, 2023

Process Description

Electronic Assembly/Soldering is where electronic components are assembled and soldered onto printed circuit boards. The process steps include hand assembly, wave soldering, solder paste application with reflow oven, and solvent cleaning. Hand assembly is where components are manually assembled and soldered onto printed circuit boards. The process steps include flux application and hand soldering. Wave soldering is where components are soldered onto the printed circuit board by a wave soldering machine. The solder paste application with reflow oven involves the application of solder paste to pad locations on the printed circuit board through a stencil. Components are then surface mounted onto the printed circuit board with a pick and place machine. After inspection, the surface mounted components are joined to the printed circuit board inside the reflow oven. The potential of pollutants into the atmosphere are organic emissions from the use of solvents and solvent-containing materials.

The following equipment is typically exempt from permitting requirements:

Description of Equipment	Permit Exemption
Any flux application, hand soldering, wave soldering, solder paste application which meets the criteria of Regulation 2-1-103.	2-1-103
Any reflow oven used in conjunction with a solder paste application which meets the criteria of Regulation 2-1-103.	2-1-119.4

This chapter describes the permitting requirements and procedures for those electronic assembly and wave soldering operations which are not exempt from permitting requirements per Regulation 2-1-103. The potential of pollutants into the atmosphere are organic emissions from the use of solvents and solvent-containing materials.

Permitting of solvent cleaning is covered by other Permit Handbook Chapters such as Wipe Cleaning (6.3) and Vapor Solvent Cleaning (6.2).

Completeness Determination

The following Air District forms should be completed, and fees provided for electronic assembly and wave soldering operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source).
3. Material Safety Data Sheet for each solvent-containing material used, if it is a mixture of compounds.
4. If the electronic assembly and save soldering operations exhausts into add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

Using the material balance method for materials containing POC, NPOC, and/or toxics, the amount of pollutant emitted is often assumed to be 100 percent of the amount of pollutant contained in the material.

E lb POC/yr = [X gal flux/yr] x[Y lb flux/gal flux] x [Z lb POC/lb flux],

where,
E = Pollutant emission rate (lb/yr)
X = Maximum annual quantity of flux used (gal/yr)
Y = Density of flux (lb/gal)
Z = POC wt. fraction of flux (lb/lb)

Applicable Requirements

Air District Rules and Regulations

In general, electronic assembly and save soldering operations are subject to the operating standards of Regulation 8-1 and 8-4. The standards require that closed containers be used for disposal of cloth or paper impregnated with organic compounds, that closed containers be used for storage of organic compounds, and that evaporation of organic compounds during the cleaning of spray equipment be minimized. In addition, emissions are limited to 5 TPY per flux application and wave soldering operation.

Best Available Control Technology (BACT)

BACT for flexible and rigid disc manufacturing is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Circuit Board Manufacturing
- Circuit Board Etcher – Batch *Immersion Type, Subtractive Process*
- Circuit Board Etcher – Conveyorized Spray Type, Subtractive Process

Electronic Assembly & Wave Soldering Operations
- Wave Solder Operation - Flux Application and Finger Cleaning

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for electronic assembly and wave soldering operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

7.3 FLEXIBLE AND RIGID DISC MANUFACTURING

December 15, 2023

Process Description

The manufacturer of flexible and rigid discs includes the following operations: disc lubers and disc polishing. Disc lubers are used to coat magnetic memory discs with a thin layer of fluorocarbon polymer lubricant. The solvent is typically a non-precursor organic compound. There are three types of disc lubers: gravity flow, dip, and spray.

Gravity flow disc lubers operate in the following manner:

1. A rack of discs is loaded into a chamber.
2. A lubricant/solvent mixture is pumped into the chamber, submerging the discs.
3. The lubricant/solvent mixture is allowed to drain slowly, leaving a thin layer of lubricant on the discs.
4. The discs are removed from the chamber.

Dip lubers manually coat disc(s) in a bath of lubricant/solvent mixture in a dipping (and draining) operation.

Spray lubers spray the discs with lubricant/solvent mixture in an enclosed chamber.

Disc polishing /texturing is a technique using a physical rubbing process with an organic solvent on the surface of flexible or rigid magnetic data storage disc for the purpose of removing contaminants or oxidation or for increasing surface smoothness, resolution or gloss. Solvent cleaning devices using immersion or agitation in solvent vapors are not considered disc polishing/texturing, but solvent cleaning subject to Regulation 8-16 and Vapor and Conveyorized Solvent Cleaning chapter (6.2).

Completeness Determination

The following Air District forms should be completed, and fees provided for flexible and rigid disc manufacturing. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source).
3. Material Safety Data Sheet for each solvent used, if it is a mixture of compounds.
4. If the disc luber exhausts into add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

Net organic solvents used in the solvent cleaners are assumed to be 100 percent volatile and emitted into the atmosphere. Annual emissions are calculated by multiplying the annual net solvent usage by the density of the organic solvent.

Applicable Requirements

Air District Rules and Regulations

In general, disc lubers are subject to the operating standards of Regulation 8-1. The standards require that closed containers be used for disposal of cloth or paper impregnated with organic compounds; that closed containers be used for storage of organic compounds; and that evaporation of organic compounds during the cleaning of spray equipment be minimized.

Specifically, disc lubers (also known as disc coaters) and disc polishing operations are subject to the operating standards of Regulation 8-38. The permit evaluator should evaluate the permit application for compliance with the operating standards of Regulation 8-38.

Best Available Control Technology (BACT)
BACT for flexible and rigid disc manufacturing is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Magnetic Media Manufacturing - Disc Coating, Lubricant
- Dip Luber
- Gravity Drop (Drain) Luber
- Spray Luber

Magnetic Media Manufacturing - Disc Polishing/Texturing
- <22 lb/day Emissions (Uncontrolled)
- >=22 lb/day Emissions (Uncontrolled)

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for disc lubers are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

7.4 SEMICONDUCTOR FABRICATION

December 15, 2023

Process Description
Semiconductor manufacturing refers to the series of manufacturing processes, which produce packaged integrated circuits (ICs). Most packaged ICs are assembled onto printed circuit boards (PCBs) by a separate manufacturer. However, some packaged ICs, such as microprocessor upgrades and memory modules, are used without pre-assembly onto a circuit board. PCB assembly is the subject of a separate chapter. A thorough description of the semiconductor manufacturing process is available in Chapter 1 of Revision 2 of this chapter.

Completeness Determination
The following Air District forms should be completed and fees provided for semiconductor fabrication (FAB). Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. . Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form FF (one per source).
3. Material Safety Data Sheet for each solvent mixture, photoresist coating, stripper, and developer identified in Form FF.
4. If fab area equipment exhausts into add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule H).

Emission Calculations
Emission factors are typically used in calculating emissions from semiconductor fabrication operations. For any material applied at a wafer coating applicator, including coatings, developers, dispensed cleanup solvents, and processing solvents, the emission factor is 90% of the total solvent content of material. For solvent station chemicals used at solvent sinks or other solvent stations, the emission factor of 30% of the total solvent content of all chemicals is used. For wipe cleaning operations, the emission factor of 100% of the total solvent content of the solvent is used. A thorough background explanation of these factors is provided in Section 3 of Revision 2 of this chapter.

Applicable Requirements
Air District Rules and Regulations
Semiconductor manufacturing operations are subject to Regulation 8-30: Semiconductor Manufacturing Operations. The permit evaluator shall ensure the applicant complies with all sections of the rule that apply:

If Use	Then Subject to
Solvent –based developers < 24 gals/month of solvent-based maskant and developer	Regulation 8-30-402
Solvent-based developers > 24 gals/month of solvent-based maskant and developer	Regulation 8-30-302
Solvent Sinks	Regulation 8-30-304
Solvent Spray Stations	Regulation 8-30-305
Solvent Vapor Stations	Regulation 8-30-306
Wipe Cleaning Operations	Regulation 8-30-307

NESHAP requirements may apply for a semiconductor manufacturing facility, which emits or has the potential to emit any single HAP at a rate of 10 tons per year or more or any combination of HAP at a rate of 25 tons per year or more. In general, semiconductors facilities in the Bay Area are not subject to these NESHAP requirements, because after controls their HAP emissions are well below the NESHAP trigger levels. However, the permit evaluator should still review the applicant's HAP emissions to ensure that NESHAP requirements are not triggered.

Best Available Control Technology (BACT)
BACT for semiconductor fabrication operations is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Semiconductor Manufacturing Operations
- Semiconductor Fab - Photoresist Operations
- Semiconductor Fab - Solvent Cleaning Stations
- Semiconductor Fab - Siliconizing Reactors,,Furnace Chambers, Vapor Deposition

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Health Risk Assessment
- ❑ Prevention of Significant Deterioration
- ❑ Overburdened Communities
- ❑ School Notification

Permit Conditions
Standardized conditions for semiconductor fabrication areas are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

8.2 WASTEWATER TREATMENT FACILITIES

December 15, 2023

Process Description
EPA's Chapter 4.3 (Waste Water Collection, Treatment And Storage) of AP-42 provides information regarding the wastewater collection, treatment, and storage. This chapter covers the permitting of typical unit operations at publicly owned treatment works (POTW) facilities. This chapter does not cover industrial or refinery wastewater. These plants treat wastewater from sanitary and storm sewer systems prior to discharge into the Bay or reuse as reclaimed water. Typical POTW sources may be defined as a combination of the liquid or water carried wastes removed from residences, institutions, and commercial and industrial establishments, together with groundwater, surface water, and storm water runoffs.

Each of the process categories at the wastewater treatment facilities should be permitted as a separate source "grouping" with an assigned a source number and process code (for Data Form G entry) as indicated in the following table. The material code for wastewater or municipal sewage is 562 and the "usage unit" is million gallons (for Data Form G entry).

Process/Source Description	Definition of Process/Source Description	Examples of Equipment Included in Source Description	Process Code
Preliminary Treatment (use default source number, **S-110**, if available)	Preliminary treatment to screen out, grind up, or separate debris is the first step in wastewater treatment. Sticks, rags, large food particles, sand, gravel, toys, etc., are removed at this stage to protect the pumping and other equipment in the treatment plant.	Treatment equipment such as **bar screens, comminutors** (a large version of a garbage disposal), and **grit chambers** are used as the wastewater first enters a treatment plant. The collected debris is usually disposed of in a landfill.	7210
Primary Treatment (use default source number, **S-120**, if available)	In primary treatment systems, physical operations remove floatable and settleable solids.	**Oil-water separator**s, primary **clarifiers**, and primary **treatment tanks**.	7220
Flow Equalization (use default source number, **S-130**, if available)	Flow rate equalization results in a more uniform effluent quality in downstream settling units, such as clarifiers.	**Equalization basins** are used to reduce fluctuations in the wastewater flow rate and organic content before the waste is sent to downstream treatment processes. The basins are used to store large flows of wastewater produced during storms or floods so that the flows do not overwhelm treatment capacity and are not discharged with no treatment or inadequate treatment.	7230
Secondary Treatment (use default source number, **S-140**, if available)	In secondary treatment systems, biological and chemical processes remove most of the organic matter in the wastewater.	Biological waste treatment in **tanks, aeration basins, and oxidation ponds**.	7240
Secondary Clarifiers (use default source number, **S-150**, if available)	Used in secondary treatment systems to settle and remove settleable or suspended solids.	Secondary **clarifier**.	7250
Tertiary Treatment (use default source number, **S-160**, if available)	In tertiary treatment systems, additional processes remove constituents not taken out by secondary treatment.	Advanced treatment is necessary in some treatment systems to remove nutrients from wastewater. Chemicals are sometimes added	7260

Process/Source Description	Definition of Process/Source Description	Examples of Equipment Included in Source Description	Process Code
		during the treatment process to help settle out or strip out phosphorus or nitrogen. Some examples of nutrient removal systems include coagulant addition for phosphorus removal and air stripping for ammonia removal. Micro filtration can also be used to further increase effluent quality. **Nitrification Basins, Membrane Bioreactors**	
Disinfection (use default source number, **S-170**, if available)	Disinfection focuses on removal of disease-causing organisms from wastewater. Treated wastewater can be disinfected by adding chlorine or by using ultraviolet light. High levels of chlorine may be harmful to aquatic life in receiving streams. Treatment systems often add a chlorine-neutralizing chemical to the treated wastewater before stream discharge. Ozone may also be used for disinfection. If ozone generators produce more than 1 lb/day of ozone, they require separate permits.	**Chlorine Contact Tanks and De-chlorination.**	7270
Sludge Handling Processes (use default source number, **S-180**, if available)	Sludges are generated through the sewage treatment process. Primary sludges, material that settles out during primary treatment, often have a strong odor and require treatment prior to disposal. Secondary sludges are the extra microorganisms from the biological treatment processes. The goals of sludge treatment are to stabilize the sludge and reduce odors, remove some of the water and reduce volume, decompose some of the organic matter and reduce volume, kill disease-causing organisms and disinfect the sludge.	Water can be removed from sludge by using **sand drying beds, vacuum filters, filter presses, rotary drum thickeners, and centrifuges**.	7280
Digesters (use default source number, **S-190**, if available)	Aerobic and anaerobic digestion are used to decompose organic matter to reduce sludge volume and its odors.	**Aerobic and anaerobic digesters**.	7290
Receiving of food waste and fats oils and greases (FOG) (any	Food waste and FOG are received to be digested in anaerobic digesters. The receiving stations are either fully	**Receiving stations, pre-digestion blend tanks.**	7280

Process/Source Description	Definition of Process/Source Description	Examples of Equipment Included in Source Description	Process Code
available number may be used)	enclosed or emissions are routed to carbon adsorbers/biofilters. Food waste degrades more rapidly than FOG and will produce higher emissions in a receiving station.		
Receiving of fats oils, and greases (FOG) exclusively (any available number may be used)		**Receiving stations, pre-digestion blend tanks.**	7999

Storage vessels, which contain hydrocarbon condensate, require a permit if the vessel is greater than 260 gallons in capacity, per Regulation 2-1-123.1 and contain an organic layer which is greater than 1 weight percent VOC per Regulation 2-1-123.6. The permitting of these storage tanks is covered in the permit handbook for Organic Liquid Storage Tanks.

Completeness Determination

The following Air District forms should be completed and fees provided for the wastewater treatment facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). See the Process Description section for Process Code, Material Code, and Usage Unit.
3. Process Diagram and Map.
4. If any source exhausts into an add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule G1) for Industrial and Municipal Wastewater Treatment Facilities for primary treatment, preliminary treatment, sludge handling, and digesters at municipal wastewater facilities (except petroleum refineries), Schedule F for flow equalization, secondary treatment, secondary clarifiers, tertiary treatment, and disinfection..

Emission Calculations

In general, POTWs are large facilities with processes and flow characteristics, that may differ greatly from facility to facility. There are no emission factors, that can be used without some measure of uncertainty. There are a number of emission methods, which can be used depending on the operation and other parameters. These emission estimation methods are presented as follows:

- **A)** **Mass Balance**: Emissions are calculated based on liquid concentrations from the proposed source (influent and effluent concentrations). If facilities choose to test the influent and effluent wastewater at a given source, the organic TACs may be reduced below what would otherwise be given using the 80th percentile emission factors, which are described below, if supported by the results. Even if the wastewater throughput is not increased and emissions are not increasing, this testing could still be useful to provide more accurate emission factors.
- **B)** **Refined Mass Balance**: Emissions are calculated based on liquid concentrations, while accounting for competing removal mechanisms, such as biodegradation and adsorption.
- **C)** **Fate Emissions Estimation Models (BAAT's BASTE Model)**: The Bay Area Air Toxics (BAAT) Group's BASTE model can be modified to include the top 95 percent of the reactive organic gases (ROGs). This model estimates pathway losses (volatilization, sorption, and biodegradation) based on liquid-phase concentration measurements coupled with information related to wastewater flow (flow rate, depth of flow, etc), fluid characteristics (temperature, suspended solids, etc), contaminant properties, and physical properties of the unit operations.
- **D)** **Tracer Studies**: This method utilizes a steady dosing of a tracer compound into the influent of the treatment process and simultaneous analysis for the tracer in the effluent and off-gases. The

emissions for other compounds can be calculated based on known physical constants, such as gas/water partition and biodegradation rate.

E) **Source Tests**: This method includes stack testing, for confined sources or combustion sources, and surface isolation flux chambers for area sources.

F) **Industry-wide Emission Factors**: This method uses conservative values developed from a wide range of POTWs to determine air emission rates.

G) **80th Percentile Emission Factors**: Although there are no universal emission factors for POTWs which can be used without some uncertainty, it is possible to use certain average emission factors developed by the Bay Area Air Toxics (BAAT) POTW Group. The 80th percentile method allows certain POTWs to calculate air emissions from liquid processes within an 80% confidence interval. Emission Factors are entered for source S-100 (Municipal Wastewater Treatment Plant) instead of individual sources. These emission factors are presented in the following table.

80th Percentile Emission Factors
POTW Liquid Processes

Compound	Emission Factor (lb/yr per MM gal/day)
Methylene Chloride	95
Chloroform	40
1,1,1-TCA	110
Benzene	3.7
TCE	11
Toluene	28
Tetrachloroethylene	37
Xylenes	33
1,4-Dichlorobenzene	5

H) **Indirect Measurement**: This method uses indirect air measurement techniques such as transection, fenceline, and/or ambient air monitoring to calculate the sources of air emission.

I) **Overall facility VOC emissions:** The AP-42 emission factor from Webfire, factor 23940, gives an overall POTW VOC emission factor of **8.90 lb/MMgal**. This factor should be used for overall POTW VOC emissions estimation unless information in the inlet wastewater concentrations is available.

J) **Overall facility Ammonia emissions:** Ammonia emissions from the overall POTW may be estimated using an AP-42 emission factor from Webfire, which gives a general factor of **19 lb/mmgal**.

K) **Overall facility H_2S emissions:** Hydrogen sulfide is one of the main toxic and nuisance compounds emitted by wastewater treatment plants. A 2012 study from Valencia, Spain (Colomer et al, 2012, Journal of the Air & Waste Management Association) found that wastewater treatment plants lose 8-10% of influent hydrogen sulfide to the atmosphere. The CATEF database (sourceid 2554) estimates the H_2S content in wastewater at the Headworks stage to be 705 ppbv. The following calculation gives an emission factor for the average amount of H_2S lost at POTWs:

H_2S conc. at Headworks	705 ppbv	Source: CATEF sourceid 2254
Sewage density	8.34 lb/gal	Assume same as water
	8,340,000 lb/mmgal	
H_2S in sewage	5.88 lb/mmgal	
Estimated H_2S losses	10%	"Estimation of hydrogen sulfide emission rates at several wastewater treatment plants through experimental concentration measurements and dispersion modeling", Journal AWMA 2012
	0.588 lb H_2S/mmgal	**EF, average POTW H_2S lost**

H_2S emissions calculated with this emission factor can be evenly distributed between preliminary treatment, primary treatment, and sludge handling POTW sources.

L) Digester PRV Emissions: The anaerobic digestion of sewage sludge produces high levels of hydrogen sulfide. Anaerobic digesters are equipped with pressure relief valves (PRVs) to eliminate the possibility of catastrophic digester failure due to over-pressurization. While over-pressurization is designed to only occur in emergency situations, such as failure of digester gas combustion equipment, activation of the PRVs does happen and can result in significant releases of H_2S. Additionally, if PRVs are not maintained, they may fail and continuously vent. An example PRV emissions calculation is shown below:

1,800	CFM, digester gas	PRV flow rate per specs
200	ppm H_2S	Conc. in digester gas
108,000	V, CFH, digester gas	
1	P, atm	
0.7302	R, $ft^3 \cdot atm/lb\ mol \cdot {}^\circ R$	
559	T, Rankine	
264.59	lb-mol/hr	
0.05292	lb-mol/hr H_2S	
34	MW H_2S, lb/lb-mole	
1.799	lb/hr H_2S	

The digester PRV emissions calculations should be used in air dispersion analysis to demonstrate whether the source is likely to comply with Regulation 9, Rule 2. If emissions exceed the toxic trigger levels for hydrogen sulfide, an HRA should be conducted. The modeling may be used to determine the lb/hr that can be vented from a PRV while still ensuring compliance with Regulation 9, Rule 2. The facility can use the length of the release (usually minutes), the H_2S concentration at the time, and the standard flow through the PRV at the pressure setting to determine compliance.

M) High Strength Waste Receiving Emissions: High strength waste receiving stations allow POTWs to take in food waste and Fats, Oils, and Greases (FOG), which is then typically pumped into the anaerobic digesters. Decomposition of this material leads to emissions of VOCs, H_2S, ammonia, and toxic organic compounds. Typically, emissions are routed through some form of carbon adsorption or biofiltration. VOC emissions can be estimated with testing at the abatement stack by EPA method 25C. If testing is not available, a 2015 CARB study found that **0.196 lb VOC/wet ton-day** was emitted from stockpiles of food waste and green waste (CARB, 2015, "ARB Emissions Inventory Methodology for Composting Facilities") at several California facilities. This number can be used to estimate VOC emissions. Toxic organic compounds can be estimated using Table 1-2 from the Composting Operations Permit Handbook Chapter 11.16, which gives emissions of TACs as a proportion of VOC emissions.

Testing conducted at SCAQMD-inland in 2001 showed **0.018 lb NH_3/wet ton-day** from stockpiled green waste. This can be used to estimate ammonia emissions if testing is not available.

N) Carbon Adsorption Abatement Emissions: The decomposition of organic matter in sewage leads to the emissions of VOCs, H_2S, and other compounds. Carbon abatement or biofiltration is often used to abate such emissions. Emissions from the stack of the abatement are calculated using the Ideal Gas Law, the maximum design flow rate of the abatement, and the specified, designed, or tested peak outlet concentration of the pollutant to be calculated. If this information is not provided in the permit application submittal, the applicant should submit information on the H_2S and organics concentrations out of the stack and the maximum flow rate of the abatement device.

Alternatively, the EPA's Measurement Policy Group recommends the use of the WATER9 software program. The SIMS program, referred to in Section 4.3 of EPA's AP-42, was removed from the CHIEF web site in August 2000. Since this program requires many details of the geometry and configuration, the District cannot use this model. However, if a facility uses this model, it may submit the results.

Renewable Natural Gas
Renewable natural gas (RNG) is one way to make use of energy released by the biodegradation of wastewater solids. RNG is meant to be used anywhere natural gas, which has a heat content of 1020 Btu/scf, would be used. Because digester gas is typically composed of 60% methane and 40% carbon dioxide, as well as significant moisture and trace amounts of siloxanes and hydrogen sulfide, it must undergo a treatment process before being used as RNG. This treatment process creates the desired RNG, but also a waste gas that may have a heat content of 250 Btu/scf or more. This waste gas is often flared. A more productive use of this waste gas could be to fire boilers to create process heat at the facility, which might be used to heat the digesters.

Applicable Requirements
Air District Rules and Regulations
Wastewater collection and separation systems that handle liquid organic compounds from industrial processes are subject to the standards of Regulation 8-8. However, Regulation 8-8-115 specifically exempts publicly owned municipal waste water handling facilities from the standards of Regulation 8-8.

The wastewater treatment facility may be subject to Regulation 7 (Odorous Substances), if it is considered a potential source of odors. Abatement may be warranted if the uncontrolled source has demonstrated odors in the past or has the potential to be odorous.

Best Available Control Technology (BACT)
BACT for water treatment facilities is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Sewage Treatment Facilities Works (POTWs)
Sewage Treatment Plants
- Headworks and Primary Treatment
- Conventional Air Activated Sludge
- High Purity Oxygen Activated Sludge
- Secondary Clarifiers and Tertiary Treatment
- Solids Handling Equipment
- Digesters and Sludge Holding Tanks

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NSPS
Sewage sludge incinerators (SSI) at sewage treatment facilities may be subject to the NSPS, 40 CFR 60, Subpart O: Standards of Performance for VOC Emissions for Sewage Treatment Facilities. Existing SSI are subject to the Emission Guideline in 40 CFR 60, Subpart MMMM indirectly and the Federal Plan in 40 CFR 62, Subpart LLL, because the District and the State of California have not adopted a state plan. A new SSI would be subject to 40 CFR 60, Subpart LLLL.
In addition, oil-water separators at a petroleum refinery may be subject to the NSPS, Subpart QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems. The permit evaluator should review the proposed application to ensure that any proposed incinerator or oil-water separator is either exempt from the NSPS or complies with the NSPS.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration

- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for sewage treatment facilities are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

9.1 AIRSTRIPPING

December 15, 2023

Process Description

This chapter covers the permitting of air stripping operations. Air stripping involves the mass transfer of volatile contaminants from water to air. For ground water remediation, this process is typically conducted in a packed tower or an aeration tank. The typical packed tower air stripper includes a spray nozzle at the top of the tower to distribute contaminated water over the packing in the column, a fan to force air countercurrent to the water flow, and a sump at the bottom of the tower to collect decontaminated water. Auxiliary equipment that can be added to the basic air stripper includes an air heater to improve removal efficiencies; automated control systems with sump level switches and safety features, such as differential pressure monitors, high sump level switches, and explosion-proof components; and air emission control and treatment systems, such as activated carbon units, catalytic oxidizers, or thermal oxidizers. Packed tower air strippers are installed either as permanent installations on concrete pads or on a skid or a trailer.

Completeness Determination

The following Air District forms should be completed and fees provided for the air stripping operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). Process code is 5040 for air stripping/DAF processing, 7155 for contaminated ground water stripping, and 7353 for sub-slab depressurization/mitigation/venting systems. Material code is 502, and usage unit is thousand gallons.
3. Form A (one per abatement device).
4. If abatement device burns fuel (i.e., thermal oxidizer), then Form C. If the abatement device is an internal combustion engine, then Form ICE.
5. Form P (one per stack).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule G1 – Remediation Operations, Groundwater – Strippers).

Emission Calculations

Airstripping (Primary) Emissions

Emission calculations are based on a material balance from the proposed source with the following assumptions:

1. Standard conditions: Pressure = 1 atm; temperature = 70ºF (21ºC); 1 mole occupies 24.15 L
2. Influent concentrations based on estimates provided by the applicant (from water analyses results for total organic hydrocarbons (POC), and individual toxic compounds, identified in Table 2-5-1 of Regulation 2-5).
3. Assume 100% of contaminants are stripped from the water.
4. Influent flow rate based on operational parameters of equipment (i.e., flow rate into air stripping operation; abatement efficiency of abatement equipment (i.e., carbon system, thermal or catalytic oxidation).

Abated emission of the total organic hydrocarbons and individual toxic compounds can be calculated using the following equation:

$$E_P = Ci * Q * Co * (1\text{-}A)$$

where:

E_P = Abated Emissions (lbs/day),
Ci = Influent Concentration (ppmw),
Q = Flow Rate (gal/min),

Co = Dimensional Constant (Conversion Factor),
Co = 8.34 lb/gal * 1440 min/day = 12009.6 lb-min/gal-day

A = Abatement Efficiency of Abatement Device (wt%),

Annual emissions are calculated by multiplying daily emissions by the maximum number of operating days (i.e., 365 days per year).

Abatement Device Emissions (Secondary)
Per Regulation 2-2-208, the aggregate sum of all increases of any given pollutant from a facility pursuant to the authority to construct or permit to operate is included in the cumulative increase. Hence, in addition to abated emissions of airstripping operation ("primary" emissions), emissions from the abatement device ("secondary" emissions) must also be calculated. Because the abatement device requires a permit, per Regulation 2-1-113.2.4, any "secondary" emissions from the abatement device must also be included in the cumulative increase.

Carbon Adsorption
There are no secondary emissions for the operation of a carbon adsorption system.

Thermal/Catalytic Oxidation
However, the combustion of fuel from thermal and catalytic oxidizers and internal combustion engines results in secondary criteria pollutants of combustion. These secondary pollutants must be calculated and included in the cumulative increase. Furthermore, per Regulation 2-2-112, although the abatement equipment is not be subject to BACT requirements when it is used to abate a source to meet BACT/TBACT requirements, it is subject to Reasonably Available Control Technology (RACT) for control of secondary pollutants. Policy: NOx and CO RACT Levels for Thermal Oxidizers has been established:

NOx = 0.2 lb/MMBTU
CO = 0.8 lb/MMBTU

Per Air District Policy: NOx and CO RACT Levels for Thermal Oxidizers, source testing of the thermal and catalytic oxidizers are required to verify nitrogen oxide and carbon monoxide emission requirements, if the oxidizer is over 7.5 MMBTU/hr.

Emission factors from AP-42, Table 1.4-2 (Natural Gas Combustion) may be used for particulate (PM10), sulfur dioxide (SO_2), and POC emissions, unless vendor data for the abatement device is available:

PM10 = 7.6 lb/MM scf *(scf/1020 BTU) = 0.075 lb/MMBTU
SO_2 = 0.6 lb/MM scf *(scf/1020 BTU) = 0.0006 lb/MMBTU
POC = 5.5 lb/MM scf *(scf/1020 BTU) = 0.0054 lb/MMBTU

With these emission factors, the annual emissions from the thermal/catalytic oxidizer can be calculated using the following equation:

$$E_S = F \times B \times H$$

where:

E_S = Annual Emissions of Abatement Device (lbs/yr)
F = Emission Factor of Criteria Pollutant (lb/MMBTU)
B = Maximum Firing Rate of Burner in Abatement Device (MMBTU/hr)
H = Maximum Number of Hours The Oxidizer Will Operate
(i.e., 24 hr/day x 365 day/yr = 8760 hrs/yr)

Applicable Requirements
Air District Rules and Regulations

Air stripping operations are subject to Regulation 8-47 (Air Stripping and Soil Vapor Extraction Operations); which requires at least 90% control of emissions unless the applicant meets the exemptions of Sections 109 through 113 of that regulation.

Any IC engines over 250 HP used for abatement of the airstripping operation would also be subject to Regulation 9-8 (Nitrogen Oxide and Carbon Monoxide Emissions From Stationary Internal Combustion Engines). Initial startup source testing should be required to ensure that the IC engine (≥ 250 HP) will meet the emission standards for nitrogen oxides and carbon monoxide.

Best Available Control Technology (BACT)
BACT for airstripping is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Air Stripper - Ground Water Treatment

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for air stripping operations (including that for RACT requirements for thermal oxidizers and IC engines) are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

9.2 SOIL VAPOR EXTRACTION

December 15, 2023

Process Description

This chapter covers the permitting of soil vapor extraction operations. Soil vapor extraction also known as "soil venting" or "vacuum extraction", is an in situ remedial technology that reduces concentrations of volatile constituents in petroleum products adsorbed to soils in the unsaturated (vadose) zone. In this technology, a vacuum is applied through wells near the source of contamination in the soil. Volatile constituents of the contaminant mass "evaporate" and the vapors are drawn toward the extraction wells. Extracted vapor is then treated as necessary (commonly with carbon adsorption or thermal or catalytic oxidation) before being released to the atmosphere.

Completeness Determination

The following Air District forms should be completed and fees provided for the soil vapor extraction operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). Process code is 7156; material code is 572, and usage unit is cubic feet.
3. Form A (one per abatement device).
4. If abatement device burns fuel (i.e., thermal oxidizer), then Form C. If the abatement device is an internal combustion engine, then Form ICE.
5. Form P (one per stack).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule G1 – Remediation Operations, Soil – Any Equipment).

Emission Calculations

Soil Vapor Extraction (using carbon adsorption)

For a conservative estimate of yearly emissions, we shall assume that the system is operated for an entire year within an inlet concentration corresponding to the initial soil concentration level. Emission calculations are based on a material balance from the proposed source with the following assumptions:

1. Standard conditions: Pressure = 1 atm; temperature = 70°F (21°C); 1 mole occupies 24.15 L (or 386.8 ft3/lb-mol)
2. Hydrocarbons will be abated by at least two activated carbon vessels (typically 300 – 2000 lb) in series. POC/NPOC cumulative emissions are based on a 3-ppm effluent concentration since the last carbon threshold changeout level on the last abatement vessel will be limited 3 ppm, calibrated to isobutylene.
3. Toxic Air Contaminants (TAC) emissions will be based on soil vapor data submitted with the application.
4. Assume 100% of contaminants are stripped from collected vapor.
5. All equipment can operate 24 hours per day and 365 days per year.
6. Influent flow rate based on operational parameters of equipment (i.e., flow rate into abatement equipment and an abatement efficiency of 99%).

Abated emission of the total organic hydrocarbons and individual toxic compounds can be calculated using the following equations:

$$E_P = Ci * Q * Co * (1-A)$$

where:

E_P = Abated Emissions (lbs/hr),
Ci = Influent Concentration (ug/m^3),
Q = Flow Rate (scfm),
Co = Dimensional Constant (Conversion Factor)
Co = 1 lb/4.54E8 ug * m^3/35.31 ft^3 * 60 min/hr = 3.75E-09 lb- m^3-min/ug-ft^3-hr
A = Abatement Efficiency of Abatement Device (wt%)

Daily emissions are calculated by multiplying hourly emissions by the maximum number of operating hours per day (i.e., 24 hours per day). Annual emissions are calculated by multiplying daily emissions by the maximum number of operating hours per year (i.e., 365 days per year).

The following are an example emissions calculation for 21,000 ug/m3 of pollutant concentration with a flow rate of 275 cfm of influent flow rate

$$21{,}000\ \frac{\mu g}{m^3} \times 275\frac{ft^3}{min} \times 1440\frac{min}{day} \times \frac{1}{35.31}\frac{m^3}{ft^3} \times \frac{1}{4.54 \times 10^8}\frac{lb}{\mu g} = 0.518\frac{lb}{day}\ (\,unabated)$$

$$0.518\frac{lb}{day} \times (1 - 99\%) \times 365\frac{day}{year} = 1.89\ \ lb/year\ (abated)$$

<u>Abatement Device Emissions (Secondary)</u>

Per Regulation 2-2-208, the aggregate sum of all increases of any given pollutant from a facility pursuant to the authority to construct or permit to operate is included in the cumulative increase. Hence, in addition to abated emissions of soil vapor extraction ("primary" emissions), emissions from the abatement device ("secondary" emissions) must also be calculated. Because the abatement device requires a permit, per Regulation 2-1-113.2.4, any "secondary" emissions from the abatement device must also be included in the cumulative increase.

Carbon Adsorption

There are no secondary emissions for the operation of a carbon adsorption system.

Thermal/Catalytic Oxidation

However, the combustion of fuel from thermal and catalytic oxidizers and internal combustion engines results in secondary criteria pollutants of combustion. These secondary pollutants must be calculated and included in the cumulative increase. Furthermore, per Regulation 2-2-112, although the abatement equipment is not be subject to BACT requirements when it is used to abate a source to meet BACT/TBACT requirements, it is subject to Reasonably Available Control Technology (RACT) for control of secondary pollutants. Policy: NOx and CO RACT Levels for Thermal Oxidizers has been established:

> NOx = 0.2 lb/MMBTU
> CO = 0.8 lb/MMBTU

Per Air District Policy: NOx and CO RACT Levels for Thermal Oxidizers, source testing of the thermal and catalytic oxidizers are required to verify nitrogen oxide and carbon monoxide emission requirements, if the oxidizer is over 7.5 MMBTU/hr.

Emission factors from AP-42, Table 1.4-2 (Natural Gas Combustion) may be used for particulate (PM10), sulfur dioxide (SO_2), and POC emissions, unless vendor data for the abatement device is available:

> PM10 = 7.6 lb/MM scf *(scf/1020 BTU) = 0.0075 lb/MMBTU
> SO_2 = 0.6 lb/MM scf *(scf/1020 BTU) = 0.0006 lb/MMBTU
> POC = 5.5 lb/MM scf *(scf/1020 BTU) = 0.0054 lb/MMBTU

With these emission factors, the annual emissions from the thermal/catalytic oxidizer can be calculated using the following equation:

> E_S = F x B x H

where:

E_S = Annual Emissions of Abatement Device (lbs/yr)
F = Emission Factor of Criteria Pollutant (lb/MMBTU)
B = Maximum Firing Rate of Burner in Abatement Device (MMBTU/hr)
H = Maximum Number of Hours The Oxidizer Will Operate
(i.e., 24 hr/day x 365 day/yr = 8760 hrs/yr)

Applicable Requirements
Air District Rules and Regulations
Soil vapor extraction operations are subject to Regulation 8-47 (Air Stripping and Soil Vapor Extraction Operations); which requires at least 90% control of emissions unless the applicant meets the exemptions of Sections 109 through 113 of that regulation.

Best Available Control Technology (BACT)
BACT for soil vapor extraction is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Soil Vapor Extraction

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for soil vapor extraction operations (including that for RACT requirements for thermal oxidizers and IC engines) are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

9.3 SUB-SLAB DEPRESSURIZATION

December 15, 2023

Process Description
This chapter covers the permitting of sub-slab depressurization operations. Volatile chemicals from groundwater contamination or contaminated soil can enter a building through cracks or holes in the foundation slab or walls, utility penetrations, and/or can permeate through building materials. Vapor-forming chemical compounds typically include gases, such as methane. Sub-slab depressurization is the most common and most effective gas reduction strategy in basement and slab-on-grade houses. Sub-slab depressurization reduces the pressure in the sub-slab environment by exhausting sub-slab gases before they move through floor cracks or openings. A sub-slab depressurization system consists of one or more pipes attached to a fan or blower thereby creating a suction. The collected vapors are then abated typically using an activated carbon abatement system.

Potential Permit Exemption
Note that sub-slab depressurization systems that utilize wind-driven roof-mounted exhaust fans are exempt from Air District permitting requirements provided that:

- The emissions of any toxic air contaminants (TACs) are below the acute and chronic trigger levels listed in Table 2-5-1 of Regulation 2-5; and
- The exhaust fan is solely powered by natural wind action (also known as turbine ventilators). No electricity or external source of power is used.

Regulation 2-1-128.5 exempts "Natural draft hoods, natural draft stacks or natural draft ventilators" from permitting requirements. Wind-driven roof-mounted exhaust fans are ventilators that rely on natural forces such as the stack and wind effects and thus should also fall within the scope of the Regulation 2-1-128.5 permit exemption.

Completeness Determination
The following Air District forms should be completed and fees provided for the sub-slab depressurization operation. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately

8. Form 101-B (one for facility).
9. Form G (one per source). Process code is 7353 for sub-slab; material code is 572, and usage unit is cubic feet.
10. Form A (one per abatement device).
11. Form P (one per stack).
12. If Health Risk Assessment is triggered, Form HRA (one per source).
13. Fees, calculated per Regulation 3 (Schedule F).
14. Detail description of proposed sub-slab depressurization operation including the location of operation, including the operating hours of the system and the location.
15. Soil vapor data results for total organic hydrocarbons and individual toxic compounds.

Emission Calculations
Emission calculations are based on a material balance from the proposed source with the following assumptions:

5. Standard conditions: Pressure = 1 atm; temperature = 70ºF (21ºC); 1 mole occupies 24.15 L
6. Influent concentrations (ug/m^3)based on soil vapor data results provided by the applicant for total organic hydrocarbons (POC/NPOC), and individual toxic compounds, identified in Table 2-5-1 of Regulation 2-5):
7. Assume 100% of contaminants are stripped from collected vapor.
8. All equipment can operate 24 hours per day and 365 days per year.
9. Influent flow rate based on operational parameters of equipment (i.e., flow rate into abatement equipment and a minimum abatement efficiency of 90%).

Abated emission of the total organic hydrocarbons and individual toxic compounds can be calculated using the following equations:

$$E_P = Ci * Q * Co * (1-A)$$

where:

E_P = Abated Emissions (lbs/hr),
Ci = Influent Concentration (ug/m^3),
Q = Flow Rate (scfm),
Co = Dimensional Constant (Conversion Factor)
Co = 1 lb/4.536E8 ug * 0.02832 m^3/ft^3 * 60 min/hr = 3.75E-09 lb- m^3-min/ug-ft^3-hr
A = Abatement Efficiency of Abatement Device (wt%)

Daily emissions are calculated by multiplying hourly emissions by the maximum number of operating hours per day (i.e., 24 hours per day). Annual emissions are calculated by multiplying daily emissions by the maximum number of operating days per year (i.e., 365 days per year).

The following are an example emissions calculation for 21,000 ug/m3 of pollutant concentration with a flow rate of 275 cfm of influent flow rate

$$21{,}000\ \frac{\mu g}{m^3} \times 275\frac{ft^3}{min} \times 1440\frac{min}{day} \times \frac{1}{35.31}\frac{m^3}{ft^3} \times \frac{1}{4.54 \times 10^8}\frac{lb}{\mu g} = 0.518\frac{lb}{day}\ (\,unabated)$$

$$0.518\frac{lb}{day} \times (1 - 99\%) \times 365\frac{day}{year} = 1.89\ \ lb/year\ (abated)$$

Applicable Requirements
Air District Rules and Regulations
Sub-slab depressurization are subject to Regulation 8-47 (Air Stripping and Soil Vapor Extraction Operations); which requires at least 90% control of emissions unless the applicant meets the exemptions of Sections 109 through 113 of that regulation.
Operating procedures to the sub-slab depressurization are outlined in the permit conditions. Effluent volatile organic compound (VOC) concentrations will be monitored with a photoionization detector (PID) on a schedule reflecting current loading rates and predicted carbon capacity. Monitoring schedule changes will be allowed only after the Air District reviews concentration measurements and a subsequent receipt of Air District approval is granted.

Best Available Control Technology (BACT)
There is no specified BACT for sub-slab depressurization in the BACT/TBACT Workbook. However, generally, sub-slab depressurization operations generally do not trigger BACT requirements because of the control requirements of Regulation 8-47.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for soil vapor extraction operations (including that for RACT requirements for thermal oxidizers and IC engines) are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

10.1 CHROME PLATING (HEXAVALENT)

December 15, 2023

Process Description

This chapter covers the permitting of chrome plating operations. Chrome plating is a finishing treatment utilizing the electrolytic deposition of chromium. These operations fall into three general categories as follows: hard (or technical) chrome plating, decorative (or bright) chrome plating, and hard chrome anodizing. Decorative chrome plating is further divided into two permit categories, hexavalent (+6 valence state) chrome based decorative plating and trivalent (+3 valence state) chrome based decorative plating. Air emissions result from these processes when byproduct hydrogen or air (air sparging is occasionally used for mixing or cooling) leaves the bath carrying bath chemicals into the atmosphere in particulate (mist) form. Although other variants of the above chrome plating processes exist, including Porous Chrome Plating, Brush Chrome Plating and Black Chrome Plating, this chapter focuses mainly on the most prevalent plating operations, hard chrome plating, decorative chrome plating and trivalent chrome plating.

Hard chrome plating usually involves plating at high current densities for time periods measured in multiple hours to produce plating thicknesses ranging from 20 to 100 µm. Decorative chrome plating, on the other hand, is conducted at relatively lower current densities for time periods measured in minutes to produce plating thicknesses that are typically less than 1 µm, but some decorative plating operations may plate up to 10 µm.

Although both hexavalent and trivalent chrome compounds are listed on the various hazardous (toxic) materials lists, only hexavalent chrome has been identified to be a human carcinogen. Therefore, those plating operations that involve hexavalent chrome-based bath chemistry (decorative, hard chrome and hard anodizing) require a Health Risk Assessment and are subject to the Statewide ATCM for chrome plating (Regulation 11, Rule 8). Decorative Trivalent Chrome Plating is also subject the Statewide ATCM for chrome plating (Regulation 11, Rule 8). No Heath Risk Assessment is required for trivalent chrome plating at this time.

Completeness Determination

The following Air District forms should be completed and fees provided for chrome plating. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). Process code is 3070 for decorative chrome plating (<=50000 Amphr), 3071 for hard chrome plating, 3079 for decorative trivalent chrome, and 3080 for decorative chrome (> 500000 Amphr); material code is 477; and usage unit is amp-hr. The pollutant code is 1095 for hard and decorative chrome plating and 1340 for trivalent chrome.
3. Form A (one per abatement device).
4. A Health Risk Assessment is triggered, Form HRA (one per source).
5. Fees, calculated per Regulation 3 (Schedule G1) for Sterilization Equipment (Ethylene Oxide).

Emission Calculations

Hard Chrome

In general, the emission standards of Section 93102, Subchapter 7.5, Chapter 1, Division 3, Title 17, of the California Code of Regulations: "Hexavalent Chrome Airborne Toxic Control Measure For Chrome Plating and Chromic Acid Anodizing Operations" should be used to estimate emissions from hard chrome platers. (see Section 93102(c)(1)).

With the emission factors and the project throughput (in amp-hr/year), the emissions of hexavalent chrome can be estimated:

PM10 (lbs/yr) = Cr^{VI+} = Throughput (amp-hr/yr) x Emission Factor (mg/amp-hr) x (1.0E-03 g/mg) x (2.203E-3 lb/g)

Decorative Chrome
For decorative chrome plating, emission calculations are based on source test data for decorative chrome plating operations. This information may be found in the California Air Resources Board (CARB) document "Control of Emissions from Electroplating and Anodizing Operations" December, 1988:

Decorative Chrome Plating:	0.5 mg/amp-hr
Abatement Efficiency of Mist Suppressant:	95% (factor=0.05)

With the specified emission factors and the project throughput (in amp-hr/year), the emissions of hexavalent chrome can be estimated:

PM10 (lbs/yr) = Cr^{VI+}= Throughput (amp-hr/yr) x Emission Factor (mg/amp-hr) x (1.0E-03 g/mg) x (2.203E-3 lb/g)

Trivalent Chrome
A search of Internet, the known available literature including AP-42 all indicate the emissions of trivalent chrome, if any, have not been quantified at the present time. The trivalent chrome plating bath chemistry is much more dilute than hexavalent chrome, therefore any emissions created by hydrogen gas production and entrainment would be expected to be much lower than for a similar hexavalent chrome bath. To minimize any potential emissions, the trivalent chrome chemicals include an additive that is a wetting agent, thereby reducing the surface tension and reducing emissions of plating bath solution. For the purposes of this evaluation, trivalent chrome plating bath emissions are estimated to be negligible.

It should be noted that wetting agent is included in the bath formulation to facilitate optimal bonding of the trivalent chrome metal with the substrate being plated. The reduced emissions potential is a side benefit to the desired low surface tension created by the wetting agent already included in the bath chemicals. It should also be established that the presence of any hexavalent chrome constitutes a contaminated bath, compromising the quality of the trivalent chrome plating process. For this reason, it is assumed that there is no hexavalent chrome present or emitted.

Applicable Requirements
Air District Rules and Regulations
The provisions of Section 93102, Subchapter 7.5, Chapter 1, Division 3, Title 17, of the California Code of Regulations: "Hexavalent Chrome Airborne Toxic Control Measure For Chrome Plating and Chromic Acid Anodizing Operations" were incorporated by reference in Regulation 11-8.

Best Available Control Technology (BACT)
BACT for chrome planting is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Chrome Plating
- Chrome Plating - Decorative Chrome

Chrome Plating - Hard Chrome
- Rectifier throughput 0 to 6,053,333 amp-hr/yr
- Rectifier throughput 6,053,333 to 151,333,333 amp-hr/yr
- Rectifier throughput >= 151,333,333 amp-hr/yr

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NESHAPS
A chrome plater is subject to the Chromium Electroplating: National Emission Standards for Hazardous Air Pollutants if it emits more than 10 tons per year of hexavalent chrome (or other hazardous air pollutant). The chrome plating ATCM has been granted equivalency with the Federal NESHAP. Hence, compliance with the ATCM is compliance with the NESHAP.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for chrome plating are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

10.2 ETHYLENE OXIDE STERILIZERS

December 15, 2023

Process Description
This chapter covers the permitting of ethylene oxide (EtO) sterilizers. EtO is a substance identified as a toxic air contaminant by the Air Resources Board in Title 17 of the California Code of Regulations, Section 93000. EtO sterilization is typically performed at industrial/commercial facilities and hospitals in sealed, airtight chambers to destroy bacteria, viruses, and other unwanted organisms or materials. Most sterilizers use 100% pure EtO. Mixtures of EtO and chlorofluorocarbons (HCFC-22, HCFC-124, or Freon 12) were used in the past but chlorofluorocarbon (CFC) use is being phased out. The 100% EtO sterilizers use unit-dose cartridges to eliminate the need for external tanks.

The EtO sterilization process usually employs five steps:

1. Presterilization conditioning,
2. Sterilization,
3. Evacuation,
4. Air wash,
5. Aeration.

Conditioning includes sealing and evacuating the loaded chamber, then adjusting temperature and pressure. The sterilization step involves adding the sterilant (typically 100% pure EtO), establishing the correct operating pressure and temperature and holding the chamber for a soaking period of 4 to 24 hours. The chamber pressure should be slightly below atmospheric for pure EtO or two atmospheres for EtO and CFC mixtures. After soaking, the sterilizer is evacuated, then given a series of air washes to finish removing EtO. Any residual EtO in the sterilized product is removed by aeration. Aeration may be done either in the sterilizer chamber or in a specially designed aeration chamber (SCAQMD, 1990) using forced air flow, natural or mechanically assisted convection, or other means.

Completeness Determination
The following Air District forms should be completed and fees provided for EtO sterilizers. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). Process code is 7146 for medical equipment sterilization and 1032 for food/pharmaceutical products sterilization; material code is 487; and usage unit is in pounds.
3. Form A (one per abatement device).
4. If Health Risk Assessment is triggered, Form HRA (one per source).
5. Fees, calculated per Regulation 3 (Schedule G1) for Sterilization Equipment (Ethylene Oxide).

Emission Calculations
Ethylene Oxide Sterilizer Emissions (Primary)
Emissions from EtO sterilizers should be calculated as the total sterilant gas throughput minus the amount of inert gas present. Approximately 90% of the emissions can be attributed to the sterilizer and 10% to the aerator. If the EtO usage factor is known, (e.g., 170 grams/run), the permit evaluator shall determine the run time of each warm operation cycle (sterilization time plus aeration time). With the facility's annual operating schedule, total runs each year, and EtO usage factor, annual EtO emissions can be calculated. These emissions will be reduced, if necessary, to the levels required by the ATCM for EtO sterilizers (e.g., Table I of the ATCM for units using less than 2,000 Pounds of EtO per year)

POC = Ethylene Oxide = (lbs/yr of Sterilizer)(% of EtO in Sterilizer)(1-%Required Control Efficiency)
NPOC (if any) = CFC = (lbs/yr of Sterilizer)(1-% of EtO in Sterilizer)

Abatement Device Emissions (Secondary)
Per Regulation 2-2-208, the aggregate sum of all increases of any given pollutant from a facility pursuant to the authority to construct or permit to operate is included in the cumulative increase. Hence, in addition to abated emissions of ethylene oxide sterilizer ("primary" emissions), emissions from the abatement device ("secondary" emissions) must also be calculated. Because the abatement device requires a permit, per Regulation 2-1-113.2.4, any "secondary" emissions from the abatement device must also be included in the cumulative increase.

Thermal/Catalytic Oxidation
The combustion of fuel from thermal and catalytic oxidizers and internal combustion engines results in secondary criteria pollutants of combustion. These secondary pollutants must be calculated and included in the cumulative increase. Furthermore, per Regulation 2-2-112, although the abatement equipment is not be subject to BACT requirements when it is used to abate a source to meet BACT/TBACT requirements, it is subject to Reasonably Available Control Technology (RACT) for control of secondary pollutants. Policy: NOx and CO RACT Levels for Thermal Oxidizers has been established:

NO_x = 0.2 lb/MMBTU
CO = 0.8 lb/MMBTU

Per Air District Policy: NOx and CO RACT Levels for Thermal Oxidizers, source testing of the thermal and catalytic oxidizers are required to verify nitrogen oxide and carbon monoxide emission requirements, if the oxidizer is over 7.5 MMBTU/hr.

Emission factors from AP-42, Table 1.4-2 (Natural Gas Combustion) may be used for particulate (PM10), sulfur dioxide (SO_2), and POC emissions, unless vendor data for the abatement device is available:

PM10 = 7.6 lb/MM scf *(scf/1020 BTU) = 0.075 lb/MMBTU
SO_2 = 0.6 lb/MM scf *(scf/1020 BTU) = 0.0006 lb/MMBTU
POC = 5.5 lb/MM scf *(scf/1020 BTU) = 0.0054 lb/MMBTU

With these emission factors, the annual emissions from the thermal/catalytic oxidizer can be calculated using the following equation:

$$E_S = F \times B \times H$$

where:

E_S = Annual Emissions of Abatement Device (lbs/yr)
F = Emission Factor of Criteria Pollutant (lb/MMBTU)
B = Maximum Firing Rate of Burner in Abatement Device (MMBTU/hr)
H = Maximum Number of Hours The Oxidizer Will Operate
(i.e., 24 hr/day x 365 day/yr = 8760 hrs/yr)

Applicable Requirements
Air District Rules and Regulations
The provisions of Section 93108 and 93108.5, Title 17, of the California Code of Regulations: "Ethylene Oxide ATCM for Sterilizers and Aerators, Part 1 and 2" were incorporated by reference in Regulation 11-9. Section 93108 is the Airborne Toxic Control Measure (ATCM) for non-commercial sterilizers and aerators and commercial sterilizers and aerators using less than 2,000 pounds of Ethylene Oxide per 12 Consecutive Months. Section 93108.5 is the ATCM for commercial sterilizers using 2,000 pounds or more of ethylene oxide per 12 consecutive months.

Regulation 8-2 also applies. It is expected that with the control requirements imposed by the ATCMs that compliance with Regulation 8-2 is likely. The permit evaluator should review the application to determine whether compliance with the ATCMs and Regulation 8-2. Ethylene oxide emissions should be well below 15 pounds per day of total carbon due to the toxicity of this material.

Best Available Control Technology (BACT)
BACT for ethylene oxide sterilizers is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Ethylene Oxide Sterilizers
- Ethylene Oxide Sterilization

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

ATCM
CARB adopted the Airborne Toxic Control Measure (ATCM) for Ethylene Oxide for Sterilizers and Aerators. The ATCM listed operating requirements for units using less than 2,000 Pounds of EtO per year and those units using more than 2,000 Pounds of EtO per year. The ATCM included leak-free requirements, control device and efficiency requirements, concentration limits of ethylene oxide, data recording and source test requirements.

NESHAPS
Ethylene oxide sterilizers are subject to the NESHAPS, Subpart O: Commercial Sterilizers (Ethylene Oxide Emission Standards for Sterilization Facilities). If a facility uses less than 1 ton of EtO per year (all consecutive 12-month periods after December 6, 1996), then it is subject to only the recordkeeping requirements of the standard (Section 63.367). If the facility uses 1 ton or more of EtO per year, then it is also subject to the emission standards of the Sterilizer NESHAP. Which emission standards apply depend on whether or not 10 or more tons of EtO per year are used. The NESHAP standards apply based on EtO usage, not emissions. The permit evaluator should review the application to determine whether the NESHAP applies and whether the applicant complies if it does.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for EtO Sterilizers are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

10.4 NON-HALOGENATED SOLVENT DRYCLEANING

December 15, 2023

Process Description

This chapter covers the permitting of non-halogenated (i.e., petroleum) solvent dry cleaning operations. Petroleum solvents, as distinguished from synthetic solvents (which include halogenated solvents such as perchloroethylene), are defined as any non-halogenated hydrocarbon solvent. Types of non-halogenated solvent include Stoddard, 140F solvent. Dry Cleaning facilities using synthetic solvents are covered under a different chapter (10.5).

Additional background information is available from Chapter 4.1 Dry Cleaning of AP-42 (Fifth Edition, Volume I).

Any dry cleaning facility which uses (gross consumption) less than 200 gallons of petroleum solvent or any other non-halogenated solvent in any single year is exempt from permitting requirements per Regulation 2-1-120. However, they are subject to the registration requirements per Regulation 8-17-404. Details of how to qualified dry cleaning equipment can be registered can be found on-line at the Air District's web site.

Completeness Determination

The following Air District forms should be completed and fees provided for the non-halogenated solvent drycleaners (which are not exempt per Regulation 2-1-120). Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form D (one per source).
3. If abated, Form A (one per abatement device).
4. If Health Risk Assessment is triggered, Form D(a) (one per source).
5. Fees, calculated per Regulation 3 (Schedule I).

Emission Calculations

Emissions from petroleum solvent dry cleaning operations should be calculated based on the estimated net solvent evaporation.

POC in lb/yr = Net Solvent Evaporation (gals/yr) x Density of Solvent (lb/gal)

Applicable Requirements

Air District Rules and Regulations

Petroleum solvent dry cleaning operations are subject to Regulation 8-17. The standards of Regulation 8-17 do not currently reflect the latest technologies of dry cleaning. Almost all non-halogenated solvent drycleaners use closed loop machines (ventless dry-to-dry systems with internal refrigerated condenser), which have been deemed by the Air District to be equivalent or better to complying with the requirements of Regulation 8-17. Regulation 8-17 will be amended in the near future; upon which time this permit handbook will also be amended to reflect the new requirements.

Best Available Control Technology (BACT)

BACT for non-halogenated solvent drycleaning is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Petroleum Solvent Drycleaning
- Drycleaner - Petroleum Solvent

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for petroleum solvent drycleaning are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

10.5 SYNTHETIC SOLVENT DRYCLEANING

July 3, 2023

Process Description
This chapter covers the permitting of synthetic solvent drycleaning operations. Synthetic solvents used for drycleaning include n-propyl bromide. Trichlorotrifluroethane (freon, fluorocarbon) and trichloroethane (TCA) are no longer used because of ozone depletion concerns. The Airborne Toxic Control Measure (ATCM) for Emissions of Perchloroethylene from Dry Cleaning Operations dictated the complete phase out of perchloroethylene on January 1, 2023. Dry Cleaning facilities using non-halogenated solvents are covered under a different chapter (10.4).

Additional background information is available from Chapter 4.1 Dry Cleaning of AP-42 (Fifth Edition, Volume I).

Completeness Determination
The following Air District forms should be completed and fees provided for the dry cleaning facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form D (one per source).
3. If Health Risk Assessment is triggered, Form D(a) (one per source).
4. Fees, calculated per Regulation 3 (Schedule I).

Emission Calculations
Emissions from synthetic solvent dry cleaning operations should be calculated based on the estimated net solvent evaporation. The Air District has developed instructions for the dry cleaner Annual Update Form to assist dry cleaners in calculating net solvent evaporation.

VOC in lb/yr = Net Solvent Evaporation (gals/yr) x Density of Solvent (lb/gal)

n-propyl bromide is a POC.

Applicable Requirements
Air District Rules and Regulations
Synthetic solvent dry cleaning operations are subject to Regulation 11-16.

N-propyl bromide is a compound undergoing review by OEHHA (i.e., reproductive effects and both toxics are subject to Regulation 2-5-301 (Best Available Control Technology for Toxics (TBACT) Requirements) and 302 (Project Risk Requirements). The permit evaluator should ensure that the applicant uses TBACT in the dry cleaning operation and that the project risk is acceptable.

Best Available Control Technology (BACT)
BACT for synthetic solvent drycleaning is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Synthetic Solvent Drycleaning
- Drycleaner - Valclene & Other Synthetic Solvents

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

NESHAPS
Dry cleaning facilities, which use perchloroethylene, are subject to the NESHAPS, Subpart M: Dry Cleaning (National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities). California's ATCM has been designed as equivalent to NESHAP and California has been delegated enforcement authority by the U.S. EPA. On January 25, 2007, the California Air Resources Board approved the

amendments to the ATCM. These amendments have been incorporated into to Regulation 11-16 to include all new ATCM requirements for perchloroethylene dry cleaning:

- Require that all Perc machines be removed from service once they become 15 years old (as a result, all remaining Perc machines must be removed from service by January 1, 2023); and
- Expand good operating practices and recordkeeping and reporting requirements.

and a definition for non-halogenated solvents:

8-17-201 **Non-halogenated Solvent:** For the purposes of this rule only, this definition applies to the following solvents used for dry cleaning that contain less than 5% by weight of total halogens (chlorine, bromine, fluorine, and/or iodine). Non-halogenated solvents typically, but not necessarily, contain hydrogen and carbon.

201.1 Solvent: For the purposes of this rule only, "solvent" refers to any non-halogenated solvent subject to this rule, i.e., any non-halogenated solvent and/or solvent containing less than 5% by weight of total halogens.

201.2 Non-halogenated solvents include, but are not limited to, petroleum solvents, glycol ethers, and volatile methylated siloxanes:

1. Petroleum Solvent: A hydrocarbon distillate used for dry cleaning, typically having a minimum flash point of 38ºC (100ºF) (generically known as Stoddard solvent).
2. High Flash Petroleum Solvent: A highly refined hydrocarbon solvent with a flash point above 60ºC (140ºF); typically a mixture of aliphatic hydrocarbons in the C_8-C_{14} range (e.g. DF2000™, Ecosolve™, Drylene®, Puredry™).
3. Glycol Ether Solvent: A glycol ether/ester based liquid used for dry cleaning, typically having a minimum flash point of 85ºC (185ºF). These solvents include, but are not limited to Propylene Glycol Ethers, Dipropylene Glycol Tert Butyl Ether, Propylene Glycol Dipropylene Glycol Normal Ether (e.g. Rynex®, Arcosolv® DPNB, Impress™).
4. Volatile Methylated Siloxane Solvent: A liquid containing a volatile methyl siloxane (e.g., decamethylcyclopentasiloxane or D5) as the cleaning solvent, typically having a minimum flash point of 76ºC (170ºF) (e.g. Green Earth®).

(Amended March 4, 2009)

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for synthetic solvent dry cleaning operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.1 ABRASIVE BLASTING OPERATIONS

December 15, 2023

Process Description
Abrasive blasting is the cleaning or preparing of a surface by forcibly propelling a stream of abrasive material against the surface using sand, glassbead, aluminum oxide, grit, slag, garnet, steel shot, slag, walnut shells, and others. Abrasive blasting is being used in many different applications to:

1. remove rust, scale, and paint;
2. roughen surfaces in preparation for bonding, painting or coating;
3. remove burr; and/or
4. develop a matte surface finish.
5. Remove flash from molding operation.

Abrasive blasting helps eliminate the use of organic solvent stripping and the generation of toxic waste material. A wide range of abrasive blasting equipment is available and blasting conditions can be selected to suit the coating and substrate. In most applications, the abrasive media are collected, cleaned to remove coating debris, and reused. The abrasive media breakdown in use so they cannot be reused indefinitely. Once the particle size gets smaller, the stripping efficiency drops. The worn abrasive media must be discarded and may require disposal.

There are two types of abrasive blasting:

1. Confined
2. Unconfined

Confined abrasive blasting is abrasive blasting, which is confined in an enclosure to reduce particulate matter emissions to the atmosphere, while unconfined is not. This chapter will discuss both types.

A thorough explanation of abrasive blasting is available from Chapter 13.2.6, Abrasive Blasting, of AP-42 (Fifth Edition, Volume I). Generally, an Air District permit is required for any confined abrasive blasting operation or equipment that has a confined volume greater than or equal to 100 cubic feet and is located in building. If the confined abrasive blasting operation is less than 100 cubic feet and abated by a particulate filter, it is exempt from permitting requirements per Regulation 2-1-118.1. In addition, blast cleaning equipment used a suspension of abrasives in water is exempt per Regulation 2-1-118.2. Portable abrasive blasting equipment used on a temporary basis within the Air District is exempt per Regulation 2-1-118.3.

Completeness Determination
The following Air District forms should be completed and fees provided for abrasive blasting operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. If Health Risk Assessment is triggered, Form HRA (one per source).
4. Fees, calculated per Regulation 3 (Schedule F).

Emission Calculations
Particulate matter (PM) and particulate hazardous air pollutants (HAP) are the major concern relative to abrasive blasting. Table 13.2.6-1 in Chapter 13.2.6, Abrasive Blasting, of AP-42 (Fifth Edition, Volume I).

Presents total PM emission factors for abrasive blasting as a function of wind speed. However, emissions of PM10 and PM2.5 are not significantly wind dependent.

Emission Factors for Abrasive Blasting

Unconfined and uncontrolled	PM10 = 13 lb/1000 lb of Abrasive

Confined and controlled by fabric filter	PM10 = 0.69 lb/1000 lb of Abrasive

The following equation can be used to calculate daily and annual PM10 emission rates:

$E_{PM10} = U(EF)[1-(A/100)]$

where,

E = emissions of PM10 (lb/hr)
U = blast media usage (lb/day or lb/yr)
EF = emission factor (lb/1000 lb)
A = abatement efficiency (%)

However, an alternative method is to use the grain loading rates and exhaust rates from the particulate abatement devices for confined abrasive blasting operations to calculate particulate emissions.

$E_{PM10} = Q_{dry}(gr)(60\ min/hr)/7000\ gr/lb$

where,

E = emissions of PM10 (lb/hr)
Q_{dry} = dry volumetric flow rate (cfm)
gr = grain loading rate (gr/dscf)

The standard cubic feet of dry air exhaust can be calculated from actual exhaust rates using the following equation:

$Q_{dry} = Q_{act}[(68 + 460)/(Tact + 460)](1\text{-}\%H_2O)$

where,

Q_{dry} = dry volumetric flow rate (cfm)
Q_{act} = actual volumetric flow rate (cfm), including water vapor
T_{act} = actual temperature of exhaust (ºF)
$\%H_2O$ = weight fraction of water vapor

AIR TOXICS
According to Chapter 13.2.6, Abrasive Blasting of AP-42, hazardous air pollutants, typically particulate metals, are emitted from some abrasive blasting operations. These emissions are dependent on both the abrasive material and the targeted surfaces. The permit evaluator should assume the same percentage of toxics in the resulting emissions of PM10 as found in the abrasive material used.

Applicable Requirements
Air District Rules and Regulations
In general, the unconfined abrasive blasting operation is subject to the operating standards of Regulation 12, Rule 4. With the proper operation and use of complying abrasive blasting media, the unconfined operation should comply with the operating standards of Regulation 12, Rule 4. Permit conditions are imposed to ensure compliance with Regulation 12, Rule 4.

Confined abrasive blasting operations are subject to the operating standards of Regulation 6-1. Permit conditions are imposed to ensure compliance with Regulation 6-1.

Best Available Control Technology (BACT)
BACT for the abrasive blasting operations is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Abrasive Blasting
- Abrasive Blasting - Enclosed

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Health Risk Assessment
- Prevention of Significant Deterioration
- Overburdened Communities
- School Notification

Permit Conditions
Standardized conditions for abrasive blasting operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.2 ASPHALT FACILITIES

December 15, 2023

Process Description

Asphalt pavement is a mix of coarse aggregate stone, sand, fine aggregate, and asphalt cement, which is petroleum based. Depending on the asphalt manufacturing process and temperatures used, it is either considered hot mix asphalt or warm mix asphalt.

Hot Mix Asphalt (HMA)

Hot mix asphalt or HMA is the designation given to asphalt mixtures that are heated and poured at temperatures between 300- and 350-degrees Fahrenheit. This type of asphalt is the most used asphalt type in the United States for highways, interstates, and roads due to its flexibility, weather resistance and ability to repel water. Hot mix asphalt is used when the outside air temperature is above 40 degrees, due to its propensity for rapid cooling.

A HMA facility is an assembly of equipment where aggregates are blended, heated, dried, and mixed with asphalt. An aggregate is any hard, inert mineral material used for mixing in graduated particles or fragments. It includes sand, gravel, crushed stone, slag, rock dust or powder, and reclaimed asphalt pavement [RAP]. Aggregate and RAP (if used) constitutes over 90 percent by weight of the total mixture.[2] There are two categories of HMA facilities: batch and drum mix. A detailed description of the types of batch and drum mix HMA facilities are provided in Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42.

Recently, HMA facilities have added ground tire rubber to asphalt as the binder to meet CalTrans' specifications which requires that recycled rubber (at least 15% by weight of the total blend) be used on its highway paving projects. The same equipment used to produce HMA can be used to produce rubberized asphalt. However, there will typically be a portable asphalt rubber blending unit made up of ground tire rubber storage (i.e., silos) and handling (i.e., hoppers) equipment, storage tank for asphalt oil, extender oil, reaction tank and heaters for the extender oil and asphalt oil. Extender oil is used to promote the reaction of the asphalt cement and the ground tire rubber. The storage tanks for asphalt oil and extender oil and the reaction tanks are generally abated by air-cooled condensers designed to cool process vent emissions. As the blending process proceeds, asphalt rubber binder is transferred to the reaction tank where it is heated and maintained at the specified temperature (325-375ºF), agitated, and circulated for the specified reaction time. After sufficient reaction time, the fully reacted asphalt rubber binder mixture is pumped into spreader trucks for placement on the road.

Warm Mix Asphalt (WMA)

Warm mix asphalt or WMA is used approximately one-third of all paving projects. WMA is manufactured at temperatures between 200 and 250 degrees Fahrenheit. It uses less fossil fuels and resources in its manufacturing process and includes additional binding materials and additives, including wax, emulsions and zeolites for easier pouring and spreading at low temperature. WMA is less costly to produce than HMA.

A WMA facility is also an assembly of equipment where aggregates are blended, heated, dried, and mixed with asphalt. However, the asphalt is heated to a lower temperature than for hot mix asphalt.

Most HMA and WMA facilities are comprised of the same basic air pollution sources. These components are the dryer, asphalt cement heating and storage (with dust collection system), and reclaimed asphalt paving (RAP) area. Storage tanks are used to store heated liquid asphalts and asphalt cement at the HMA or WMA facilities. Storage tanks at the HMA or WMA facilities are usually fixed roof (closed or enclosed) and vented due to the smaller size of the tanks, usually less than 30,000 gallons. The following equipment is typically exempt from permitting requirements:

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[2] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 1.

Description of Equipment	Permit Exemption
Any heater or dryer with less than 10 million BTU/hr rated heat input if fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g., propane, butane, isobutene, propylene, butylenes, and their mixtures), and any combination thereof. Hot oil heaters for asphalt oil and/or extender oil fueled by natural gas or LPG are often exempt.	2-1-114.2.1
Mixer and other ancillary sources at aggregate product production facility with a maximum rated production capacity less than 15 cubic yards per hour	2-1-115.1.1
Other sources at a facility with a maximum throughput less than 5000 tons per year	2-1-115.1.2
A crusher or grinder which processes exclusively material with a moisture content greater than or equal to 20 percent by weight	2-1-115.1.3
The following which process exclusively material with a moisture content greater than or equal to 5 percent by weight: - Screen or other size classifier - Conveyor, screw, auger, stacker or bucket elevator - Grizzly, or other material loading or unloading - Storage silos - Storage or weigh hopper/bin system	2-1-115.1.4
Haul or access roads	2-1-115.1.5
Drilling or blasting	2-1-115.1.6
Containers, reservoirs, tanks, and loading equipment used exclusively for the storage or loading of petroleum oils with an ASTM D-93 (PMCC) flash point of 130oF or higher, when stored or loaded at a temperature at least 36oF below the flash point.	2-1-123.3.3
Containers, reservoirs, tanks, and loading equipment used exclusively for the storage or loading of asphalt or asphalt emulsion with a sulfur content of less than 0.5 wt%. This does not include the storage of asphalt cutback with hydrocarbons having an initial boiling point of less than 302°F.	2-1-123.3.7
Containers, reservoirs, tanks, and loading equipment used exclusively for the storage or transfer of an asphalt-water emulsion heated to 150°F or less.	2-1-123.3.11

The permitting of any heater used to provide indirect heat is covered in Chapter 2.1 (Boilers, Steam Generators, & Process Heaters) of the permit handbook. The permit of any storage tanks is covered in Chapter 4 (Organic Liquid Storage Tanks) of the permit handbook. This permit handbook will cover asphalt mixers and dryers, asphalt rubber blending plants, and ancillary storage sources (i.e., piles, silos, loadouts).

Completeness Determination

The following Air District forms should be completed and fees provided for HMA facilities. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Form C (one per dryer).
4. Form A (one per abatement device).
5. Form P (one per stack).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule G-2 for Aggregate Dryers; Batch, Drum, and Other Mixers and Schedule F for other sources).

Emission Calculations [Batch Mix and Drum Mix]
Emissions from HMA and WMA plants may be divided into ducted production emissions, pre-production fugitive dust emissions, and other production-related fugitive emissions. Pre-production fugitive dust sources associated with HMA and WMA plants include vehicular traffic generating fugitive dust on paved and unpaved roads, aggregate handling, and other aggregate processing operations.

Pre-production fugitive emissions – PM10 and $PM_{2.5}$ from vehicle traffic
Emissions from vehicle traffic on paved and/or unpaved roads to and from the storage piles should also be accounted in the emissions for the storage piles. An paved roads emission factor equation is provided in Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on paved surfaces at industrial sites:

$$E = k(sL)^{0.91}(W)^{1.02} \text{ lb/VMT} \qquad \text{[Equation 1]}$$

An unpaved roads emission factor equation is provided in Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k(s/12)^a(W/3)^b((365\text{-}P)/365)) \text{ lb/VMT} \qquad \text{[Equation 1a]}$$

and for vehicles traveling on publicly accessible roads, dominated by light duty vehicles:

$$E = [k(s/12)^a(S/30)^d/(M/0.5)^c – C]((365\text{-}P)/365)) \text{ lb/VMT} \qquad \text{[Equation 1b]}$$

The following provides an explanation of the variables in the equation and the average values recommended for use (only if actual more specific and precise values are not available), if the source-specific values are not known:

E = Emission Factor (lb/VMT)
k = Particle size multiplier (dimensionless); for PM_{10}, k= 0.0022 for Equation 1
k = 1.5 for Equation 1a, 1.8 for Equation 1.b;
for $PM_{2.5}$, k = 0.00054 for Equation 1, k = 0.15 for Equation 1a, 0.18 for Equation 1.b
sL = road surface silt loading; sL = 12 g/m^2
a = Empirical Constants; a = 0.9 for Equation 1a, 1 for Equation 1b
b = Empirical Constants; b = 0.45
c = Empirical Constants; c = 0.2 for Equation 1b
d = Empirical Constants; d = 0.5 for Equation 1b
s = Silt content of road surface (%); s = See Table 13.2.2-1[3] and use the mean value for the applicable industry. (For example, for stone and gravel processing s=4.8 for plant roads, 7.1 for material storage areas.)
W = Mean vehicle weight (tons); W = 21 tons for Equation 1,
W=146 tons for Equation 1a, 2 tons for Equation 1b
M = surface material moisture content (%); M = 6.5
S = Mean vehicle speed (mph); S = 24 for Equation 1a, 33 for Equation 1b
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
for PM_{10}, C = 0.00047[4] and for PM2.5, C= 0.00036[17]
P = Number of days with greater than, or equal to, 0.01 inches of precipitation per year; 70[5]

For example, the PM_{10} and $PM_{2.5}$ emission factors used for paved roads are calculated as follows:

[3] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 3.
[4] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 6.
[5] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 9.

E_1 $(PM_{10}) = 0.0022(12)^{0.91}(21)^{1.02}$
E_1 (PM_{10}) = 0.47 lb/VMT

E_1 $(PM_{2.5}) = 0.00054(12)^{0.91}(21)^{1.02}$
E_1 $(PM_{2.5})$ = 0.12 lb/VMT

The PM_{10} and $PM_{2.5}$ emission factors used for unpaved roads at industrial sites are calculated as follows:

E_{1a} $(PM_{10}) = (1.5)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} (PM_{10}) = 3.05 lb/VMT

E_{1a} $(PM_{2.5}) = (0.15)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} $(PM_{2.5})$ = 0.31 lb/VMT

The permit evaluator should determine which emission factor equation (1, 1a or 1b) is most appropriate depending on the unpaved surfaces or roads where the sources will be situated. The permit evaluator should also obtain information from the applicant regarding the maximum vehicle weight and miles traveled per year by all vehicles involved on driving on the unpaved roads at the facility. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[6].

For emissions from equipment traffic (truck, front-end loaders, dozer, etc.) traveling between or on piles, it is recommended that the equation for vehicle traffic on unpaved surfaces be used (see Equation 1a). The emissions from equipment traffic around the piles should be calculated using the same emission factors noted previously for unpaved roads by including the VMT around these piles and including it in the total estimated VMT on unpaved roads within the facility.

Pre-production fugitive emissions – PM10 and $PM_{2.5}$ from storage piles
Emission factors for storage piles are taken from Chapter 13.2.4, Aggregate Handling and Storage Piles, of AP-42 (Fifth Edition, Volume I). These emission factors include emissions from drop operations into storage piles:

$$E = k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$$

The following provides an explanation of the variables in the equation and the average values recommended for use, if the source-specific values are not known:

E = Emission Factor (lb/ton)
k = Particle size multiplier (dimensionless); for PM_{10}, k = 0.35; for $PM_{2.5}$, k=0.053
U = mean wind speed (miles/hr); U = 8.2
M = material moisture content (%); M = 2.4

$E = (0.35)(0.0032)(8.2/5)^{1.3}/(2.4/2)^{1.4}$
E = 2.75E-03 lb/ton [PM_{10} for storage piles]

$E = (0.053)(0.0032)(8.2/5)^{1.3}/(2.4/2)^{1.4}$
E = 4.16E-03 lb/ton [$PM_{2.5}$ for storage piles]

For emissions from equipment traffic (truck, front-end loaders, dozer, etc.) traveling between or on piles, it is recommended that the equation for vehicle traffic on unpaved surfaces be used (see Equation 1a). The emissions from equipment traffic around the piles should be calculated using the same emission factors noted previously for unpaved roads by including the VMT around these piles and including it in the total estimated VMT on unpaved roads within the facility.

[6] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 13.

If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[7].

Furthermore, if railcars or ships are involved in the transportation of materials, then also the combustion emissions from the use of these transport vehicles should also be calculated and included in the facilities cumulative increase.

Pre-production dust emissions – Loadout and Silo Filling
Emission factors for HMA and WMA load-out and silo-filling operations can be estimated using the data in Tables 11.1-14, -15, and -16 of Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42. Table 11.1-14 presents predictive emission factor equations for HMA loadout and silo filling operations. Note that the equations of Chapter 11.1 can also be used to estimate WMA load-out and silo-filling emissions by using the lower temperature of WMA in the emission factor equations of Table 11.1-14. Note that if both HMA and WMA are to be produced at the same sources that the higher temperature of HMA should be used to allow maximum operating flexibility for the operation. Tables 11.1-15 and -16 present speciation profiles for organic particulate-based and volatile particulate-based compounds, respectively. The speciation profile shown in Table 11.1-15 can be applied to the extractable organic particulate matter (PM) emission factors estimated by the equations in Table 11.1-14 to estimate emission factors for specific organic PM compounds. The speciation profile presented in Table 11.1-16 can be applied to the total organic carbon (TOC) emission factors estimated by the equations in Table 11.1-14 to estimate emission factors for specific volatile organic compounds.

[7] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 13.

Table 11.1-14[8]

Table 11.1-14. PREDICTIVE EMISSION FACTOR EQUATIONS FOR LOAD-OUT AND SILO FILLING OPERATIONS[a]

EMISSION FACTOR RATING: C

Source	Pollutant	Equation
Drum mix or batch mix plant load-out (SCC 3-05-002-14)	Total PM[b]	$EF = 0.000181 + 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$
	Organic PM[c]	$EF = 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$
	TOC[d]	$EF = 0.0172(-V)e^{((0.0251)(T + 460) - 20.43)}$
	CO	$EF = 0.00558(-V)e^{((0.0251)(T + 460) - 20.43)}$
Silo filling (SCC 3-05-002-13)	Total PM[b]	$EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$
	Organic PM[c]	$EF = 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$
	TOC[d]	$EF = 0.0504(-V)e^{((0.0251)(T + 460) - 20.43)}$
	CO	$EF = 0.00488(-V)e^{((0.0251)(T + 460) - 20.43)}$

[a] Emission factor units are lb/ton of HMA produced. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5. EF = emission factor; V = asphalt volatility, as determined by ASTM Method D2872-88 "Effects of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test - RTFOT)," where a 0.5 percent loss-on-heating is expressed as "-0.5." Regional- or site-specific data for asphalt volatility should be used, whenever possible; otherwise, a default value of -0.5 should be used for V in these equations. T = HMA mix temperature in °F. Site-specific temperature data should be used, whenever possible; otherwise a default temperature of 325°F can be used. Reference 1, Tables 4-27 through 4-31, 4-34 through 4-36, and 4-38 through 4-41.

[b] Total PM, as measured by EPA Method 315 (EPA Method 5 plus the extractable organic particulate from the impingers). Total PM is assumed to be predominantly PM-2.5 since emissions consist of condensed vapors.

[c] Extractable organic PM, as measured by EPA Method 315 (methylene chloride extract of EPA Method 5 particulate plus methylene chloride extract of impinger particulate).

[d] TOC as propane, as measured with an EPA Method 25A sampling train or equivalent sampling train.

[8] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 33.

Table 11.1-15[9]

Table 11.1-15. SPECIATION PROFILES FOR LOAD-OUT, SILO FILLING, AND ASPHALT STORAGE EMISSIONS–ORGANIC PARTICULATE-BASED COMPOUNDS

EMISSION FACTOR RATING: C

		Speciation Profile for Load-out and Yard Emissions[b]	Speciation Profile for Silo Filling and Asphalt Storage Tank Emissions
Pollutant	CASRN[a]	Compound/Organic PM[c]	Compound/Organic PM[c]
PAH HAPs			
Acenaphthene	83-32-9	0.26%	0.47%
Acenaphthylene	208-96-8	0.028%	0.014%
Anthracene	120-1207	0.070%	0.13%
Benzo(a)anthracene	56-55-3	0.019%	0.056%
Benzo(b)fluoranthene	205-99-2	0.0076%	ND[d]
Benzo(k)fluoranthene	207-08-9	0.0022%	ND[d]
Benzo(g,h,i)perylene	191-24-2	0.0019%	ND[d]
Benzo(a)pyrene	50-32-8	0.0023%	ND[d]
Benzo(e)pyrene	192-97-2	0.0078%	0.0095%
Chrysene	218-01-9	0.103%	0.21%
Dibenz(a,h)anthracene	53-70-3	0.00037%	ND[d]
Fluoranthene	206-44-0	0.050%	0.15%
Fluorene	86-73-7	0.77%	1.01%
Indeno(1,2,3-cd)pyrene	193-39-5	0.00047%	ND[d]
2-Methylnaphthalene	91-57-6	2.38%	5.27%
Naphthalene	91-20-3	1.25%	1.82%
Perylene	198-55-0	0.022%	0.030%
Phenanthrene	85-01-8	0.81%	1.80%
Pyrene	129-00-0	0.15%	0.44%
Total PAH HAPs		5.93%	11.40%
Other semi-volatile HAPs			
Phenol		1.18%	ND[d]

[a] Chemical Abstract Service Registry Number.
[b] Emissions from loaded trucks during the period between load-out and the time the truck departs the plant.
[c] Emission factor for compound is determined by multiplying the percentage presented for the compound by the emission factor for extractable organic particulate (organic PM) as determined from Table 11.1-14.
[d] ND = Measured data below detection limits.

[9] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 34.

Table 11.1-16[10]

Table 11.1-16. SPECIATION PROFILES FOR LOAD-OUT, SILO FILLING, AND ASPHALT STORAGE EMISSIONS–ORGANIC VOLATILE-BASED COMPOUNDS

EMISSION FACTOR RATING: C

Pollutant	CASRN	Speciation Profile for Load-Out and Yard Emissions Compound/TOC[a]	Speciation Profile for Silo Filling and Asphalt Storage Tank Emissions Compound/TOC (%)[a]
VOC[b]		94%[b]	100%
Non-VOC/non-HAPs			
Methane	74-82-8	6.5%	0.26%
Acetone	67-64-1	0.046%	0.055%
Ethylene	74-85-1	0.71%	1.1%
Total non-VOC/non-HAPS		7.3%	1.4%
Volatile organic HAPS			
Benzene	71-43-2	0.052%	0.032%
Bromomethane	74-83-9	0.0096%	0.0049%
2-Butanone	78-93-3	0.049%	0.039%
Carbon Disulfide	75-15-0	0.013%	0.016%
Chloroethane	75-00-3	0.00021%	0.0040%
Chloromethane	74-87-3	0.015%	0.023%
Cumene	92-82-8	0.11%	ND[c]
Ethylbenzene	100-41-4	0.28%	0.038%
Formaldehyde	50-00-0	0.088%	0.69%
n-Hexane	100-54-3	0.15%	0.10%
Isooctane	540-84-1	0.0018%	0.00031%
Methylene Chloride	75-09-2	0.0%[d]	0.00027%
MTBE	596899	0.0%[d]	ND[c]
Styrene	100-42-5	0.0073%	0.0054%
Tetrachloroethene	127-18-4	0.0077%	ND[c]
Toluene	100-88-3	0.21%	0.062%
1,1,1-Trichloroethane	71-55-6	0.0%[d]	ND[c]
Trichloroethene	79-01-6	0.0%[d]	ND[c]
Trichlorofluoromethane	75-69-4	0.0013%	ND[c]
m-/p-Xylene	1330-20-7	0.41%	0.2%
o-Xylene	95-47-6	0.08%	0.057%
Total volatile organic HAPs		1.5%	1.3%

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10 Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 35.

Table 11.1-16 (cont.)

[a] Emission factor for compound is determined by multiplying the percentage presented for the compound by the emission factor for total organic compounds (TOC) as determined from Table 11.1-14.

[b] The VOC percentages are equal to 100 percent of TOC minus the methane, acetone, methylene chloride, and 1,1,1-trichloroethane percentages.

[c] ND = Measured data below detection limits. Additional compounds that were not detected are: acrylonitrile, allyl chloride, bromodichloromethane, bromoform, 1,3-butadiene, carbon tetrachloride, chlorobenzene, chloroform, dibromochloromethane, 1,2-dibromoethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,2-dichloropropane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 1,2-epoxybutane, ethyl acrylate, 2-hexanone, iodomethane, methyl methacrylate, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, vinyl acetate, vinyl bromide, and vinyl chloride

[d] Values presented as 0.0% had background concentrations higher than the capture efficiency-corrected measured concentration.

Production Emissions

Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42 presents emission factors for batch mix and drum mix HMA plants as follows:

Emission Factors for PM10/PM2.5 from HMA Plants[11]

Process	**PM10/PM2.5 Emission Factor (lb/ton)**
Dryer, hot screens, mixer – Batch Mix HMA Plant	
Uncontrolled	4.5
Fabric Filter (i.e., Baghouse)	0.027
Dryer – Drum Mix	
Uncontrolled	6.5
Fabric Filter (i.e., Baghouse)	0.023

All PM generated is assumed equivalent to PM_{10} and 100% of PM_{10} is $PM_{2.5}$ for conservative emission estimation.

Emission Factors for CO, NOx, SO2, and POC from HMA Plants[12]

Process	CO (lb/ton)	NOx (lb/ton)	SO2 (lb/ton)	POC (lb/ton)
Natural Gas Dryer				
Batch Mix	0.40	0.025	0.0046	0.0082
Drum Mix	0.13	0.026	0.0034	0.032

[11] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 11-14.
[12] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 15-18.

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Table 11.1-9[13] presents organic pollutant emission factors for batch mix plants.

Table 11.1-9. EMISSION FACTORS FOR ORGANIC POLLUTANT EMISSIONS FROM BATCH MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. Nos.
	CASRN	Name			
Natural gas- or No. 2 fuel oil-fired dryer, hot screens, and mixer with fabric filter (SCC 3-05-002-45,-46)	Non-PAH Hazardous Air Pollutants[b]				
	75-07-0	Acetaldehyde	0.00032	E	24,34
	71-43-2	Benzene	0.00028	D	24,34,46, 382
	100-41-4	Ethylbenzene	0.0022	D	24,46,47,49
	50-00-0	Formaldehyde	0.00074	D	24,34,46,47,49,226,382
	106-51-4	Quinone	0.00027	E	24
	108-88-3	Toluene	0.0010	D	24,34,46,47
	1330-20-7	Xylene	0.0027	D	24,46,47,49
		Total non-PAH HAPs	0.0075		
	PAH HAPs				
	91-57-6	2-Methylnaphthalene[c]	$7.1x10^{-5}$	D	24,47,49
	83-32-9	Acenaphthene[c]	$9.0x10^{-7}$	D	34,46,226
	208-96-8	Acenaphthylene[c]	$5.8x10^{-7}$	D	34,46,226
	120-12-7	Anthracene[c]	$2.1x10^{-7}$	D	34,46,226
	56-55-3	Benzo(a)anthracene[c]	$4.6x10^{-9}$	E	46,226
	50-32-8	Benzo(a)pyrene[c]	$3.1x10^{-10}$	E	226
	205-99-2	Benzo(b)fluoranthene[c]	$9.4x10^{-9}$	D	34,46,226
	191-24-2	Benzo(g,h,i)perylene[c]	$5.0x10^{-10}$	E	226
	207-08-9	Benzo(k)fluoranthene[c]	$1.3x10^{-8}$	E	34,226
	218-01-9	Chrysene[c]	$3.8x10^{-9}$	E	46,226
	53-70-3	Dibenz(a,h)anthracene[c]	$9.5x10^{-11}$	E	226
	206-44-0	Fluoranthene[c]	$1.6x10^{-7}$	D	34,46,47,226
	86-73-7	Fluorene[c]	$1.6x10^{-6}$	D	34,46,47,226
	193-39-5	Indeno(1,2,3-cd)pyrene[c]	$3.0x10^{-10}$	E	226
	91-20-3	Naphthalene	$3.6x10^{-5}$	D	34,46,47,49,226
	85-01-8	Phenanthrene[c]	$2.6x10^{-6}$	D	34,46,47,226
	129-00-0	Pyrene[c]	$6.2x10^{-8}$	D	34,46,226
		Total PAH HAPs	0.00011		
	Total HAPs		0.0076		
	Non-HAP organic compounds				
	100-52-7	Benzaldehyde	0.00013	E	24
	78-84-2	Butyraldehyde/ isobutyraldehyde	$3.0x10^{-5}$	E	24
	4170-30-3	Crotonaldehyde	$2.9x10^{-5}$	E	24
	66-25-1	Hexanal	$2.4x10^{-5}$	E	24
		Total non-HAPs	0.00019		

[13] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 20.

Table 11.1-10[14] presents organic pollutant emission factors for drum mix plants.

Table 11.1-10. EMISSION FACTORS FOR ORGANIC POLLUTANT EMISSIONS FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant: CASRN	Pollutant: Name	Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
Natural gas-fired dryer with fabric filter[b] (SCC 3-05-002-55, -56,-57)	Non-PAH hazardous air pollutants[c]				
	71-43-2	Benzene[d]	0.00039	A	25,44,45,50, 341, 342, 344-351, 373, 376, 377, 383, 384
	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde[e]	0.0031	A	25,35,44,45,50, 339-344, 347-349, 371-373, 384, 388
	110-54-3	Hexane	0.00092	E	339-340
	540-84-1	Isooctane (2,2,4-trimethylpentane)	4.0×10^{-5}	E	339-340
	71-55-6	Methyl chloroform[f]	4.8×10^{-5}	E	35
	108-88-3	Toluene	0.00015	D	35,44,45
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0051		
	PAH HAPs				
	91-57-6	2-Methylnaphthalene[g]	7.4×10^{-5}	D	44,45,48
	83-32-9	Acenaphthene[g]	1.4×10^{-6}	E	48
	208-96-8	Acenaphthylene[g]	8.6×10^{-6}	D	35,45,48
	120-12-7	Anthracene[g]	2.2×10^{-7}	E	35,48
	56-55-3	Benzo(a)anthracene[g]	2.1×10^{-7}	E	48
	50-32-8	Benzo(a)pyrene[g]	9.8×10^{-9}	E	48
	205-99-2	Benzo(b)fluoranthene[g]	1.0×10^{-7}	E	35,48
	192-97-2	Benzo(e)pyrene[g]	1.1×10^{-7}	E	48
	191-24-2	Benzo(g,h,i)perylene[g]	4.0×10^{-8}	E	48
	207-08-9	Benzo(k)fluoranthene[g]	4.1×10^{-8}	E	35,48
	218-01-9	Chrysene[g]	1.8×10^{-7}	E	35,48
	206-44-0	Fluoranthene[g]	6.1×10^{-7}	D	35,45,48
	86-73-7	Fluorene[g]	3.8×10^{-6}	D	35,45,48,163
	193-39-5	Indeno(1,2,3-cd)pyrene[g]	7.0×10^{-9}	E	48
	91-20-3	Naphthalene[g]	9.0×10^{-5}	D	35,44,45,48,163
	198-55-0	Perylene[g]	8.8×10^{-9}	E	48
	85-01-8	Phenanthrene[g]	7.6×10^{-6}	D	35,44,45,48,163
	129-00-0	Pyrene[g]	5.4×10^{-7}	D	45,48
		Total PAH HAPs	0.00019		

[14] Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 21.

Table 11.1-10 (cont.)

Process	Pollutant		Emission Factor, lb/ton	Emission Factor Rating	Ref. No.
	CASRN	Name			
Natural gas-fired dryer with fabric filter[b] (SCC 3-05-002-55, -56,-57) (cont.)	Total HAPs		0.0053		
	Non-HAP organic compounds				
	106-97-8	Butane	0.00067	E	339
	74-85-1	Ethylene	0.0070	E	339-340
	142-82-5	Heptane	0.0094	E	339-340
	763-29-1	2-Methyl-1-pentene	0.0040	E	339,340
	513-35-9	2-Methyl-2-butene	0.00058	E	339,340
	96-14-0	3-Methylpentane	0.00019	D	339,340
	109-67-1	1-Pentene	0.0022	E	339-340
	109-66-0	n-Pentane	0.00021	E	339-340
		Total non-HAP organics	0.024		

Tables 11.1-11[15] and –12[16] present metals emission factors for batch and drum mix plants, respectively.

Table 11.1-11. EMISSION FACTORS FOR METAL EMISSIONS FROM BATCH MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
Dryer, hot screens, and mixer[b] (SCC 3-05-002-45,-46,-47)	Arsenic[c]	$4.6x10^{-7}$	D	34, 40, 226
	Barium	$1.5x10^{-6}$	E	24
	Beryllium[c]	$1.5x10^{-7}$	E	34, 226
	Cadmium[c]	$6.1x10^{-7}$	D	24, 34, 226
	Chromium[c]	$5.7x10^{-7}$	D	24, 34, 226
	Hexavalent chromium[c]	$4.8x10^{-8}$	E	34, 226
	Copper	$2.8x10^{-6}$	D	24, 34, 226
	Lead[c]	$8.9x10^{-7}$	D	24, 34, 226
	Manganese[c]	$6.9x10^{-6}$	D	24, 34, 226
	Mercury[c]	$4.1x10^{-7}$	E	34, 226
	Nickel[c]	$3.0x10^{-6}$	D	24, 34, 226
	Selenium[c]	$4.9x10^{-7}$	E	34, 226
	Zinc	$6.8x10^{-6}$	D	24, 34, 226

[a] Emission factor units are lb/ton of HMA produced. Emissions controlled by a fabric filter. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5.
[b] Natural gas-, propane-, No. 2 fuel oil-, or waste oil-/drain oil-/No. 6 fuel oil-fired dryer. For waste oil-/drain oil-/No. 6 fuel oil-fired dryer, use a lead emission factor of $1.0x10^{-5}$ lb/ton (References 177 and 321, Emission factor rating: E) in lieu of the emission factor shown.
[c] Arsenic, beryllium, cadmium, chromium, hexavalent chromium, lead, manganese, mercury, nickel, and selenium are HAPs as defined in the 1990 CAAA.

15 Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 29.
16 Chapter 11.1 (Hot Mix Asphalt Plants) of EPA's AP-42, pg. 30.

Table 11.1-12. EMISSION FACTORS FOR METAL EMISSIONS FROM DRUM MIX HOT MIX ASPHALT PLANTS[a]

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
Fuel oil-fired dryer, uncontrolled (SCC 3-05-002-58, -59,-60)	Arsenic[b]	1.3×10^{-6}	E	340
	Barium	0.00025	E	340
	Beryllium[b]	0.0	E	340
	Cadmium[b]	4.2×10^{-6}	E	340
	Chromium[b]	2.4×10^{-5}	E	340
	Cobalt[b]	1.5×10^{-5}	E	340
	Copper	0.00017	E	340
	Lead[b]	0.00054	E	340
	Manganese[b]	0.00065	E	340
	Nickel[b]	0.0013	E	340
	Phosphorus[b]	0.0012	E	340
	Selenium[b]	2.4×10^{-6}	E	340
	Thallium	2.2×10^{-6}	E	340
	Zinc	0.00018	E	340
Natural gas- or propane-fired dryer, with fabric filter (SCC 3-05-002-55, -56,-57))	Antimony	1.8×10^{-7}	E	339
	Arsenic[b]	5.6×10^{-7}	D	25, 35, 339-340
	Barium	5.8×10^{-6}	E	25, 339-340
	Beryllium[b]	0.0	E	339-340
	Cadmium[b]	4.1×10^{-7}	D	25, 35, 162, 301, 339-340
	Chromium[b]	5.5×10^{-6}	C	25, 162-164, 301, 339-340
	Cobalt[b]	2.6×10^{-8}	E	339-340
	Copper	3.1×10^{-6}	D	25, 162-164, 339-340
	Hexavalent chromium[b]	4.5×10^{-7}	E	163
	Lead[b]	6.2×10^{-7}	E	35
	Manganese[b]	7.7×10^{-6}	D	25, 162-164, 339-340
	Mercury[b]	2.4×10^{-7}	E	35, 163
	Nickel[b]	6.3×10^{-5}	D	25, 163-164, 339-340
	Phosphorus[b]	2.8×10^{-5}	E	25, 339-340
	Silver	4.8×10^{-7}	E	25, 339-340
	Selenium[b]	3.5×10^{-7}	E	339-340
	Thallium	4.1×10^{-9}	E	339-340
	Zinc	6.1×10^{-5}	C	25, 35, 162-164, 339-340

Spreadsheets for **Emission Calculations [Batch Mix and Drum Mix]** are provided.

Emission Calculations **[Asphalt Rubber Blending Plant]**

Crumb Rubber Materials Weigh Hopper Loading Emissions
The uncontrolled PM_{10} emission factors of **0.0028 lbs/ton** for weigh hopper loading of crumb rubber materials is obtained from Table 11.12-2 in Chapter 11.12 , "Concrete Batching," of AP-42 (Fifth Edition, Volume I). Since $PM_{2.5}$ emission factor was not provided, all PM generated is assumed equivalent to PM_{10} and 100% of PM_{10} is $PM_{2.5}$ for conservative emission estimation.

Mixing Tank Emissions from the Mixing of Asphalt Oil and Rubber
The POC emission factor of **0.023 lbs/ton** was taken from Application # 16460, which utilized Source Test # 91078 from 10/9/1990 and # 91064 from 9/24/1990 to derive emission factors. This POC emission factor is equivalent to the BACT level of 0.015 lbs/ton for asphalt mixing tank, which was provided by the asphalt mixing tank manufacturer in Application # 26584 for DeSilva Gates Construction and was verified through a source test by the South Coast Air Quality Management District.

POC working and breathing losses for storage tanks for extender oil and asphalt oil can be calculated using EPA Table 4.0.9d program, per Chapter 4 (Organic Liquid Storage Tanks) of the permit handbook.

PM emissions from the storage of extender oil, asphalt oil, or asphalt oil/rubber mixtures can be estimated by assuming a PM grain loading of **0.04 gr/dscf** (40 CFR Prat 60, Subpart I limit) and an exhaust flowrate of **37 scfm** for the vent condenser of the storage tank unless the applicant or equipment manufacturer can provide the information related to exhaust flowrate for the vent condenser. The exhaust flowrate of 37 scfm was provided for a 30,000-gallon asphalt tank from Application # 38649 for Granite Construction Company. Using exhaust flowrate for a 30,000-gallon asphalt tank is expected to lead to conservative estimate of PM emissions, since the volumetric capacity of most storage tanks are smaller. All PM generated is assumed equivalent to PM_{10} and 100% of PM_{10} is $PM_{2.5}$ for conservative emission estimation.

AP-42 Table 11.1-9 provides emissions factors for toxic gases emitted from standard batch asphalt mixers. It was assumed that the POC emissions calculated above are the same as standard batch mixer emissions. To be consistent, the same assumption will be made with toxic gases with the exception that PAH emissions will not be calculated. The asphalt rubber mixer uses indirect heating that does not promote PAH formation. All toxic gas emissions will be assumed to result from asphalt evaporation and not combustion.

Applicable Requirements

Air District Rules and Regulations

In general, the particulate sources at HMA (including Asphalt Rubber Blending) and WMA plants are subject to the operating standards of Regulation 6-1. All but the transfer points of storage silos are fugitive in nature. The storage silos are generally abated by a fabric filter or baghouse device. Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer operations depend primarily on the surface moisture content of these materials. Types of controls used may include water sprays, enclosures, and baghouse devices. With these controls of the equipment and good maintenance and wetting of unpaved road surfaces, particulate emissions should comply with the operating standards of Regulation 6-1. Permit conditions are imposed to ensure compliance with Regulation 6-1.

HMA (not including Asphalt Rubber Blending) and WMA facilities are subject to the Federal NSPS Subpart I for Hot Mix Asphalt Facilities, which prohibits the owner/operator from discharging or causing to discharge into the atmosphere from any affected facility any gases which: 1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf); and 2) Exhibit 20% opacity, or greater. Note that the NSPS Subpart I does not apply to the mixing and reaction tanks for asphalt rubber. Because these NSPS requirements are less restrictive than Air District BACT requirements for HMA plants, new/modified HMA facilities should meet the NSPS.

Best Available Control Technology (BACT)

BACT for the sources at asphalt plants are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Miscellaneous Operations
- Asphalt Batch Plant – Material Handling
- Asphalt (Hot Mix) Batch Mix Facilities
- Asphalt (Hot Mix) Drum Mix Facilities
- Asphalt (Hot Mix) Drum and Batch Mix Facilities, Asphalt Material Handling (Conveyors and Storage Silos; and Loadout Operations
- Asphalt Roofing Line
- Asphalt Storage Tank

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for HMA plants are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.3 COFFEE ROASTING OPERATIONS

December 15, 2023

Process Description

The roasting of coffee beans is a common activity that occurs throughout the Bay Area at a wide variety of facilities ranging from small gourmet coffee shops to medium-sized commercial operations with locally distributed products to large facilities with national product distribution that operate 24 hours per day. Drum-type coffee bean roasters are the most common type used in the coffee bean roasting industry. The associated coffee roasting equipment ranges from small 25 pound per hour batch roasters located at gourmet coffee shops to industrial, 4 ton per hour, recirculating, continuous roasters located at large facilities.

The coffee roasting process consists essentially of cleaning, roasting, cooling, grinding, and packaging operations. Bags of green coffee beans are hand- or machine-opened, dumped into a hopper, and screened to remove debris. The green beans are then weighed and transferred by belt or pneumatic conveyor to storage hoppers. From the storage hoppers, the green beans are conveyed to the roaster. At the end of the roasting cycle, water sprays are used to "quench" the beans. Following the roasting, the beans are cooled and run through a "destoner". Destoners remove stones, metal fragments, and other waste not removed during initial screening from the beans.

The majority of coffee bean roasters are equipped with natural gas-fired burners to provide heat for the roasting process. Emissions from coffee roasting are typically controlled using a combination of a cyclone and an afterburner. The air pollutant emissions resulting from coffee roasting operations include particulate matter (PM10 and PM2.5), volatile organic compounds (VOC), organic acids, sulfur dioxide (SO2), and natural gas combustion products like oxides of nitrogen (NOx) and carbon monoxide (CO). The odorous and visible emissions (smoke) resulting from the roasting process have the most obvious and direct impact on the public. A thorough explanation of coffee roasting is available from Chapter 9.13.2, Coffee Roasting, of AP-42 (Fifth Edition, Volume I). Generally, an Air District permit is required for any coffee roaster, which processes 15 or more pounds of coffee per hour, per Regulation 2-1-117.8. In addition, separate coolers/destoners, if used, should be permitted as sources of particulate.

Completeness Determination

The following Air District forms should be completed and fees provided for coffee roasting operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Form C (one per coffee roaster and afterburner) for the combustion of fuel.
4. If Health Risk Assessment is triggered, Form HRA (one per source).
5. The higher of the following: fees, calculated per Regulation 3 (Schedule F) and fees, calculated for combustion of fuel per Regulation 3 (Schedule B). All sources at coffee roasting facilities will be subject to Fee Schedules F, "Miscellaneous Sources." Combustion equipment may also be subject to Fee Schedule B, "Combustion of Fuel." When sources are subject to two Fee Schedules, the schedule resulting in the highest fee is used. Abatement equipment is not subject to fee requirements, if they are permitted at the same time as the source that it will be abating.

Emission Calculations

The coffee roaster is the main source of gaseous pollutants, including alcohols, aldehydes, organic acids, and nitrogen and sulfur compounds. Because roasters are typically natural gas fired, NOx, CO, and carbon dioxide (CO_2) emissions are expected as a result of fuel combustion. Particulate emission factors for coffee roasting are given in Tables 9.13.2-1 and 9.13.2-2 in Chapter 9.13.2, Coffee Roasting, of AP-42 (Fifth Edition, Volume I).

Table 9.13.2-1 and 9.13.2-2 from AP-42 Chapter 9.13.2 (Coffee Roasting) provides the following emission factors for particulate (as PM10, which are also assumed to be 100% PM2.5), VOC, and CO from the coffee roasting process.

Emission Factors for Coffee Roasting Operations

Green coffee bean screening, handling, and storage System with fabric filter	PM10 = 0.059 lb/ton PM2.5 = 0.059 lb/ton
Batch roaster	VOC = 0.86 lb/ton
Batch roaster with thermal oxidizer	VOC = 0.047 lb/ton
	PM10 = 0.12 lb/ton PM2.5 = 0.12 lb/ton

Air District staff has reviewed source test results from different size coffee roasters in the Bay Area. Air District staff suggests using source test emission factors from similar size and brand/model roasters for emission estimation in the application. Most new facilities have chosen batch roasters. Based on batch capacity of the roasters, three groups of coffee roasters are defined here: small to medium commercial roaster (5 kg to 35 kg), large commercial roaster (35 kg to 70 kg), and extra-large commercial roaster (70 kg and up). Suggested emission factors for each group are summarized in the following table based on source test results.

	Small to Medium Roaster (5 – 35 kg)[1]	Large Commercial Roaster (35 - 70 kg)[2]	Extra-Large Roaster (70 kg & up)[3]
Pollutant	(lb/ton)	(lb/ton)	(lb/ton)
NOx	0.56	0.36	2.08
CO	3.44	1.63	3.67
POC	0.22	0.047	0.73
PM10	0.44	0.10	0.077
Sulfates	0.021	0.021	0.021
Formaldehyde	2.0E-04	1.2E-02	0.064
Acetaldehyde	1.0E-04	8.0E-04	0.038

Notes:

1. Emission Factors shown are from Source Test on July 31, 2009 at Plant 16718 Tailor Maid Farming (S-1, Loring S35 35kg/batch).
2. Emission Factors shown are from Source Test on April 19, 2019 at Plant 15081 Equator Coffees (S-6, Loring S70 70kg/batch).
3. Emission Factors are maximum source test values for roasters range from 120 kg/batch to 250 kg/batch at Plant 167, Kraft foods, Plant 23015, Philtz Coffee, Plant #21613, Mountanos Brothers Coffee Company, and Plant #17456, Peet's Coffee)
4. Kraft Source Test Result, Air District Test 99126 12/17/98 (see Application 25356)

If the applicant has more representative emission factors (i.e., from manufacturer's specifications or guarantees), those factors should be used.

The requirement to apply Reasonably Available Control Technology (RACT) to secondary pollutants from thermal oxidizers is contained in Regulation 2-2-112, which state that emissions of secondary pollutants from an abatement device are subject to RACT requirements, when the abatement device is being used to meet Best Available Control Technology (BACT) or Best Available Retrofit Technology (BARCT) requirements for a source or sources. The Air District Policy: NOx and CO RACT Levels for Thermal Oxidizers requires the following RACT control levels for afterburners:

50 ppmvd NOx @ 15% O2 [0.2 lb/MMBTU]
350 ppmvd CO @ 15% O2 [0.8 lb/MMBTU]

AIR TOXICS
Air toxics such as acrolein, acetaldehyde and formaldehyde are emitted as a result of the coffee roasting process. Uncontrolled coffee roasting results in significant odors and visible emissions smoke. According to Chapter 9.13.2, Coffee Roasting of AP-42, the roaster is the main source of gaseous pollutants, including aldehydes and acrolein. However, the California Air Resources Board has invalidated the source test method for acrolein. Until CARB approves a new test method and acrolein emissions are estimated from factors developed using the new test method, the Air District is not evaluating risk for acrolein
There are no California Air Toxics Emission Factors (CATEF) factors for the aldehydes from coffee roasting. However, source tests were performed at several facilities and acetaldehyde and formaldehyde emission factors have been summarized in the table in the Emission Calculations section.

If the applicant has more representative toxic emission factors (i.e., from manufacturer's specifications or guarantees), those factors should be used. If toxic emissions for the project exceed an acute or chronic trigger level in Table 2-5-1, a health risk assessment is required for the project. HRA results and the ,argin of compliance with Regulation 2-5 health risk limits should be considered when setting toxic emission limits in the permit conditions and requiring verification by source testing.

Based on these emission factors and the maximum projected throughput for the coffee roasting operations, emissions can be calculated. The combustion emissions are based on estimated usage of the burners at their estimated firing rates or maximum projected natural gas usage.

Applicable Requirements
Air District Rules and Regulations
In general, the particulate sources at coffee roasting facilities are subject to the operating standards of Regulation 6-1. With the proper operation and abatement of the coffee roasters and its destoning/cooling operations, particulate emissions should comply with the operating standards of Regulation 6-1. Permit conditions are imposed to ensure compliance with Regulation 6-1.

Best Available Control Technology (BACT)
BACT for the coffee roasters (including its handling) is specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Coffee Roasters
- Coffee Roasting < 110,000 Btu/hr
- Coffee Roasting 110,000 Btu/hr to 3.5 MM Btu/hr
- Coffee Roasting Handling Equipment < 1,590 lb/hr
- Coffee Roasting Handling Equipment >= 1,590 lb/hr

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions

Standardized conditions for coffee roasters are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.4 COOLING TOWERS

July 3, 2023

Process Description

This chapter describes the permitting procedures for cooling towers. A detailed description of cooling towers is provided in Chapter 13.4 Wet Cooling Towers of EPA's AP-42.

A cooling tower relies on the latent heat of water evaporation to exchange heat between the process and the air passing through the tower. In a cooling tower, warmer water is brought into direct contact with the cooler air. When the air enters the cooling tower, its moisture content is generally less than saturation. When the air exits, it emerges at a higher temperature and with moisture content at or near saturation. Even at saturation, cooling can take place since a temperature increase results in an increase in heat capacity which allows more sensible heat to be absorbed.

There are two main types of cooling towers: natural draft and mechanical draft cooling towers. A natural draft cooling tower receives its air supply from natural wind currents that results in a convection flowing up the tower. This air convection cools the water on contact. Due to the tremendous size of these towers (500 feet high, 400 foot diameter at the base) they are generally used for flow rates above 200,000 gal/min which are generally only used in utility power stations in the United States. It is generally loaded at about 2 to 4 gal/(min ft^2) or 1.4 to 2.7 L/(s m^2). Currently there are no natural draft cooling towers operating within the Air District.

A mechanical draft cooling tower is much more widely used. A mechanical draft cooling tower employs large fans to either force or induce a draft. This increases the contact time between the water and the air maximizing the heat transfer. A forced draft tower has the fan mounted at the base, forcing air in at the bottom and discharging air at low velocity through the top. An induced draft tower uses fans to create a draft that pulls air through the cooling tower fill. Mechanical draft cooling towers may also employ a crossflow or counterflow design. A crossflow (XF) tower is designed so that the air and water is mixed at a 90-degree angle. A counterflow (CF) design allows vertically falling water to mix with vertically rising, cooling air at an angle of 180 degrees. Generally, crossflow and counterflow cooling towers have similar drift loss. A typical mechanical draft cooling tower has a loading capacity of 2 to 6 gal/(min ft^2) or 1.4 to 4.1 L/(s m^2).

Drift eliminators are often used to reduce the amount of drift in the exiting air flow. There are four main types of drift eliminators: blade-type; herringbone; waveform; and cellular or honeycomb. Blade-type and herringbone drift eliminators are usually the least efficient; waveform drift eliminators are typically moderately efficient; cellular units are the most efficient. The velocity of the airflow in the fill is typically 300 to 700 feet per minute. Drift rates are highest when the air velocity is at either end of the range. Important design considerations for drift eliminators include the air velocity and pressure drop through the eliminators, as well as provisions from reducing or eliminating droplet reentrainment and air leakage. Better drift eliminators expand the range of airflow rates that produce minimum drift rates and reduce the effect of substantially higher or lower airflow rates on the drift rate.

Completeness Determination

The following Air District forms should be completed and information and fees provided for cooling tower operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form P101-B (one for facility).
2. Form G (one per source).
3. If Health Risk Assessment is triggered, Form HRA (one per source).
4. Fees, calculated per Regulation 3 (Schedule F).
5. See the Emissions Calculations section for additional information that should be provided by the applicant regarding the cooling tower.
6. Form Appendix H

Emission Calculations
Most of the emissions from cooling towers are a result of drift droplets, liquid water entrained in the air stream which are carried out of the tower. The amount of drift escaping the cooling tower depends on the type and model, the capacity, the velocity of the air, the temperature of the inlet and outlet flow, and the density of the air in the cooling tower. Drift loss can usually be obtained by requesting the drift loss from the manufacturer or vendor. Drift droplets can be reduced to less than 0.1 % by effectively using an eliminator. Due to safety reasons, a cooling tower is often designed, if necessary, to allow leakage to the cooling water side of the heat exchanger. These leaks within the system may result in hydrocarbon emissions.

The water transfer system, including pumps, valves, and piping is generally not subject to the fugitive emissions regulations. These components are typically exempt by definition since the system should normally contain only water containing little or no volatile organic compounds (VOCs).

Major emission constituents are organic compounds, particulate matter (PM10), salts, and any other chemicals that may either are present in the stream being cooled or that may be added to the circulating water. The visible emissions (the plume) mainly consist of water vapor. Precipitation of the plume may occur near the vicinity due to adiabatic cooling. Interaction of nearby stacks and the cooling tower plume may also occur causing changes in pH and other problems. Refer to the Cooling Tower spreadsheet for the emission calculation based of Method 1 and Method 2 below.

1. Particulate Matter < 10 microns (PM10)
The operator/owner can usually obtain the drift loss by requesting the drift loss from the manufacturer or vendor. The operator/owner should also provide the manufacturer's written documentation for the premise, basis, and justification for the drift loss that was determined. If the applicant fails to provide the drift loss, then the 0.02 % value should be used in these calculations for the drift loss value. Per the August 1993 EPA publication titled "Chromium Emissions from Industrial Process Cooling Towers - Background Information for Proposed Standards", typical drift loss rates for cooling towers range from 0.001 to 0.02 %. The drift loss of an induced draft cooling tower is typically 0.02 % (AP-42 Table 13.4-1, 1/95). The drift loss of a natural draft cooling tower is typically 0.00088 % (AP-42 Table 13.4-1, 1/95). The drift loss is a function of air velocity through the fill material, recirculation rate, type of fill material and drift eliminator used. Source testing is not normally recommended since there are no source test procedures that comply with Air District standards.

Typically, the operators of cooling towers have readily available the TDS content of the water due to reporting requirements of agencies responsible for regulating water quality and water treatment testing requirement. Typical cooling tower water recirculation capacities range from 3,200 to 90,000 gallons/minute. Power plant cooling towers can be much larger than this.

2. Precursor Organic Compounds (POC)
Only cooling towers that use process water (water containing organics) will emit POCs. For those towers that do not use process water, no POC emissions will be assumed to be emitted.

Obtained from the applicant (usually this is supplied by the cooling tower vendor to the applicant)
Cooling water capacity of the cooling tower, gallons/minute
Refinery feed rate, gallons/minute
Operating time

If the cooling water rate is unknown (in gallons) assume it is 40 (AP-42, Table 5.1-3, 1/95) times the refinery feed rate (in gallons). Refinery feed rate is defined as the crude oil feed rate to the atmospheric distillation column. Unless the facility can demonstrate an more appropriate emission factor for the tower, the emission calculation shall be conducted using one of the following emission factors for either uncontrolled or controlled cooling towers [controlled means minimization of hydrocarbon leaks into the cooling water system and monitoring of cooling water for hydrocarbons]:

Method 1 (VOC and PM/PM_{10}): The default emission factors listed below can be used to estimate the PM/PM_{10} and VOC emissions using the equation below:

$$E = Q \times EF$$

Where:

E = Annual emissions in pounds per year (lb/yr)
Q = Cooling tower recirculating water in million gallons or cooling tower capacities
EF = Emission factor expressed in lb/throughput

Default Emission Factors for Cooling Towers:

Industry	Throughput Unit	Uncontrolled VOC EF (lb/MMgal)	Controlled VOC EF (lb/MMgal)	Controlled PM/PM_{10} EF
Refineries	Million gallon	6.0	0.7	19 (lb/MMgal)
Chemical Manufacturing Plant	Million gallon	6.0	0.7	19 (lb/MMgal)
Others	Million gallon	Not expected	Not expected	19 (lb/MMgal)

Assuming PM_{10} = PM

References:

- Uncontrolled VOC: AP-42, Section 5.1, Table 5.1-3 (April 2015)
- Controlled VOC: AP-42, Section 5.1, Table 5.1-2 (April 2015)
- PM: AP-42, Section 13.4, Table 13.4-1 (January 1995). This average corresponds to an effective cooling tower recirculating water TDS content of approximately 11,500 ppm for induced draft towers.

Method 2 (PM/PM_{10}): Total Dissolved Solids (TDS) and Drift Loss % of the recirculating water are provided.

Information obtained from the applicant for a cooling tower (usually this is supplied by the cooling tower vendor to the applicant):

$$EF_{PM/PM10} = TDS \times \text{Drift Loss } \%/100 \times \text{density water}$$

Where:

$EF_{PM/PM10}$ = Emission factor, lb/gal
TDS = Concentration of total dissolved solids in circulating water (ppm by weight)
TDS of the recirculating water, ppm by wt. (1,000 ppmw = 1,000 lb solid/10^6 lb water)
TDS = Conductivity (micromho per cemtineter, umho/cm) x CF_{TDS}).
CF_{TDS} Correlation factor to convert conductivity to TDS concentration = 0.5 to 1.0; default is 0.67
Drift Loss (percentage of liquid water emitted to the air), % wt. [Drift loss = ((makeup water – evaporated water- blow down water)/recirculating cooling water) x100%]
Density of water = 8.34 lb/gallon

A conservatively high PM_{10} emission can be obtained by multiplying the drift loss by the TDS fraction in the circulating water and by assuming that, once the water evaporates, all remaining solid particles are within the PM_{10} size range.

Example:

$EF_{PM/PM10}$ = 5,000 ppmw/10^6 x 0.0005%/100 x 8.34 lb/gal = 2.085 E-7 lb/gal

PM/PM_{10} Emissions (lb/hr) = (Recirculating water capacity) x $EF_{PM/PM10}$ x (operating time)

PM/PM_{10} (lb/hr) = 60,000 gpm x 2.087 E-7 lb/gal X 60 min/hr = 0.75 lb/hr

Note: BACT for Cooling Tower at TECQ

- PM10 required drift < 0.001% achieved by drift eliminator.
- VOC required Non-contact design. Monthly monitoring of VOC in water per Appendix P or approved equivalent (assume all VOC stripped out). Repair identified leaks as soon as possible, but before next scheduled shutdown, or shutdown triggered by 0.08 ppmw cooling water VOC concentration.

3. Toxic Air Contaminant (TAC) Emission Estimation - cooling tower

The toxic air contaminant emissions will be dependent on the type of water treatment chemical used by the applicant for corrosion inhibition and to discourage algae growth. In many cases, bromine is used for this purpose. The maximum concentration of the water chemical treatment is typically obtained from the applicant. TAC emission factor calculation is shown below:

$$EF_{TAC} = EF_{VOC\ or\ PM/PM10} \times W$$

Where:

EF_{TAC} = Toxics air contaminants emission factor (lb/gal)
$EF_{VOC\ or\ PM/PM10}$ = VOC or PM/PM_{10} emission factor used to report colling towers emissions (lb/MMgal)
W = Weight fraction of TAC in VOC or PM/PM10 (decimal format)

Example:

Nickel = 0.2% by weight

EF_{nickel} = 2.085 E-7 lb/gal x 0.2%/100 = 4.17 E-10 lb/gal
$E_{Nickel-PM/PM10}$ (lb/hr) = 60,000 gpm x 4.17 E-10 lb/gal X 60 min/hr = 0.0015 lb/hr

Alternatively: If the TAC concentration of the toxic compound is known, the TAC emission calculation is shown below:

Chloroform concentration = 0.004 ppmv in cooling water
$E_{Chloroform}$ (lb/hr) = 0.004 ppmv/10^6 x 60,000 gpm x 8.34 lb/gal x 60 min/hr = 0.12 lb/hr Chloroform

Applicable Requirements

Regulation 2, Rule 1, Section 128.4 exempts from permits "water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers." The Air District's policy has interpreted process water to be water that contains organics. On May 17, 2000 Regulation 2, Rule 1, Section 319 was amended to require permits for any source with an emission rate of any regulated air pollutant from the source greater than 5 tons per year, after abatement. This includes cooling towers that had been previously exempt. Along with this, Section 93103, Subchapter 7.5, Chapter 1, Part III, Titles 17 and 26, Code of California Regulations and Air District Regulation 11-10-301 prohibits hexavalent chromium-containing compounds from being added to the circulating water. As a result, all cooling towers are subject to Regulation 11-10; therefore the exemption in Regulation 2-1-103 is also not applicable.

A cooling tower is defined by Air District Regulation 11-10-201 as "any open water recirculation device that uses fans or natural draft to draw or force air to contact and cool water by evaporation." They are often referred to as evaporative or wet cooling towers. Air emissions typically result from entrainment of liquid water in the air stream which is carried out of the tower as drift droplets. Drift droplets are any water droplets and dissolved and suspended solids they contain that are entrained in the air and emitted from the cooling tower stack. Generally, the concentration of the dissolved solids in the drift is the same as that in the circulating cooling water. Drift in the exiting airflow can be reduced with various types of drift eliminators. A non-evaporative or dry cooling tower has negligible emissions because there are no drift droplets.

Although the bacterium Legionella pneumophila (the bacterium that causes Legionnaire's Disease) is not regulated by the Air District, it is suggested that the facility follow the guidelines and recommendations made by the Cooling Technology Institute in their February 2000 report titled "Legionellosis, Guideline: Best Practices for Control of Legionella" in order to minimize the risks associated with this bacterium. It is also suggested that the facility contact their local public health officer to obtain procedures for handling this bacterium.

Cooling towers may or may not be subject to Regulation 2-2 – Prevention of Significant Deterioration (PSD):
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination. The increase in emissions in this project may or may not exceed the major modification thresholds.

Regulation 2, Rule 2: Major Modification of a Major Facility
Section 2-2-221 defines Major Modification as any modification, as defined in Regulation 2-1-234, at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amounts or more:

POC: 40 tons per year
NO_x: 40 tons per year
SO_2: 40 tons per year
PM_{10}: 15 tons per year
CO: 100 tons per year

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants (TAC) - Health Risk Assessment (HRA) Requirements
The Air District's regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of TACs. All TAC emissions from new and modified sources are subject to risk assessment, if the emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Table 2-5-1. If a health risk screening analysis is triggered, related projects permitted within the previous three years must also be considered in the analysis.

Cooling towers are exempt from Regulation 8, Rule 2, per Section 8-2- 114 exempts cooling towers from Section 8-2-301 provided best modern practices are used. The permit evaluator shall ensure that the cooling tower uses best modern practices in its operations.

Cooling towers are subject to Regulation 6-1- Particulate Matter-General Requirements:
- Section 6-1-301 limits particulate matter emissions for a period or periods aggregating more than three minutes in any hour to a visible emission of No. 1 on the Ringelmann Chart. Visible emissions are usually not associated with cooling towers.
- Section 6-1-302 limits cooling tower emissions for a period or periods aggregating more than three minutes in any hour equal to or greater than 20% opacity as perceived by an opacity sensing device (if required by the District).
- Section 6-1-305 prohibits emission of visible particles from causing public nuisance.
- Section 6-1-310 limits particulate matter grain loading of 0.15 grains/dscf in exhaust gas volume, corrected to 12% CO_2 by volume. The permit evaluator should review emission calculations of particulate to ensure that the cooling tower will comply with Regulation 6-1 requirements.

Regulation 11-10-Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers:
- Section 11-10-301 prohibits hexavalent chromium-containing compounds from being added to the circulating water.
- Section 11-10-304 required one of the three options for hydrocarbon leak monitoring at the cooling tower return line(s): either 1) sample and analyze recirculating cooling tower water; 2) install a continuous hydrocarbon; or 3) alternative APCO approved method.
- Section 11-10-305 minimizes the leak within 7 calendar days and conduct leak repair within 21

calendar day.
- Section 11-10-401 reports exceedance of leak action level *4 ppbw for existing unit and 42 ppbw for new/modified unit) and conducts sampling of total hydrocarbon concentration and chlorine concentration no later than 24 hours.

Cooling towers may or may not be subject to Major Facility Review, Regulation 2, Rule 640 CFR Part 70, State Operating Permit Programs (Title V):
If the facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

NESHAP
Subpart CC (Maximum Available Control Technology (MACT CC)) of 40 CFR Part 63 is the National Emission Standard for Hazardous Air Pollutants from Petroleum Refineries Section 63.654 and 63.655.
- Section 63.654 (c)(4) leak level action of 6.2 ppmv of strippable hydrocarbon concentration (as methane) using modified El Paso Method if measured monthly, or 3.1 ppmv of strippable hydrocarbon concentration (as methane) using modified El Paso Method if measured quarterly.

-Section 63.655 reporting and recordkeeping requirements.

Subpart Q of 40 CFR Part 63 is the National Emission Standard for Hazardous Air Pollutants for Industrial Process Cooling Towers. The requirements of this NESHAP were also implemented as Regulation 11-10. Both ban the use of hexavalent chromium chemicals in cooling towers. The permit evaluator shall ensure that the cooling tower complies with these requirements.

Best Available Control Technology (BACT)
Because these types of operations are somewhat unique, BACT for Cooling Towers is currently NOT specified in the BACT/TBACT Workbook. As a result, any Cooling Tower, which triggers BACT, shall require a cost-effectiveness determination for add-on organic abatement. Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

The Air District conducted a review of the BACT Clearinghouses and BACT Guidelines from US Environmental Protection Agency, California Air Resources Board, and other Air Districts in the state of California. Texas Commission on Environmental Quality (TCEQ) lists a BACT Guideline for cooling towers. The TCEQ BACT Guideline states BACT is as follows:

- VOC: Non-contact design. Monthly monitoring of VOC in water per Appendix P or approved equivalent (assume all VOC stripped out). Repair identified leaks as soon as possible, but before next scheduled shutdown, or shutdown triggered by 0.08 ppmw cooling water VOC concentration.
- PM_{10}: Drift < 0.001% achieved by drift eliminators

BACT for PM/PM10 at cooling tower (Application 29657)
- Use of mist/drift eliminators designed to achieve a drift rate of 0.0005%
- TDS limits of 2,000 ppm averaged over 12 consecutive months (taken from the EPA RACT/BACT/LAER Clearinghouse, cooling tower listed for company PTTGCA US Petrochemical Complex permitted by the Ohio EPA).

BACT for VOC at cooling tower (Application 29657)
- Continuous hydrocarbon analyzer monitor with VOC concentration not to exceed 42 ppb (new/modified source)
- Repair leaks as soon as detected not to exceed 15 days from date of detection. Cooling tower shall be shutdown until repairs are completed if repairs cannot be performed within 15 days of detection.
- Employ the following best modern practices (BMPs) to ensure emissions from the cooling tower are minimized:
  - All heat exchangers upstream of the CWTs are closely examined during turnaround, and are back flushed.

- The steel contained in the heat exchangers undergoes re-passivation.
- The tubes within the heat exchangers that show evidence of corrosion or pitting are sealed.
- Frequent visual observations (several times on a daily basis) of the cooling water by refinery operators to detect any changes in the appearance of the water that could indicate hydrocarbon contamination.
- Regular refinery operator presence on the CWT decks, which would allow the operators to detect any unexpected odors from the water.
- Measurement of the residual chlorine by refinery operators at the CWTs one or two times per shift for the following reasons:

  Hydrocarbons are reducers, which tend to combine with the oxidizing chlorine atoms. In the presence of hydrocarbons, the residual chlorine would drop significantly. In addition to being detected via measurement, a reduction in chlorine (a biocide) could foster microbial growth, which could be visually observed by the refinery operators.
- Use of hand-held monitors, such as PIDs or FIDs, to detect the presence of hydrocarbons in the air, in the event that refinery operators suspect a leak.
- Measurement of the Oxidation Reduction Potential (ORP) by refinery operators using a hand-held monitor if a leak is suspected. A change in the reducer side of the measurement would indicate the presence of hydrocarbons.
- Use of an on-line Total Hydrocarbon Analyzer that continuously determines the hydrocarbon vapor concentration from the cooling water.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities
- ❑ Notice of Exemption (NOE)/Notice of Determination (NOD)

Permit Conditions
Standardized conditions for cooling towers are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.5 CONCRETE BATCH PLANTS

March 1, 2024

Process Description
Concrete is composed essentially of water, cement, cement supplement (pozzolan material), fine (sand) and coarse (i.e., gravel, crushed stone) aggregate. A thorough explanation of these type of plants is available from Chapter 11.12, Concrete Batching, of AP-42 (Fifth Edition, Volume I).

Concrete batch plants are generally made up a number of sources of air pollution which store, convey, measure, and discharge its constituents into trucks for transport to a job site. Per Air District policy, the following sources at the plants shall be permitted:

Sand and Aggregate Storage Piles (grouped as one source if they are all in the same general area)
Cement and Cement Supplement Storage Silos (each silo is a separate source)
Conveyors (grouped as one source if they are all in the same general area)
Weigh Hoppers (each weigh hopper is a separate source)
Batch Mixers (each batch mixer is a separate source)

Completeness Determination
The following Air District forms should be completed and fees provided for concrete batch plants. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately. There is a specific policy for the grouping of sources and the calculation of fees at concrete batch plants and quarrying/crushing operations.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Process Diagram and Map of the Concrete Batch Plant.
4. Form A for watering system (one per facility)
5. Form A (one per device) for any particulate abatement device (i.e., baghouse).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule F for all sources except, batch mixer, which is subject to Schedule G-2 for Concrete Batching).
8. See the Emissions Calculations section for additional information that should be provided by the applicant regarding the concrete batch plant.

Emission Calculations
Particulate matter, consisting primarily of cement and cement supplement dust but including some aggregate and sand dust, is the primary pollutant of concern. In addition, there are emissions of toxic air contaminants that include metals from cement and cement supplements and crystalline silica from sand. Particulate emission factors for concrete batching are given in Table 11.12-2 in Chapter 11.12, Concrete Batching, of AP-42 (Fifth Edition, Volume I). These emission factors are based upon source tests of centralized- and on-truck mixing facilities.

Since cement is the primary contributor to fugitive particulate matter generated during concrete batching operations, the California Air Resources Board (CARB) further defined particulate matter emissions by using the chemical composition of Portland cement to develop the PM3431 chemical speciation profile.[17] PM3431 defines the portion of particulate matter in concrete batching operations which is PM2.5, information which is not identified in AP-42.

[17] CARB PM 3431: https://ww2.arb.ca.gov/sites/default/files/2024-01/concretebatching_pm3431.pdf

Process	Unabated PM10 Emission Factor (lb/ton)	Unabated PM2.5 Emission Factor (lb/ton)	Abated PM10 Emission Factor (lb/ton)	Abated PM2.5 Emission Factor (lb/ton)
Aggregate transfer	0.0033[1]	0.0005[2]	*	ND
Sand transfer	0.00099[1]	0.00015[2]	*	ND
Cement pneumatic unloading to elevator storage silo	0.47[1]	0.07[2]	0.00034[1]	0.00034[3]
Cement supplement unloading to elevator storage silo	1.10[1]	0.17[2]	0.0049[1]	0.0049[3]
Weight hopper loading (emission factor is of lb of pollutant per ton of aggregate and sand)	0.0028[1]	0.0004[2]	*	ND
Central Mix – Mixer loading (emission factors are of lb of pollutant per ton of cement and cement supplement)	0.156[1]	0.023[2]	0.0055[1]	0.0055[3]
Truck Mix – Truck loading (emission factors are of lb of pollutant per ton of cement and cement supplement)	0.310[1]	0.047[2]	0.0263[1]	0.0263[3]

* = If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used.
ND = No data.
[1] – Emission factors obtained from AP-42, Table 11.12-2.
[2] –Size fraction obtained from PM3431, Table 3, which shows that unabated PM2.5 = 15% of PM10
3 – For abated emissions, all abated PM emissions are conservatively assumed to be 100% PM2.5

Use of the abated emission rates in the table above is appropriate when BACT does not apply to the source. For operations that are abated by baghouses, the abated emission rates shown in the table above include any fugitive emissions that are not captured by the hoods or vents plus the post-control emissions from the baghouse. A comparison of the abated emission rates to the unabated emission rates in the table above shows the overall capture and control efficiency that is assumed for the hood and baghouse. For example, the factors in the table above represent an overall capture and control efficiency of 96% for PM10 from central mix operations and 92% for PM10 from truck loading operations. If BACT applies to these operations and the source is required to meet high capture and control requirements (for example a minimum of 99% capture for the truck loading operation with captured emissions vented to a baghouse emitting no more than 0.0013 grains/dscf), it is more accurate to calculate the fugitive emissions and abated emissions separately.

For example, fugitive truck loading emissions can be calculated by applying the minimum capture efficiency to the uncontrolled emission rate:

Fugitive Truck Loading Emission Factor Based on 99% Minimum Capture Efficiency:
PM10 (0.310 lbs/ton) * (1-0.99) = 0.0031 lbs/ton fugitive PM10
PM2.5 (0.047 lbs/ton) * (1-0.99) = 0.00047 lbs/ton fugitive PM2.5

Baghouse Emissions Based on a Maximum Grain Loading Limit:
PM10 (8000 sdcf/min)*(60 mins/hr)*(0.0013 gr/sdcf)/ (7000 gr/lb)/(500 tons/hr) = 0.000178 lbs/ton
PM2.5 (same as PM10) = 0.000178 lbs/ton

For this example, the total emission rate for fugitive and baghouse emissions would be:
PM10 0.0013 + 0.000178 = 0.00148 lbs/ton PM10

PM2.5   0.00047 + 0.000178 = 0.00065 lbs/ton PM2.5
These emission rates are more representative of the BACT controlled operation than the abated emission rates shown in the table.

The permit evaluator should obtain information from the applicant regarding the composition and maximum annual quantity of the concrete to be produced. If such composition information is not available, footnote a of Table 11.12-2 of AP-42 (Fifth Edition, Volume I) indicates that one yard of concrete is typically composed of the following:

Material	Composition by Weight (pounds/cubic yd)
Course aggregate	1865
Sand	1428
Cement	491
Cement Supplement	73
Water	20 gallons
Total Quantity Concrete Produced (lbs/cubic yd)	4024

Metals emission factors for concrete batching are given in Tables 11.12-7 and 11.12-8 in Chapter 11.12, Concrete Batching, of AP-42 (Fifth Edition, Volume I).

Per EPA AP-42 Table 11.12-8, metal emissions from cement loading and mix batching include arsenic, beryllium, cadmium, total chromium, lead, manganese, nickel, and selenium. The constituents of Portland cement, including metals, were also used to develop the PM3431 chemical speciation profile. TAC hexavalent chromium emission, Cr(VI) to total chromium ratio (5/58) in cement dust was adopted from an analysis by the San Diego mineral products industry. In addition, crystalline silica emissions from aggregates processing were calculated. Crystalline silica emission factor (average 6.38% of aggregate processing PM_{10} emission, excluding fugitive road dust PM_{10}) is derived from a journal paper published in 2009. In that paper[18], Richards et al. (2009) reported PM4 crystalline silica emission factors at three aggregate producing facilities in California. The average of the crystalline silica emission factor from the Vernalis plant in Tracy, CA was used.

Pollutant	Process	PM3431 Speciation (lb-pollutant/ton-cement)[1]	AP-42 Emission Factor (lb-pollutant/ton-material)[2]
Arsenic	Cement Silo Filling		1.68E-06
	Cement Silo Filling (w/ fabric filter)		4.24E-09
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		1.00E-06
	Central Mix Batching		8.38E-06
	Central Mix Batching (w/ fabric filter)		2.96E-07
	Truck Loading		1.22E-05
	Truck Loading (w/ fabric filter)		6.02E-07
	Cement Silo Filling		1.79E-08

[18] Richards, J.R. et al. (2009). PM4 Crystalline Silica Emission Factors and Ambient Concentrations at Aggregate-Producing-Sources in California. Journal of the Air & Waste Management Association.59:1287–1295. http://www.tandfonline.com/doi/pdf/10.3155/1047-3289.59.11.1287

Pollutant	Process	PM3431 Speciation (lb-pollutant/ton-cement)[1]	AP-42 Emission Factor (lb-pollutant/ton-material)[2]
Beryllium	Cement Silo Filling (w/ fabric filter)		4.86E-10
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		9.04E-08
	Central Mix Batching		ND
	Central Mix Batching (w/ fabric filter)		ND
	Truck Loading		2.44E-07
	Truck Loading (w/ fabric filter)		1.04E-07
Cadmium	Cement Silo Filling		2.34E-07
	Cement Silo Filling (w/ fabric filter)		ND
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		1.98E-10
	Central Mix Batching		1.18E-10
	Central Mix Batching (w/ fabric filter)		7.10E-10
	Truck Loading		3.42E-08
	Truck Loading (w/ fabric filter)		9.06E-09
Total Chromium[3]	Cement Silo Filling		2.52E-07
	Cement Silo Filling (w/ fabric filter)		2.90E-08
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		1.22E-06
	Central Mix Batching		1.42E-06
	Central Mix Batching (w/ fabric filter)		1.27E-07
	Truck Loading		1.14E-05
	Truck Loading (w/ fabric filter)		4.10E-06
Lead	Cement Silo Filling		7.36E-07
	Cement Silo Filling (w/ fabric filter)		1.09E-08
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		5.20E-07
	Central Mix Batching		3.82E-07
	Central Mix Batching (w/ fabric filter)		3.66E-08
	Truck Loading		3.62E-06
	Truck Loading (w/ fabric filter)		1.53E-06
Manganese	All	2.4	
	Cement Silo Filling		2.02E-04
	Cement Silo Filling (w/ fabric filter)		1.17E-07
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		2.56E-07
	Central Mix Batching		6.12E-05

Pollutant	Process	PM3431 Speciation (lb-pollutant/ton-cement)[1]	AP-42 Emission Factor (lb-pollutant/ton-material)[2]
	Central Mix Batching (w/ fabric filter)		3.78E-06
	Truck Loading		6.12E-05
	Truck Loading (w/ fabric filter)		2.08E-05
Nickel	Cement Silo Filling		1.76E-05
	Cement Silo Filling (w/ fabric filter)		4.18E-08
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		2.28E-06
	Central Mix Batching		3.28E-06
	Central Mix Batching (w/ fabric filter)		2.48E-07
	Truck Loading		1.19E-05
	Truck Loading (w/ fabric filter)		4.78E-06
Selenium	Cement Silo Filling		ND
	Cement Silo Filling (w/ fabric filter)		ND
	Cement Supplement Silo Filling		ND
	Cement Supplement Silo Filling (w/ fabric filter)		7.24E-08
	Central Mix Batching		ND
	Central Mix Batching (w/ fabric filter)		ND
	Truck Loading		2.62E-06
	Truck Loading (w/ fabric filter)		1.13E-07
Crystalline Silica	6.38% of aggregate processing PM^{10} emissions (excluding fugitive road dust PM^{10})[4]		

ND = No Data
[1] – Emission factors obtained from chemical speciation in PM3431.
[2] – Emission factors obtained from AP-42, Table 11.12-8.
[3] –.The amount of hexavalent chromium in the total chromium was estimated using San Diego APCD information[19].
[4] – The average of the crystalline silica emission factor from the Vernalis plant in Tracy, CA was used.[20]

Emissions from vehicle traffic on paved and/or unpaved roads to and from the storage piles should also be accounted in the emissions for the storage piles. An paved roads emission factor equation is provided in Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on paved surfaces at industrial sites:

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[19] San Diego APCD, Concrete Batch Plant Operations, November 30, 1998 update:

	Cr6/Total Cr
Cement	5/58
Cement Supplement	3/26
Central Mix	2/50
Truck Loading	2/50

[20] Richards, J.R. et al. (2009). PM4 Crystalline Silica Emission Factors and Ambient Concentrations at Aggregate-Producing-Sources in California. Journal of the Air & Waste Management Association.59:1287–1295. http://www.tandfonline.com/doi/pdf/10.3155/1047-3289.59.11.1287

$$E = k(sL)^{0.91}(W)^{1.02} \text{ lb/VMT} \qquad \text{[Equation 1]}$$

An unpaved roads emission factor equation is provided in Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k(s/12)^a(W/3)^b((365\text{-}P)/365)) \text{ lb/VMT} \qquad \text{[Equation 1a]}$$

and for vehicles traveling on publicly accessible roads, dominated by light duty vehicles:

$$E = [k(s/12)^a(S/30)^d/(M/0.5)^c - C]((365\text{-}P)/365)) \text{ lb/VMT} \qquad \text{[Equation 1b]}$$

The following provides an explanation of the variables in the equation and the average values recommended for use (only if actual more specific and precise values are not available), if the source-specific values are not known:

E = Emission Factor (lb/VMT)
k = Particle size multiplier (dimensionless); for PM_{10}, k= 0.0022 for Equation 1
k = 1.5 for Equation 1a, 1.8 for Equation 1.b;
for $PM_{2.5}$, k = 0.00054 for Equation 1, k = 0.15 for Equation 1a, 0.18 for Equation 1.b
sL = road surface silt loading; sL = 12 g/m^2 for concrete batching
a = Empirical Constants; a = 0.9 for Equation 1a, 1 for Equation 1b
b = Empirical Constants; b = 0.45
c = Empirical Constants; c = 0.2 for Equation 1b
d = Empirical Constants; d = 0.5 for Equation 1b
s = Silt content of road surface (%); s = See Table 13.2.2-1[21] and use the mean value for the applicable industry. (For example, for stone and gravel processing s=4.8 for plant roads, 7.1 for material storage areas.)
W = Mean vehicle weight (tons); W = 21 tons for Equation 1,
W=146 tons for Equation 1a, 2 tons for Equation 1b
M = surface material moisture content (%); M = 6.5
S = Mean vehicle speed (mph); S = 24 for Equation 1a, 33 for Equation 1b
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
for PM_{10}, C = 0.00047[22] and for PM2.5, C= 0.00036[17]
P = Number of days with greater than, or equal to, 0.01 inches of precipitation per year; 70[23]

For example, the PM_{10} and $PM_{2.5}$ emission factors used for paved roads are calculated as follows:

E_1 (PM_{10}) = $0.0022(12)^{0.91}(21)^{1.02}$
E_1 (PM_{10}) = 0.47 lb/VMT

E_1 ($PM_{2.5}$) = $0.00054(12)^{0.91}(21)^{1.02}$
E_1 ($PM_{2.5}$) = 0.12 lb/VMT

The PM_{10} and $PM_{2.5}$ emission factors used for unpaved roads at industrial sites are calculated as follows:

E_{1a} (PM_{10}) = $(1.5)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} (PM_{10}) = 3.05 lb/VMT

E_{1a} ($PM_{2.5}$) = $(0.15)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$

[21] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 3.
[22] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 6.
[23] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 9.

E_{1a} ($PM_{2.5}$) = 0.31 lb/VMT

The permit evaluator should determine which emission factor equation (1, 1a or 1b) is most appropriate depending on the unpaved surfaces or roads where the sources will be situated. The permit evaluator should also obtain information from the applicant regarding the maximum vehicle weight and miles traveled per year by all vehicles involved on driving on the unpaved roads at the facility. If watering is used to suppress dust, maximum abatement efficiencies of 70% may be used for PM10 emissions and 40% control for PM2.5 emissions. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[24] for PM10 and 40% control for PM2.5.

Emission factors for storage piles at concrete batch plants are taken from Chapter 13.2.4, Aggregate Handling and Storage Piles, of AP-42 (Fifth Edition, Volume I). These emission factors include emissions from drop operations into storage piles:

$$E = k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$$

The following provides an explanation of the variables in the equation and the mean values recommended for use, if the source-specific values are not known:

E = Emission Factor (lb/ton)
k = Particle size multiplier (dimensionless); for PM_{10}, k = 0.35; for $PM_{2.5}$, k= 0.053
U = mean wind speed (miles/hr); U = 8.2
M = material moisture content (%); M = 2.1

$$E = (0.35)(0.0032)(8.2/5)^{1.3}/(2.1/2)^{1.4}$$
E = 2.75E-03 lb/ton [PM_{10} for storage piles]

$$E = (0.053)(0.0032)(8.2/5)^{1.3}/(2.4/2)^{1.4}$$
E = 4.16E-03 lb/ton [$PM_{2.5}$ for storage piles]

For emissions from equipment traffic (truck, front-end loaders, dozer, etc.) traveling between or on piles, it is recommended that the equation for vehicle traffic on unpaved surfaces be used (see Equation 1a). The emissions from equipment traffic around the piles should be calculated using the same emission factors noted previously for unpaved roads by including the VMT around these piles and including it in the total estimated VMT on unpaved roads within the facility. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used.

Furthermore, if railcars or ships are involved in the transportation of materials, then also the combustion emissions from the use of these transport vehicles should also be calculated and included in the facilities cumulative increase.

Applicable Requirements

Air District Rules and Regulations

In general, the particulate sources at concrete batch plants are subject to the operating standards of Regulation 6-1. All but the transfer points of cement and cement supplement into the storage silos are fugitive in nature. The storage silos are generally abated by a fabric filter or baghouse device. Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer operations depend primarily on the surface moisture content of these materials. Types of controls used may include water sprays, enclosures, and baghouse devices. With these controls of the equipment and good maintenance and wetting of unpaved road surfaces, particulate emissions should comply with the operating standards of Regulation 6-1. Permit conditions are imposed to ensure compliance with Regulation 6-1.

[24] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 13.

Best Available Control Technology (BACT)
BACT for the particulate sources at concrete batch plants are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Concrete Batch Plant
- < 5 cubic yards per batch
- >= 5 cubic yards per batch

Crushing and Grinding
- Solid Material Handling - Dry
- Solid Material Handling - Wet
- Solid Material Storage - Enclosed
- Solid Material Storage - Open

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for human and animal crematories are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.6 CREMATORIES

December 15, 2023

Process Description

Cremation is the act of reducing a corpse by burning, generally in a crematorium furnace or crematory fire. A multiple chamber incinerator is generally used to cremate human and pet animal remains. An incinerator with two chambers, namely primary and secondary, is the most widely used type of cremator. The secondary chamber is heated first by igniting the afterburner and heating to an operating temperature at or above 1600° F. A "cremation case charge" (human or animal remains enclosed in a wooden casket/cardboard casket or a body bag) is introduced in the primary chamber, called a retort, and the retort door is closed. The charge is placed on the hearth in a manner that provides for maximum exposure to the flame of the primary burner. Control timers are set, and an opacity monitor and power switch are activated. The low fire ignition burner in the primary chamber is activated. Within approximately 30 minutes, the high fire cremation burner in the primary chamber begins a controlled cycling range of 1750 to 1800° F. This cycling continues until the cremation process is complete. During the cremation process, a large part of the body (especially the organs) and other soft tissue are vaporized and oxidized due to the heat, and the gases are discharged through the exhaust system. All that remains after cremation are dry bone fragments (mostly calcium phosphates and minor minerals). The approximate time for complete cremation is 2 hours, which may vary depending on charge weight.

After the incineration is completed, the bone fragments are swept out of the retort and the operator uses an enclosed process called a cremulator to pulverize the incinerated remains them into what are known as cremains, which exhibit the appearance of grains of sand and recognizable chips of very dry bone.

Completeness Determination

The following Air District forms should be completed and fees provided for cremators. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Source Description: Crematory Retort with Integral Afterburner
4. Process Code: 8011 (crematory retort) Material Code: 791 (bodies - human) and Usage Unit: tons
5. or Material Code: 498 (Animal carcasses) and Usage Unit: pounds
6. Form C (one per Retort and Afterburner).
7. Form A (only if applicant chooses to control emissions with abatement equipment other than an afterburner in secondary chamber of a crematory retort).
8. Form P (one per stack).
9. If Health Risk Assessment is triggered, Form HRA (one per source).
10. Fees, calculated per Regulation 3 (Schedule G-1 for incinerators - crematory).
11. Any emission data available for the proposed crematory retort, or use standard emission factors indicated in Emission Calculations section.

Emission Calculations

Crematory retort can produce emissions of flyash, smoke, gases, and odor. Odor and visible emissions can be objectionable to many people on aesthetic grounds. A poorly designed retort with inadequate turbulence, temperatures, and residence time can result in the objectionable emissions. The visible and odor emissions can best be controlled by good retort design. An afterburner in the secondary chamber of the retort compensates for deficiencies, if any, in the design of the primary chamber to minimize air contaminants.

Almost all crematory retorts use natural gas as the fuel to cremate "cremation case charge." A "cremation case charge" is a body in a casket or a bag. As a result, the emission factors available for natural gas combustion in AP-42 Chapter 1.4 (Tables 1.4-1 and 1.4-2) can be used to estimate particulate matter (PM10 and PM2.5), nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO2), precursor organic compounds (POC). And non-precursor organic compounds (NPOC) emissions from the combustion of natural gas in the crematory retort. The emission factors for natural gas combustion are as follows:

NATURAL GAS COMBUSTION EMISSION FACTORS[25]

Pollutant	Emission Factor (lb/MM cu ft)
PM10	7.6
PM2.5	7.6
NOx	100
CO	84
SO2	0.6
POC (VOC, not including methane)	5.5
NPOC (TOC-methane-VOC)	3.2

In addition to natural gas combustion, there are also emissions attributed to the combustion of the casket and body. According to EPA's FIRE Program[26], the PM10 emission factor associated with the combustion of body and the wrapping material is 8.5×10^{-2} pounds per each body burned[27]. In deriving the PM10 emission factor, the average weight per body incinerated was approximately 150 pounds (rounded up). The particulate emissions from all combustion materials are assumed to be PM2.5. In calculating the other criteria pollutants, the emission factors available for medical waste incineration in AP-42 Chapter 2.3 (Table 2.3-1 and 2.3-2) can be used to estimate NOx, CO, SO2, and POC emissions. There are no NPOC emissions from EPA's FIRE program for combustion of the casket and body. Therefore, NPOC emissions are expected from natural gas combustion only. In summary, the following are the emission factors for the combustion of the body and its case:

BODY AND CASE COMBUSTION EMISSION FACTORS

Pollutant	Emission Factor (lb/ton) – used in human emissions calculation	Emission Factor (lb/body)[28] – used in animal emissions calculation	Reference
PM10	1.13	8.50E-02	FIRE
PM2.5	1.13	8.50E-02	FIRE
NOx	3.56	2.67E-01	AP-42 Table 2.3-1
CO	2.95	2.21E-01	AP-42 Table 2.3-1
SO2	2.17	1.63E-01	AP-42 Table 2.3-1
POC	0.299	2.24E-02	AP-42 Table 2.3-2

TOXICS

For toxic emissions, emissions factors for crematories from FIRE database were also obtained:

TOXICS EMISSION FACTORS[29]

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25 Emission factor is for uncontrolled natural gas boilers less than 100 MMBTU/hr.

26 The Factor Information Retrieval System (FIRE) Data System is a database containing EPA's emission estimation factors for criteria and hazardous air pollutants..

27 Standard Classification Code (SCC) = 31502101 for Crematoriums from Emissions Testing of a Propane Fired Incinerator at a Crematorium, October 29, 1992.

28 The average weight of a body (including casing) is 150 pounds.

29 Except for mercury, formaldehyde and acetaldehyde, pollutant emission factors are from EPA's FIRE database for crematoriums (SCC = 31502101).

Pollutant	Emission Factor (pounds/body)
Acetaldehyde[30]	1.3 E-04
Arsenic	1.5E-05
Beryllium	1.4 E-06
Cadmium	1.1 E-05
Chromium, hexavalent	1.4 E-05
Copper	2.7 E-05
Formaldehyde[31]	3.4 E-05
Hydrogen chloride	7.2 E-02
Hydrogen fluoride	6.6 E-04
Lead	6.6 E-05
Mercury[31]	1.5 E-03(annual average); 5.3 E-03 (acute)
Nickel	3.8 E-05
Selenium	2.2 E-05
Chlorinated dibenzodioxins and furans (expressed as 2,3,7,8 TCDD equivalents)[32]	1.1 E-09
Polycyclic Aromatic Hydrocarbons (PAHs) [expressed as benzo(a)pyrene equivalent][33]	2.4 E-08

A crematories spreadsheet has been developed with worksheets to calculate emissions from human and animal cremations using all the emissions indicated above.

Mercury emissions are expected to decrease over time as the use of amalgam in restorative dental procedures decreases. The mercury emission factor should be updated approximately every ten years.

Applicable Requirements
Air District Rules and Regulations
In general, a permit is required for each crematory retort. The cremulator is exempt from permitting requirements per Regulation 2-1-121.

Crematory retorts are subject to the operating standards of Regulation 6-1 and Regulation 8-2. The visible and odor emissions can best be controlled by good retort design. The permit conditions for crematories

[30] Formaldehyde and acetaldehyde emission factors are calculated based on the data in CARB's Test Report No. C-90-004, "Evaluation Test on Two Propane Fired Crematories Camellia Memorial Lawn Cemetery", October 29, 1992.
[31] The mercury emission factors are from "Mercury Emissions from the Cremation of Human Remains" September 24, 2012, by Jane Lundquist and updated in accordance with the Addendum to Mercury Emissions from Cremation of Human Remains, August 3, 2021. These factors should only be applied for human cremations.
[32] Using the latest FIRE factors (dated 3/6/2008), the dioxin/furan emission factor was calculated based on the equivalency factors in the 2015 OEHHEA risk assessment guidelines (see Note 1 of Crematories spreadsheet).
[33] Using the latest FIRE factors (dated 3/6/2008), the PAH emission factor was calculated based on the equivalency factors in the 2015 OEHHEA risk assessment guidelines (see Note 2 of Crematories spreadsheet).

include parts which will ensure compliance with Regulation 6-1. The permit evaluator calculated emissions for POCs should be compared to the operating standards of Regulation 8-2 to determine compliance.

Best Available Control Technology (BACT)
BACT for the crematory retorts are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Crematories
- Crematory

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for human and animal crematories are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.7 CRUSHING AND GRINDING

December 15, 2023

Process Description
Crushing and grinding operations are performed typically at quarries. A thorough explanation of the crushed stone processing and pulverized mineral processing is available from Chapter 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing of AP-42 (Fifth Edition, Volume I).

Crushing and grinding operations are generally made up a number of sources of air pollution which store, convey, measure, and discharge its constituents. Per Air District policy, the following sources at the plants shall be permitted:

Sand and Aggregate Storage Piles (grouped as one source if they are all in the same general area)
Storage Silos (each silo is a separate source)
Conveyors (grouped as one source if they are all in the same general area)
Crushers (each crusher is a separate source)
Screens (each screen is a separate source)

Completeness Determination
The following Air District forms should be completed and fees provided for crushing and grinding h plants. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately. There is a Policy: Fees Associated with Concrete Batch Facilities and Quarrying/Crushing Operations for the grouping of sources and the calculation of fees at concrete batch plants and quarrying/crushing operations.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Process Diagram and Map of the Crushing and Grinding Plant.
4. Form A for watering system (one per facility)
5. Form A (one per device) for any particulate abatement device (i.e., baghouse).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule F for all sources except, crushers and grinders, which is subject to Schedule G-1).
8. See the Emissions Calculations section for additional information that should be provided by the applicant regarding the crushing and grinding plant.

Emission Calculations
Particulate matter, consisting primarily of cement and cement supplement dust but including some aggregate and sand dust, is the primary pollutant of concern. In addition, there are emissions of metals that are associated with this particulate matter. Particulate emission factors for crushing and grinding are given in Table 11.19.2-2 in Chapter 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing of AP-42 (Fifth Edition, Volume I).

Crushing Process	PM10 Emission Factor (lb/ton)	Controlled PM10 Emission Factor (lb/ton)	Controlled PM2.5 Emission Factor (lb/ton)
Tertiary Crushing	0.0024	0.00054	0.00010
Fines Crushing	0.0150	0.0012	0.000070
Screening	0.0087	0.00074	0.000050
Fines Screening	0.072	0.0022	Note 1
Conveyor Transfer Point	0.0011	4.6E-5	1.3E-05
Drop Unloading	0.00010	Note 2	Note 1

Notes: 1= Because the controlled emission factor (EF) for PM2.5 was not determined, conservatively assume same as PM10 EF.
2 = If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used.

The permit evaluator should obtain information from the applicant regarding maximum annual quantity of the stone to be crushed.

Emissions from vehicle traffic on paved and/or unpaved roads to and from the storage piles should also be accounted in the emissions for the storage piles. An paved roads emission factor equation is provided in Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on paved surfaces at industrial sites:

$E = k(sL)^{0.91}(W)^{1.02}$ lb/VMT [Equation 1]

An unpaved roads emission factor equation is provided in Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on unpaved surfaces at industrial sites:

$E = k(s/12)^{a}(W/3)^{b}((365\text{-}P)/365))$ lb/VMT [Equation 1a]

and for vehicles traveling on publicly accessible roads, dominated by light duty vehicles:

$E = [k(s/12)^{a}(S/30)^{d}/(M/0.5)^{c} – C]((365\text{-}P)/365))$ lb/VMT [Equation 1b]

The following provides an explanation of the variables in the equation and the average values recommended for use (only if actual more specific and precise values are not available), if the source-specific values are not known:

E = Emission Factor (lb/VMT)
k = Particle size multiplier (dimensionless); for PM_{10}, k=0.0022 for Equation 1
k = 1.5 for Equation 1a, 1.8 for Equation 1.b
for $PM_{2.5}$, k = 0.00054 for Equation 1, k = 0.15 for Equation 1a, 0.18 for Equation 1.b
sL = road surface silt loading; sL = 70 g/m^2
a = Empirical Constants; a = 0.9 for Equation 1a, 1 for Equation 1b
b = Empirical Constants; b = 0.45
c = Empirical Constants; c = 0.2 for Equation 1b
d = Empirical Constants; d = 0.5 for Equation 1b
s = Silt content of road surface (%); s = See Table 13.2.2-1[34] and use the mean value for the applicable industry. (For example, for stone and gravel processing s=4.8 for plant roads, 7.1 for material storage areas.)
W = Mean vehicle weight (tons); W = 21 tons for Equation 1,
W=146 tons for Equation 1a, 2 tons for Equation 1b
M = surface material moisture content (%); M = 6.5
S = Mean vehicle speed (mph); S = 24 for Equation 1a, 33 for Equation 1b
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
for PM_{10}, C = 0.00047[35] and for PM2.5, C= 0.00036[31]
P = Number of days with greater than, or equal to, 0.01 inches of precipitation per year; 70[36]

For example, the PM_{10} and $PM_{2.5}$ emission factors used for paved roads are calculated as follows:

$E_1 (PM_{10}) = 0.0022(12)^{0.91}(21)^{1.02}$
E_1 (PM_{10}) = 0.47 lb/VMT

$E_1 (PM_{2.5}) = 0.00054(12)^{0.91}(21)^{1.02}$

[34] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 3.
[35] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 6.
[36] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 9.

E_1 ($PM_{2.5}$) = 0.12 lb/VMT

The PM_{10} and $PM_{2.5}$ emission factors used for unpaved roads at industrial sites are calculated as follows:

E_{1a} (PM_{10}) = $(1.5)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} (PM_{10}) = 3.05 lb/VMT

E_{1a} ($PM_{2.5}$) = $(0.15)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} ($PM_{2.5}$) = 0.31 lb/VMT

The permit evaluator should determine which emission factor equation (1, 1a, or 1b) is most appropriate depending on the unpaved surfaces or roads where the sources will be situated. The permit evaluator should also obtain information from the applicant regarding the maximum vehicle weight and miles traveled per year by all vehicles involved on driving on the unpaved roads at the facility. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[37].

Emission factors for storage piles at crushing and grinding plants are taken from Chapter 13.2.4, Aggregate Handling and Storage Piles, of AP-42 (Fifth Edition, Volume I). These emission factors include emissions from drop operations into storage piles:

$E = k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$

The following provides an explanation of the variables in the equation and the mean values recommended for use, if the source-specific values are not known:

E = Emission Factor (lb/ton)
k = Particle size multiplier (dimensionless); for PM_{10}, k = 0.35; for PM2.5, k=0.053
U = mean wind speed (miles/hr); U = 8.2
M = material moisture content (%); M = 2.1

$E = (0.35)(0.0032)(8.2/5)^{1.3}/(2.1/2)^{1.4}$
E = 2.75E-03 lb/ton [PM_{10} for storage piles]

$E = (0.053)(0.0032)(8.2/5)^{1.3}/(2.4/2)^{1.4}$
E = 4.16E-03 lb/ton [$PM_{2.5}$ for storage piles]

For emissions from equipment traffic (truck, front-end loaders, dozer, etc.) traveling between or on piles, it is recommended that the equation for vehicle traffic on unpaved surfaces be used (see Equation 1a). The emissions from equipment traffic around the piles should be calculated using the same emission factors noted previously for unpaved roads by including the VMT around these piles and including it in the total estimated VMT on unpaved roads within the facility.

If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used.

Furthermore, if railcars or ships are involved in the transportation of materials, then also the combustion emissions from the use of these transport vehicles should also be calculated and included in the facilities cumulative increase.

[37] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 13.

Applicable Requirements

Air District Rules and Regulations

In general, the particulate sources at crushing and grinding plants are subject to the operating standards of Regulation 6, Rule 1. All but the transfer points of cement and cement supplement into the storage silos are fugitive in nature. The storage silos are generally abated by a fabric filter or baghouse device. Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer operations depend primarily on the surface moisture content of these materials. Types of controls used may include water sprays, enclosures, and baghouse devices. With these controls of the equipment and good maintenance and wetting of unpaved road surfaces, particulate emissions should comply with the operating standards of Regulation 6-1. Permit conditions are imposed to ensure compliance with Regulation 6-1.

Best Available Control Technology (BACT)

BACT for the particulate sources at crushing and grinding plants are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Crushing and Grinding
- Rock - Aggregate Processing
- Solid Material Handling - Dry
- Solid Material Handling - Wet
- Solid Material Storage - Enclosed
- Solid Material Storage - Open
- Wood Processing Equipment

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

New Source Performance Standards (NSPS)

Subpart OOO of the NSPS standard covers nonmetallic mineral processing, which includes regulations for emissions from operating equipment that was manufactured, modified or reconstructed after August 31, 1983. Processing equipment regulated under Subpart OOO affecting the crushed stone, sand and gravel industry includes crushers, grinding mills, screens, bucket elevators, bagging operations, storage bins, enclosed truck and railcars and transfer points on belt conveyors.

Under Subpart OOO, aggregate facilities are required to conduct performance testing on stationary equipment in accordance with EPA Reference Method 9. Method 9 is a visual emissions test that determines opacity or the percentage of the light that is prevented from passing through a plume or fugitive emission. Individuals performing the opacity readings are required to be trained and certified in accordance with the method. EPA has set specific limits for the aggregates industry based on opacity readings designated to various processing equipment ranging from 7-15 percent (%). Among the requirements of Method 9 is determining the average of twenty-four readings over a six-minute period for a total of one hour for each piece of equipment that falls under the purview of NSPS.

The permit evaluator should determine whether the source is subject to Subpart OOO. If applicable, the permit evaluator should ensure that the facility has conducted or will be required to conduct the performance testing required by the NSPS.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment

- Overburdened Communities

Permit Conditions
Standardized conditions for crushing and grinding equipment are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.8.1 METHY BROMIDE FUMIGATION

December 15, 2023

Process Description

This chapter covers the permitting of methyl bromide fumigation operations. Fumigation is a method of using a lethal gas to exterminate pests within an enclosed space. Depending on the shipping requirements for different countries, methyl bromide may be used as the fumigant for the products which can occur at the source location (ie. agricultural farms or product producers), the distribution facility, or at certain ports in the Bay Area (such as the Port of Oakland). Methyl bromide is stored as a gas and injected into a sealed and enclosed space such as a fumigation chamber or a tarpaulin tent. The fumigation gas is introduced into the area as outlined by the United States Department of Agriculture, Animal and Plant Health Inspection Service's Treatment Manual, Chapter 2-1-1, Chemical Treatments. The concentration of methyl bromide is monitored for a designated period of time based on the product. Following the fumigation process, the gas is vented to the atmosphere.

Methyl bromide is listed as a restricted material under 3 CCR Section 6400 and regulated under the California Department of Pesticide Regulations (DPR). The County Agricultural Commissioners acting on behalf of DPR issues a Restricted Materials Permit for the use of each fumigant. Since they are not allowed to operate without a Restricted Materials Permit, the District permits are not valid if the Restricted Materials Permit is allowed to expire.

Completeness Determination

The following District forms should be completed and fees provided for methyl bromide fumigation operation Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Fees, calculated per Regulation 3 (Schedule F).
4. Point of contact from the County Agricultural Department.
5. Copy of the Restricted Materials Permit from the local County Agricultural Department.
6. Detailed description of fumigation operation: including,
    a. Fumigant gas(es) to be used;
    b. Maximum concentration of fumigation gas in the chamber (lb/ft^3);
    c. Length, width, and height of fumigation chamber(s) (ft);
    d. Maximum exhaust flow rate from fumigation chamber when venting (ft^3/min);
    e. Maximum number of fumigations per day; and
    f. Maximum number of fumigations per year.

Emission Calculations

Emissions will be based on the maximum concentration of fumigation gas (in lb/ft^3) in the volume (length x width x height = ft^3) of the fumigation container multiplied by the number of fumigations per day and per year. Although the venting process will span several hours, hourly emissions are estimated conservatively by assuming that the entire content of the fumigation chamber is released to the atmosphere within the first hour based on the applicant's maximum exhaust flow rate (ft^3/min).

$$Maximum\ Hourly\ Emissions\ \left(\frac{lb}{hr}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{hour}\right)$$

$$Maximum\ Daily\ Emissions\ \left(\frac{lb}{day}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{day}\right)$$

$$Maximum\ Annual\ Emissions\ \left(\frac{lb}{year}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{year}\right)$$

Methyl bromide has the following health risk assessment trigger levels.

Pollutant	TAC Health Risk Assessment Triggers	
	Acute lb/hr	**Chronic lb/yr**
Methyl Bromide	1.7	190

Applicable Requirements

District Rules and Regulations

The fumigation operation is subject to Regulation 8-2-301 (Miscellaneous Operations). If daily emissions exceed 15.0 pounds per day, then the permit evaluator should ensure emissions do not exceed 300 ppmv with the installation of blowers and stacks to dilute the concentration during the venting process .

Best Available Control Technology (BACT)

Although the BACT/TBACT workbook does not set forth any guidelines for a fumigation chamber, the permit evaluator can perform a cost effectiveness determination to determine if more stringent emission controls are necessary to mitigate emissions. BACT controls that are achieved in practice include minimizing the use of fumigant and operating under negative pressure while venting through a stack. In addition, the template permit conditions limit the amount of fumigant gas permitted for use at the facility.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
The Memorandum of Understanding (MOU) between the District and the County Agricultural Commissioners regarding Methyl Bromide Agricultural Commodity Fumigation Chamber Facilities provides some guidance regarding the responsibilities of each party. In the MOU, the District "will not issue a separate permit, provided that the permit issued by the Agricultural Commissioner includes the District's recommended permit conditions".
This District is requesting the applicable County Department of Agriculture and Environmental Management amend their permit to include the District's permit conditions. If the applicable County Agricultural Commissioner agrees to incorporate the District's permit conditions with the permit issued by the appliable County Department of Agriculture, the CEQA requirements will also be met under the Restricted Materials Permit Program and the District will not issue a separate permit. Instead, the District shall invoice the permit as a standard source, but will not charge a Permit to Operate fee. The District shall issue a Letter of Exemption with the condition the facility will need a Permit to Operate from the District if the County Agricultural Commissioner chooses to remove the District's permit conditions from the Restricted Materials Permit. If the applicable County Agricultural Commissioner does not agree to incorporate the District's permit conditions with the Restricted Materials Permit, then the Air District will issue a Permit to Operate.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for tub grinders are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.8.2 PHOSPHINE FUMIGATION

December 15, 2023

Process Description

This chapter covers the permitting of phosphine fumigation operations. Fumigation is a method of using a lethal gas to exterminate pests within an enclosed space. Depending on the shipping requirements for different countries, phosphine may be used as the fumigant for the products which can occur at the distribution facility, or at certain ports in the Bay Area (such as the Port of Oakland). Phosphine gas is introduced either in gas form or in pellet form. Phosphine is typically introduced to either a sealed container (ie. cargo container) or under a tarpaulin tent to minimize leaks. The fumigation gas is introduced into the area as outlined by the United States Department of Agriculture, Animal and Plant Health Inspection Service's Treatment Manual, Chapter 2-1-1, Chemical Treatments. The concentration of phosphine gas is introduced to the product and allowed to remain for up to 72 hours, depending on the product.. Following the fumigation process, the gas is released to the atmosphere.

Phosphine is listed as a restricted material under 3 CCR Section 6400 and regulated under the California Department of Pesticide Regulations (DPR). The County Agricultural Commissioners acting on behalf of DPR issues a Restricted Materials Permit for the use of each fumigant. Since they are not allowed to operate without a Restricted Materials Permit, the District permits are not valid if the Restricted Materials Permit is allowed to expire.

Completeness Determination

The following District forms should be completed and fees provided for fumigation operation. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

7. Form 101-B (one for facility).
8. Form G (one per source).
9. Fees, calculated per Regulation 3 (Schedule F)
10. Point of contract from the Country Agricultural Department.
11. Copy of the Restricted Material Permit from the local County Agricultural Department.
12. Detailed description of fumigation operation: including,
    a. How the phosphine gas will be introduced (gas or pellet form);
    b. SDS for the fumigation gas;
    c. Maximum concentration of fumigation gas (lb/operation or lb/ft^3);
    d. If applicable, length, width, and height of fumigation chamber(s) (ft);
    e. Maximum number of fumigations per day; and
    f. Maximum number of fumigations per year.

Emission Calculations

Phosphine gas can be introduced in either gas form or pellet form. Phosphine in gas cylinders such as Eco2Fume is typically a mixture of phosphine gas and carbon dioxide. The exact concentration of the gas mixture will be listed on the SDS for the fumigation gas, but the mixture is around 97% carbon dioxide and 3% phosphine. Emissions will be based on the maximum concentration of fumigation gas (in lb/ft^3) in the volume (length x width x height = ft^3) of the fumigation container multiplied by the number of fumigations per day and per year. Although the venting process will span several hours, hourly emissions are estimated conservatively by assuming that the entire content of the fumigation chamber is released to the atmosphere within the first hour.

$$Maximum\ Hourly\ Emissions\left(\frac{lb}{hr}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{hour}\right)$$

$$Maximum\ Daily\ Emissions\ \left(\frac{lb}{day}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{day}\right)$$

$$Maximum\ Annual\ Emissions\ \left(\frac{lb}{year}\right) = [(Length, ft) \times (Width, ft) \times (Height, ft)] \times \left(Maximum\ Concentration\ per\ Operation, \frac{lb}{ft^3 - operation}\right) \times \left(\frac{\#\ of\ operations}{year}\right)$$

When using phosphine pellets (ie. aluminum phosphide or magnesium phosphide), the quantity is predetermined based on the USDA guidelines. The applicant will need to provide the quantity

Phosphine have the following health risk assessment trigger levels.

Pollutant	Health Risk Assessment Triggers	
	Acute lb/hr	Chronic lb/yr
Phosphine		3.1E+01
Ammonia	1.4	7.7E+03

Note that ammonia is only produced from the use of phosphine pellet fumigation because the products used for phosphine fumigation contain ammonium carbamate, an inorganic salt that forms ammonia through the following reaction:

$$NH_2COONH_4 \rightarrow 2NH_3 + CO_2$$

Based on that maximum throughput limits of phosphine proposed by the applicant, the hourly and annual emissions of ammonia can be estimated:

$$Hourly\ Emissions, NH_3\ \left(\frac{lb}{hr}\right) = \left(\frac{Maximum\ lb\ PH_3}{hr}\right) \times \left(\frac{lbmol\ PH_3}{33.997\ lb\ PH_3}\right) \times \left(\frac{lbmol\ Mg_3P_2}{2\ lbmol\ PH_3}\right) \times \left(\frac{134.88\ lb\ Mg_3P_2}{lbmol\ Mg_3P_2}\right) \times \left(\frac{29.5\ lb\ NH_2COONH_4}{66.0\ lb\ Mg_3P_2}\right) \times \left(\frac{lbmol\ NH_2COONH_4}{78.07\ lb\ NH_2COONH_4}\right) \times \left(\frac{2\ lbmol\ NH_3}{1\ lbmol\ NH_2COONH_4}\right) \times \left(\frac{17.031\ lb\ NH_3}{lbmol\ NH_3}\right)$$

$$Annual\ Emissions, NH_3\ \left(\frac{lb}{yr}\right) = \left(\frac{Maximum\ lb\ PH_3}{hr}\right) \times \left(\frac{lbmol\ PH_3}{33.997\ lb\ PH_3}\right) \times \left(\frac{lbmol\ Mg_3P_2}{2\ lbmol\ PH_3}\right) \times \left(\frac{134.88\ lb\ Mg_3P_2}{lbmol\ Mg_3P_2}\right) \times \left(\frac{29.5\ lb\ NH_2COONH_4}{66.0\ lb\ Mg_3P_2}\right) \times \left(\frac{lbmol\ NH_2COONH_4}{78.07\ lb\ NH_2COONH_4}\right) \times \left(\frac{2\ lbmol\ NH_3}{1\ lbmol\ NH_2COONH_4}\right) \times \left(\frac{17.031\ lb\ NH_3}{lbmol\ NH_3}\right)$$

Applicable Requirements

District Rules and Regulations

Phosphine is considered an inorganic gas, which is not considered a criteria pollutant. Phosphine fumigation operations is subject to Regulation 2-5. The permit evaluator should ensure that the applicant will meet these requirements.

Best Available Control Technology (BACT)
Although the BACT/TBACT workbook does not set forth any guidelines for phosphine fumigation operations, the permit evaluator can perform a cost effectiveness determination to determine if more stringent emission controls are necessary to mitigate emissions. TBACT controls that are achieved in practice include minimizing the use of fumigant and using an airtight fumigation process. In addition, the template permit conditions limit the amount of fumigant gas permitted for use at the facility.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
The Memorandum of Understanding (MOU) between the District and the County Agricultural Commissioners regarding Methyl Bromide Agricultural Commodity Fumigation Chamber Facilities provides some guidance regarding the responsibilities of each party. In the MOU, the District "will not issue a separate permit, provided that the permit issued by the Agricultural Commissioner includes the District's recommended permit conditions". The MOU is only applicable to methyl bromide fumigation operations. As such, the MOU does not apply to phosphine fumigation.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for fumigation operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.9 MISCELLANEOUS ORGANIC OPERATIONS

December 15, 2023

Process Description

This chapter covers the permitting of miscellaneous operations that emit precursor organic compounds and are subject to Regulation 8, Rule 2.. These are operations that are not specifically exempted under this rule and are not subject to any other rule in Regulation 8 or 10. Regulation 8 - Policy: Regulation 8 Rule Applicability has been developed to clarify how a source/operation that is exempt from the provisions of a specific Regulation 8 rule defaults to Regulation 8, Rule 2 or 4. In general surface coating operations not specifically subject to a specific surface coating rule in Regulation 8 defaults to Regulation 8-4. Such operations are covered under the chapter 5.1.

Following are examples of operations that are subject to Regulation 8, Rule 2:

- Wastewater treatment facilities.
- Sludge dewatering.
- Paint mixers, excluding paint manufacturers.
- Solvent dispensing stations.
- Solvent stills.
- Paint filtering.
- Paint packaging.
- Adhesive manufacturing.
- Storage of organic liquids that is exempt from Regulation 8-5.
- Storage of organic liquids, which have a vapor pressure less than 0.5 psia.
- Combustion sources that are not subject to Regulation 10.

The following operations are exempt from Regulation 8, Rule 2:

- Natural gas operations, per Regulation 8-2-110.
- Preparation of food, per Regulation 8-2-111.
- Cold reduction equipment used in metal forming when certain cooling oils are used, per Regulation 8-2-112.
- Blind changing, per Regulation 8-2-113.
- Cooling towers, per Regulation 8-2-114. (The permitting of Cooling Towers is described in Permit Handbook Chapter # 11.4.)
- Railroad tank cars, per Regulation 8-2-114.
- Marine vessels, per Regulation 8-2-114.
- Crude oil production, per Regulation 8-2-114.

The following equipment is exempt from Regulation 8, Rule 2: per Regulation 8-2-115:

- Rubber or plastic presses, per Regulation 8-2-115.1.
- Certain plastic curing ovens, per Regulation 8-2-115.2.
- Certain vinyl plastisol ovens, per Regulation 8-2-115.3.
- Melting or applying of wax, per Regulation 8-2-115.4.
- Packaging of lubricants and greases, per Regulation 8-2-115.5.
- Manufacture of water emulsions of waxes, greases, or oils, per Regulation 8-2-115.6.
- Vacuum producing devices in laboratories, per Regulation 8-2-115.7.
- Vacuum producing devices which do not remove or convey air contaminants, per Regulation 8-2-115.8.
- Vitreous or porcelain enameling furnaces or ovens, per Regulation 8-2-115.9.
- All printing presses other than rotogravure printing presses, per Regulation 8-2-115.10.
- Bonding of lining to brake shoes, per Regulation 8-2-115.11.
- Equipment for hydraulic and hydrostatic testing, per Regulation 8-2-115.12.
- Ovens and furnaces used heat-treating and annealing metals, per Regulation 8-2-115.13.
- Oil quench tanks for tempering metals, per Regulation 8-2-115.14.
- Molten metal furnaces with a capacity of less than 450 in^3per Regulation 8-2-115.15.

- Space heating and heat transfer operations using gas fuel and rated at less than one million BTU/hr, per Regulation 8-2-115.16.
- Steam cleaning equipment, per Regulation 8-2-115.17.

The following equipment or exhaust from the following equipment is exempt from Regulation 8, Rule 2 in accordance with Regulation 8-2-116:

- Ovens for curing potting materials, per Regulation 8-2-116.1.
- Ovens for castings made with epoxy resins, per Regulation 8-2-116.2.
- Injection or compressions molding of plastics, per Regulation 8-2-116.3.
- Dipping operations for coating with oils, waxes, or greases, per Regulation 8-2-116.4.
- Dipping operations for coating with natural or synthetic resins which contain no organic solvents
- Unheated solvent dispensing containers, per Regulation 8-2-116.5.
- Ceramic firing kilns, if heated by natural gas, LPG, or electricity, per Regulation 8-2-115.6.
- Shell core and shell molding machines, per Regulation 8-2-115.7.
- Die casting machines, per Regulation 8-2-115.8.
- Laboratory equipment used exclusively for chemical or physical analyses and bench scale laboratory equipment, per Regulation 8-2-115.9.

The following main categories of operations are subject to other rules in Regulation 8:

- Most surface coating operations.
- All general solvent and surface coating operations (Regulation 8-4).
- Most organic liquid storage (Regulation 8-5).
- Solvent cleaning (Regulation 8-16).
- Gasoline distribution (Regulation 8-7).

The contents of these rules should be examined to determine if a specific operation is exempt from Regulation 8-2. Exemption from Regulation 8-2 or any rule in Regulation 8 is not an exemption from the requirement for permits. A source or operation that emits air contaminants will require a permit unless excluded by a provision in Regulation 1-110 or exempted by Regulation 2-1. Review the Permit Exemption Guidance to determine if the source is potentially exempt.

Completeness Determination

The following Air District forms should be completed and information and fees provided for coating operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form P101-B (one for facility).
2. Form S (one per source), if it is a miscellaneous coating or solvent source.
3. Form G (one per source), if it is NOT a miscellaneous coating or solvent source.
4. If miscellaneous organic operation exhausts to add-on abatement device, Form A (one per device).
5. If Health Risk Assessment is triggered, Form HRA (one per source).
6. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

The emission factors for miscellaneous operations will depend on the type of source. Emissions factors may be determined from AP-42, source testing, calculations, or using established emissions factors from similar sources.

Applicable Requirements

The source must comply with Regulation 8, Rule 2. The miscellaneous operation shall not have emissions of more than 15 lb/day with a concentration of more than 300 ppm total carbon into the atmosphere. The source must exceed both conditions on a given day to be in violation of Regulation 8-2. Total carbon is defined as the ppm of each compound multiplied by the number of carbon atoms in the molecule, excluding 1,1,1-trichloroethane, methylene chloride, methane, and chlorofluorocarbons.

Best Available Control Technology (BACT)
Because these types of operations are somewhat unique, BACT for miscellaneous organic operations is currently NOT specified in the BACT/TBACT Workbook. As a result, any miscellaneous organic operation, which triggers BACT, shall require a cost-effectiveness determination for add-on organic abatement. Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for miscellaneous organic operations are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.10 PORTABLE EQUIPMENT

December 15, 2023

Process Description
This chapter covers the permitting of portable equipment. Air District Regulation 2-1-413 defines portable equipment as equipment at multiple locations that will not remain at any single location (facility boundaries) for more than twelve consecutive months, will not be within 1000 feet of a school, will comply with Regulation 2-5, will not cause a public nuisance, must be exempt from CEQA or covered by a chapter in the permit handbook and will not cause a Synthetic Minor Facility to exceed a federally enforceable emission limit.. Hence, any equipment which meets these criteria, may be permitted as portable.

Portable diesel engines are covered in Permit Handbook Chapter 2.3.3. If the owner/operator must operate the portable equipment within 1000 feet of a school, then they must submit a modification to their portable permit so that a health risk analysis can be performed.

Completeness Determination
The fees and Air District forms associated with the portable source are identical to those for like-kind stationary source (refer to applicable chapter for the specific source requirements). Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. For facility address, indicate the physical address where the equipment will be operated initially, or the mailing address, if it is within the Bay Area counties that the Air District covers. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

Emission Calculations
The emission calculation procedures associated with the portable source are identical to those for the like-kind stationary source (refer to applicable chapter for specific source requirements).

Applicable Requirements
Air District Rules and Regulations
The Air District rules and regulations associated with the portable source are identical to those for the like-kind stationary source (refer to applicable chapter for specific source requirements). In addition, the source must meet the criteria of portability set forth in Air District Regulation 2-1-413.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment (if portable equipment is placed within 1000 feet of a school)
- Overburdened Communities

Permit Conditions
Standardized conditions for portable equipment are available from the Permit Condition Guidance. These conditions should be included with the standardized conditions for the like-kind stationary source. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.11 POLYESTER RESIN MANUFACTURING

December 15, 2023

Process Description

This chapter covers the permitting of resin manufacturing. A resin is defined as a solid or semi-solid, water insoluble, organic material with little or no tendency to crystallize. Resins may be used as the basic components of plastics and as components of surface coating formulations. Resins are generally produced by combining various monomers, solvents, oils, catalysts, and other materials in batch or continuous reactors. Generally, an Air District permit is required for each reactor, thinning tank, and/or blending tank, which are defined in Regulation 8-36. However, for small polyester resin storage (< 600 gallon capacity), grouping of tanks may be allowed, per Grouping Resin Storage Tanks at Fiberglass Operations . If the facility has organic liquid storage tanks, then the chapter for Organic Liquid Storage Tanks should also be referenced.

Chapter 6.6.3 Polystyrene, of AP-42 (Fifth Edition, Volume I) provides a detailed description of how resins are manufactured.

Completeness Determination

The following Air District forms should be completed and fees provided for polyester resin manufacturing. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one form for each reactor, thinning tank, and/or blending tank).
3. Form A (one per device).
4. Fees, calculated per Regulation 3 (Schedule F).

Emission Calculations

According to EPA's FIRE Program[38], the following are the emission factors for resin manufacturing:

SCC Code	Description	Pollutant	Emission Factor (lb/ton)
3-01-018-17	General*	POC	1.07 E 01
3-01-018-19	Solvent Recovery	POC	3.20 E 00
3-01-018-21	Extruding/Pelletizing/Conveying/Storage	POC	3.00 E-01
3-01-018-27	Polyamide Resins	NOx	1.00 E 00
3-01-018-32	Urea-Formaldehyde Resins	POC	1.47 E 01
3-01-018-42	Melamine Resin	POC	5.00 E 01
3-01-018-47	Epoxy Resin	POC	5.10 E 00
3-01-018-49	Acrylonitrile-Butadiene-Styrene (ABS)	POC	6.00 E 01
3-01-018-70	Reactor (Polyester Resins)	POC	5.00 E 01
3-01-018-80	Reactor (Polyurethane)	POC	5.20 E 01
3-01-018-92	Separation Process	POC	2.00 E 00

* This factor may be used to calculate total emissions from a polystyrene resin production plant.

The following equation can be used to calculate emission rates:

$$E_{Pollutant} = U(EF)$$

where,

$E_{Pollutant}$ = emissions of pollutant (lb/yr)

U = throughput (tons/yr)

[38] The Factor Information Retrieval (FIRE) Data System is a database containing EPA's emission estimation factors for criteria and hazardous air.

EF = emission factor (lb/ton)

TOXICS

According to EPA's FIRE Program[39], the following are the toxics emission factors for resin manufacturing:

SCC Code	Description	Pollutant	Emission Factor (lb/ton)
3-01-018-19	Solvent Recovery	Styrene	1.45 E-01
3-01-018-21	Extruding/Pelletizing/Conveying/Storage	Styrene	2.463 E-01
3-01-018-32	Urea-Formaldehyde Resins	Formaldehyde	3.00 E-01
3-01-018-49	Acrylonitrile-Butadiene-Styrene (ABS)	Styrene	2.78 E 00

The following equation can be used to calculate emission rates:

$E_{Pollutant} = U(EF)$

where,

$E_{Pollutant}$ = emissions of pollutant (lb/yr)
U = throughput (tons/yr)
EF = emission factor (lb/ton)

Applicable Requirements

Air District Rules and Regulations

Resin manufacturing is subject to the requirements of Regulation 8, Rule 36 (Resin Manufacturing Operations).

Best Available Control Technology

BACT for polyester resin manufacturing is not yet specified in the BACT/TBACT Workbook.
Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions

Standardized conditions for polyester resin manufacturing are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

[39] The Factor Information Retrieval (FIRE) Data System is a database containing EPA's emission estimation factors for criteria and hazardous air pollutants.

11.12 POLYESTER RESIN OPERATIONS

December 15, 2023

This chapter describes the permitting procedures for the manufacturing of products using polyester resins. Regulation 8, Rule 50 limits organic compound emissions from polyester resin operations. Section 8-50-214 defines polyester resin operations as "methods used for the production or rework of product by mixing, pouring, hand laying-up, impregnating, injecting, forming, spraying, and/or curing unsaturated polyester materials with fiberglass, fillers, or any other reinforcement materials and associated clean-up."

The first section of this chapter describes the types of polyester resin operations that may be encountered, the process description, and the air emissions associated with polyester resin operations. The next three sections discuss Bay Area Air Quality Management District permit requirements for this equipment and items necessary for a permit application. The sixth section is an engineering evaluation template which includes typical equipment/process descriptions, sample emission calculations, applicable regulatory requirements, applicable Air District policies, and sample permit conditions.

Some of the information presented in the Process Description and Evaluation sections was obtained from the following sources: EPA AP-42; The Minnesota Technical Assistance Program (MnTAP); EPA's National Risk Management Research Laboratory; and The Air Pollution Engineering Manual. A complete reference list is included at the end of this section.

Process Description

A growing number of products are fabricated from liquid polyester resin reinforced with glass fibers and extended with various inorganic filler materials such as calcium carbonate, talc, mica, or small glass spheres. These composite materials are often referred to as fiberglass reinforced plastic (FRP), or simply "fiberglass". In some processes, resin products are fabricated without fibers, an example are the synthetic marble fabricators. The polyester resin/fiberglass industry consists of many small facilities (such as boat repair and small contract firms) and relatively few large firms that consume the major fraction of the total resin.

The major product using resins with fillers, but no reinforcing fibers is the synthetic marble used in manufacturing bathroom countertops, sinks, and related items. Other applications of non reinforced resin plastics include automobile body filler, bowling balls and coatings. Fiber reinforced plastics products have a wide range of applications in industry, transportation, home and recreation. Industrial uses include storage tanks, skylights, electrical equipment, ducting, pipes, machine components, and corrosion resistant structural and process equipment. In transportation, automobile and aircraft applications are increasing rapidly. Home and recreational items include bathroom tubs and showers, boats (building and repair), surfboards, snowboards and skis, helmets, swimming pools and hot tubs, and a variety of sporting goods. In order to be used in the fabrication of products, the liquid resin must be mixed with a catalyst to initiate polymerization into a solid thermoset. Catalyst concentrations generally range from 1 to 2 percent by original weight of resin; within certain limits, the higher the catalyst concentration, the faster the cross-linking reaction proceeds. Common catalysts are organic peroxides, typically methyl ethyl ketone peroxide (MEKP). Resins may contain inhibitors, to avoid self-curing during resin storage, and promoters, to allow polymerization to occur at lower temperatures.

<u>Non-Reinforced Polyester Resins</u>

Synthetic marble casting, a large segment of the resin products industry, involves production of bathroom sinks, vanity tops, bathtubs and accessories using filled resins that have the look of natural marble. No reinforcing fibers are used in these products. Pigmented or clear gel coat can either be applied to the mold itself or sprayed onto the product after casting to simulate the look of natural polished marble. Marble casting can be an open mold process or it can be considered a semi-closed process if cast parts are removed from a closed mold for subsequent gel coat spraying.

The polyester resin used in synthetic marble casting usually has higher viscosity and lower monomer levels than the resins used for laminating and gel coats. Fillers and colorants are mixed with the resin in large vats. To achieve the marbled effect, the colorants are often hand stirred. The mixed resin is then hand poured into partially closed molds. The resin is cured at room temperature and, after curing, the mold is removed. Gel coats may also be used, in which case, they are applied to the mold surface before pouring in the resin. Gel coats are highly pigmented unsaturated polyester resins that provide a smooth, colored surface that gives the appearance of a painted part. Sources of emissions include equipment leaks, resin storage tanks, process operations, and transfer and handling operations. The major sources of process operation emissions are the gel coat area and casting areas, where resin is mixed and poured into molds.

Reinforced Polyester Resins

Reinforced plastics products are fabricated using any of several processes, depending on their size, shape and other desired physical characteristics. The principle molding processes are open molding and closed molding. The primary types of open molding fabrication processes include spray lay-up (resin spray-up), hand lay-up, continuous lamination and pultrusion. Closed molding processes are primarily represented by bag molding. Process descriptions for these molding processes are given below.

Open Molding

Most open mold fabricators use similar processes to produce products with varying composition, sizes, and shapes. For products with a smooth, durable surface, a smooth and highly polished mold is required. For many products, a catalyzed gel coat is applied as the initial step. The resins are generally either hand rolled or sprayed into the fiberglass reinforcement. Some hand rolling is essential even when the resin is sprayed, for removing voids and ensuring proper compaction of resin and reinforcing material. Most open mold fabrication facilities consist of one or more open production areas. In these open areas, a large number of exhaust fan outlets are provided.

Spray Lay-up (Resin Spray-Up)

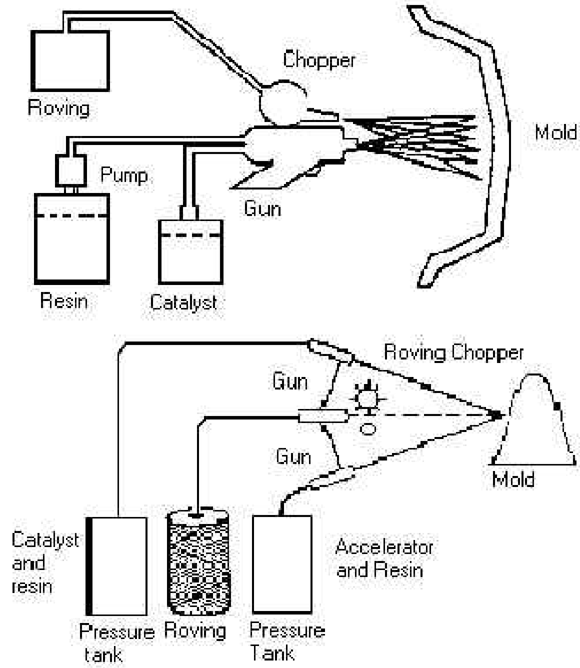
Spray lay-up is an open mold process that uses mechanical spraying and chopping equipment for depositing the resin and glass reinforcement. Chopping equipment consists of a spray gun attachment which chops glass fiber into predetermined lengths and projects it to merge with the resin mix stream. This causes the resin and chopped glass to be deposited simultaneously to the desired layer thickness on the mold surface (or on the gel coat that was applied to the mold). This process allows a greater production rate and more uniform parts than does hand lay-up, and often uses more complex molds.

In spray lay-up, the mold defines the shape of the outer surface, and the mold itself is usually made of reinforced plastic. The mold is first coated with a wax to ensure removal after curing. A layer of gel coat is then sprayed on to the mold to form the outermost surface of the products. The gel coat is allowed to cure for several hours but remains tacky so subsequent resin layers adhere better.

The polyester resin is applied with a spray gun that has a glass chopper attachment. Layers are built up and rolled out on the mold as necessary to form the part. The spray gun has separate resin and catalyst streams which mix as they exit the gun. However, compared to hand lay-up, more resin is typically used to produce similar parts by spray lay-up because of the inevitable over spray of resin during application.

Air spray guns require a large volume of air flow at high pressures. This provides good control over spray patterns; however, this type of spraying contributes to excessive fogging, over spray, and bounce back, resulting in increased emissions and material loss. To reduce styrene emissions, air-assisted airless spray guns can be used to apply gel coats and resins. Because high pressure is not needed at the nozzle, air-assisted airless spraying results in lower emissions and less material loss. Polyester resins designed for use in spray lay-up are promoted for cure at room temperature and usually are catalyzed with a liquid peroxide such as MEKP.

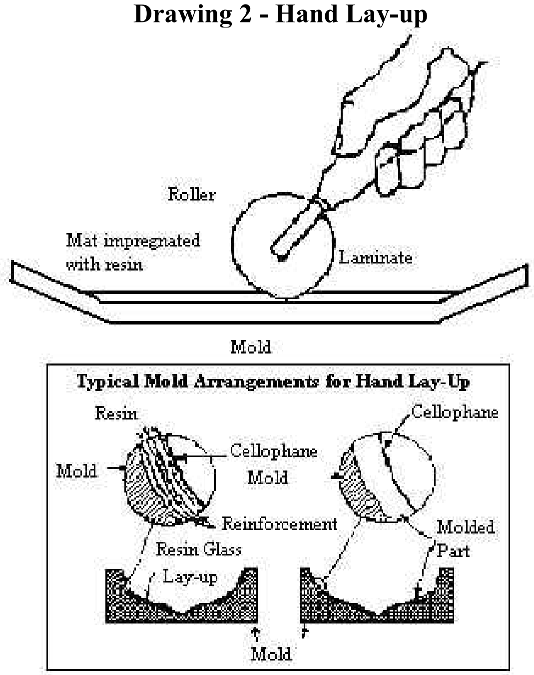
Drawing 1 - Spray Lay-up



Hand Lay-up

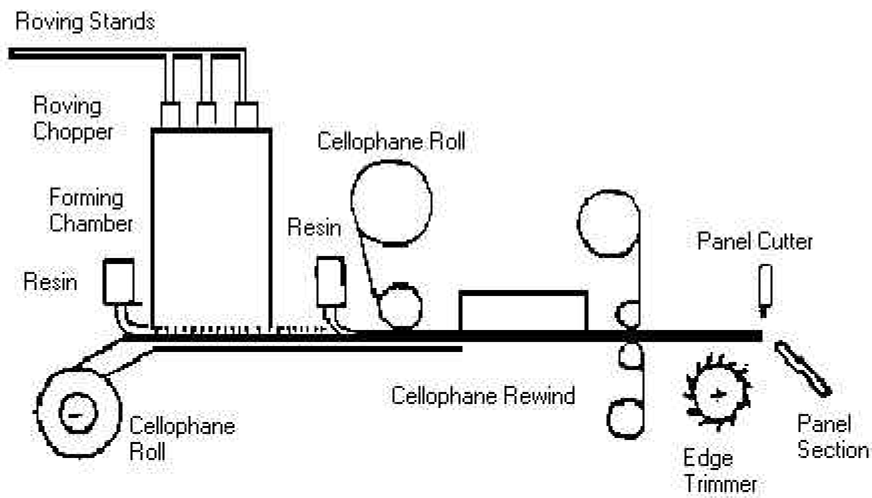
Hand lay-up, the simplest fabrication process, is another open mold process. Hand lay-up uses no mechanical spraying or chopping equipment for depositing the resin or glass reinforcement. This process involves the same initial steps (up through application of the gel coat) as used in spray lay-up. Following gel coat application, alternate layers of catalyzed polyester resin and reinforcement material are applied. The ratio of resin to glass is usually 60 to 40 by weight, but varies by product. Each reinforcement layer is "wetted out" with resin, and then rolled out to remove air pockets. The process continues until the desired thickness is achieved. Hand lay-up is also a room temperature curing process.

Drawing 2 - Hand Lay-up



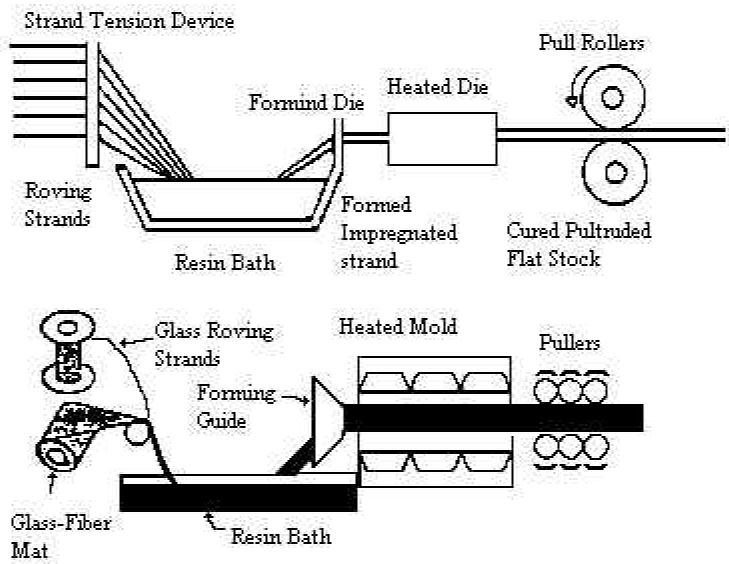
Continuous Lamination (Flow Coater With Chop)
Continuous Lamination of reinforced plastics materials involves impregnating various reinforcements with resins on an in-line conveyor. The resulting laminate is cured and trimmed as it passes through the various conveyor zones. In this process, the resin mix is metered onto a bottom carrier film, using a blade to control thickness. This film, which defines the panel's surface, is generally polyester, cellophane or nylon, and may have a smooth, embossed or matte surface. Methyl methacrylate is sometimes used as the cross-linking agent, either alone or in combination with styrene, to increase strength and weather resistance. Chopped glass fibers free-fall into the resin mix and are allowed to saturate with resin, or "wet out". A second carrier film is applied to the top of the panel before subsequent forming and curing. The cured panel is then stripped of its films, trimmed, and cut to the desired length. Principal products include translucent industrial skylights, and greenhouse panels, wall and ceiling liners for food areas, garage doors and cooling tower louvers.

Drawing 3 - Continuous Lamination



Pultrusion
Pultrusion, which can be thought of as extrusion by pulling, is used to produce continuous cross-sectional lines similar to those made by extruding metals such as aluminum. Reinforcing fibers are pulled through a liquid resin mix bath and into a long-machined steel die, where heat initiates an exothermic reaction to polymerize the thermosetting resin matrix. The composite profile emerges from the die as a hot, constant cross-sectional that cools sufficiently to be fed into a clamping and pulling mechanism. The product can then be cut to desired lengths. Example products include electrical insulation materials, ladders, walkway gratings, structural supports, and rods and antennas.

Drawing 4 - Pultrusion



Closed Molding
Closed, such as compression or injection, molding operations involve the use of two matched dies to define the entire outer surface of the part. When closed and filled with a resin mix, the matched die mold is subjected to heat and pressure to cure the plastic. For the most durable production configuration, hardened metal dies are used (matched metal molding). Another closed molding process is vacuum or pressure bag molding. The range of closed molded parts includes tool and appliance housings, cookware, brackets and other small parts, and automobile body and electrical components.

Bag Molding
Bag molding is best used to produce an intermediate volume of small to mid-size components such as seats, boat hatches, boat deck structures, and other items with shallow draft molds. Bag molding is conducted in sealed molds at room temperature. The process is initiated with gel coat applied to the surface of the mold. Glass reinforcing fibers and other materials are carefully cut to fit the mold and placed over it. Catalyzed resin is sprayed, pumped or poured over the lay-up. Once the lay-up materials are in place, the exposed area is covered with special layers of plastic which are sealed to the edges of the mold.

The bag molding process uses a bag or flexible membrane to apply pressure during molding; usually in conjunction with an autoclave, a device which uses superheated steam to create pressure. A reinforced laminate is layed-up by hand or sprayed and pressure is applied by drawing a vacuum under a cellophane, vinyl, or nylon bag covering it. This assembly is then heated under pressure in an autoclave. The use of bag molding allows the final product to have a higher fiberglass to resin ratio.

Spraying Operations
Regulation 8, Rule 50, Section 302 requires the use of high transfer efficiency spray equipment. It requires the use of one of the following: airless spray, air-assisted airless spray, electrostatic spray, or high-volume, low-pressure spray.

The four basic types of coating spray application methods are air-atomized spray, airless spray, electrostatic spray, and high-volume, low-pressure spray. Typically, coatings are sprayed in a spray booth to protect the coated surface from dirt and to provide a well-ventilated area that protects workers from solvent vapors. Air-atomized spray guns use compressed air to atomize the coating into tiny droplets and to spray the coating onto the surface of the article to be coated. Note that air-atomized spray guns are prohibited per section 302. The transfer efficiency for spray guns varies based on the configuration of the surface being coated, the skill of the operator, and the type of spray gun being used.

In airless spray coating, the coating is atomized without air as it is forced through specially designed nozzles at pressures of 17 to 14MPa (1000-2000 psi). Electrostatic spraying involves the use of an electrical transformer capable of delivering up to 60,000+ volts to create an electrical potential between the coating particles and the surface to be coated. These charged coating particles are thus electrically attracted to the surface, increasing the transfer efficiency over that of the nonelectrostatic air-atomized and airless spray guns.

Another type of coating spray equipment is the high-volume, low-pressure or turbine spray gun. In this system, a turbine is used to generate and deliver atomizing air. The turbine draws in filtered air, which is driven through several stages at up to 10,500 rpm. The result is a high volume of warm, dry, atomizing air that is delivered to the spray gun at less than 7 psi. This low-pressure gives greater control of the spray, with less over spray because of the absence of the blasting effect common with high pressure systems.

Completeness Determination

The following Air District forms should be completed and fees provided for polyester resin manufacturing. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form S (one per source for each molding or spraying operation).
3. Fees, calculated per Regulation 3 (Schedule E).

Emission Calculations

Sources of Emissions

The only emissions of any significance from this source category are organic compounds. Organic vapors consisting of volatile organic compounds (VOC) are emitted from fresh resin surfaces during the fabrication process and from the use of solvents (usually acetone) for cleanup of hands, tools, molds and spraying equipment. Cleaning solvent emissions can account for a significant portion of the total plant VOC emissions. There may also be some release of particulate emissions from automatic fiber chopping equipment, but these emissions have not yet been quantified.

Organic emissions from polyester resin/fiberglass fabrication processes occur when the cross-linking agent (monomer) contained in the liquid resin evaporates into the air during resin application curing. Styrene, methyl methacrylate and vinyl toluene are three of the principal monomers used in cross linking agents. Styrene is by far the most common. Other chemical components of resins are emitted only at trace levels because they not only have low vapor pressures but are also substantially converted to polymers. Since emissions result from evaporation of monomer from the uncured resin, they depend upon the amount of resin surface exposed to the air and the time of exposure. Thus, the potential for emissions varies with the manner in which the resin is mixed, applied, handled and cured. These factors vary among the different fabrication processes. For example, the spray lay-up process has the highest potential for VOC emissions because the atomization of resin into spray creates an extremely large surface area from which volatile monomer can evaporate.

For continuous lamination, exposure of the resin surface to air at the impregnation table is a source of styrene emissions. In addition, the ovens and the final sawing operations release some uncured resin to the atmosphere. The emissions from pultrusion operations are assumed to be the same as continuous lamination.

By contrast, the emission potential in synthetic marble casting and closed molding operations is considerably lower, because of the lower monomer content in the casting resins (30 to 38%, versus about 43%) and of the enclosed nature of these moldings. It has been found that styrene evaporation increases with increasing gel time, wind speed and ambient temperature, and that increasing the hand rolling time on a hand lay-up or spray-up results in significant styrene losses. Thus, production changes that lessen the exposure of fresh resin surfaces to the air should be effective in reducing these evaporation losses.

Emission Reduction Strategies
Styrene monomer is a significant source of VOCs from most polyester resin processes. Emissions from open-mold processes tend to be the highest because of the spray-up technique used to apply the resin and the large surface area of the part that is exposed during the curing. Operations located in California are faced with some of the toughest air quality standards in the country. In response to the needs of this area, resin manufacturers have developed low-organic emission resins. These products fall into the following categories:

1. Vapor Suppressed Resins,
2. Benzoyl Peroxide (BPO)-Catalyzed Resins, and Low Styrene Resins

Vapor Suppressed Resins
These resins contain a wax-like additive that migrates to the surface of the laminate during the cure step, forming a barrier that inhibits the release of styrene. Vapor suppressant resins may reduce styrene emissions by 30 to 50 percent during curing. These resins have had limited acceptance because the waxy additive has the potential to inhibit the bonding of subsequent layers. The resins form a wax layer during curing which must be thoroughly removed between each laminate application to ensure interlaminate bonding. If maximum strength is not required, reducing the curing time between laminate applications can partially address the wax layer buildup problem. Because of the difficulty in removing the wax layer, vapor suppressant resins are only suitable for selected applications. However, the bond strength can be improved by lightly sanding the surface of cure parts prior to applying the next laminate layer.

A 1982 California study found that vapor suppressed resins were used for 26 percent of resin and gel coat application. Vapor suppressants are typically paraffin waxes that reduce styrene emissions by migrating to the surface and reducing volatilization of styrene. In laminating resins, the vapor suppressant content can range from 0.3 to 0.6 percent by weight.

Other vapor suppressants in use are thermoplastics and fatty acid esters. Other ways to reduce styrene emissions would be to change from open to closed molding, reduce rollout times, and in general improve housekeeping. In addition, the amount of polyester resin used can be reduced by redesigning products, adding more fillers, and improving spray gun efficiency. Reformulation of resin could also be used to reduce the monomer content in the resin.

BPO-Catalyzed Resins and Low-Styrene Resins
The Minnesota Technical Assistance Program (MnTAP) recently conducted a study of low-styrene emissions resins that focused on evaluating resins formulated with lower amounts of styrene (below 38%) and resins catalyzed with BPO. The following general characteristics were observed:

1. Styrene emissions were reduced from 45 to 25%.
2. Substitutes were easily incorporated into existing processes.
3. Required minimal changes to spray equipment.
4. Economics of the substitution were favorable.

For more details see the MnTAP website.

The use of low styrene resins (35 percent styrene versus 43 percent) can potentially reduce total styrene emission by 20 percent from resin application and curing. Problems with application may occur as viscosity increases and curing problems may result in structural defects. By improving the transfer efficiencies of the spray guns used to apply gel coat and resin, styrene emissions due to over spray can be reduced to 42 percent for gel coat and 33 percent for resin spray lay-up.

The use of low vapor pressure solvents such as Dibasic Ester (DBE) can reduce the amount of clean up solvent needed due to the reduction in evaporation volumes.

Add-on Controls
In lieu of using complying resins, polyester resin operators can use add-on emission control devices. Four emission control devices were evaluated for use at polyester resin operations: incineration; adsorption; absorption; and condensation. These control technologies have been demonstrated to be highly effective in reducing volatile organic emissions when exhaust gas concentrations are relatively high. However, exhaust

concentrations from polyester resin operations are typically less that 1000 ppm which make these control technologies less effective and most likely not cost-effective. Each of the four technologies are defined below.

Adsorption
Adsorption is the condensation of a gaseous substance on a solid surface. When adsorption is used in control devices for air pollution, it is the removal of pollutants from a gas stream by attachment of the pollutants to a solid surface. Adsorption with carbon is a popular type of air pollution control of VOCs and odors.

Absorption
Absorption, or scrubbing, is a process where a soluble component of a gas mixture (absorbate) is removed from the gas by dissolving it in a liquid (absorbent). In absorption, a gas can be absorbed by simply being dissolved within a liquid, or it may be chemically reacted with the absorbing liquid. The liquid used to do the absorbing is relatively nonvolatile.

Absorption is different from adsorption in that absorption involves collecting a pollutant (or gas vapor) by passing it from a liquid surface throughout the liquid phase. In adsorption, the pollutant collects on a solid surface and not within the solid phase. The pollutant may diffuse into the pores of the solid, but not within its chemical structure. Furthermore, absorption involves removing a gas or a vapor by dissolving it into a liquid while adsorption involves removing a substance by attaching it to a solid surface.

Condensation
Condensation is the process of changing a gaseous substance into a liquid. Condensation can be applied into an air stream contaminated with VOCs by condensing volatile compounds in a waste stream and removing them. Condensation operations allow valuable solvents to be recovered while providing air pollution control.

Incineration
Incineration or oxidation involves destroying VOCs through the use of high temperatures from combustion to oxidize pollutants. Incinerators or oxidizers for the destruction of VOCs from processes are often used when it is not economical to recover solvents.

Emission Factors and Estimates
Resin Storage Tank Emissions
Styrene can be emitted during storage and transfer of the polyester resin and from the lamination area. Resin is typically stored in outdoor temperature-controlled tanks and transferred to 55-gallon drums for spray application. Emissions from these sources are expected to be small compared to the process emissions. As discussed previously, styrene emissions occur during gel coat and resin application and from resin curing. Gel coats are typically sprayed on and the resins are applied either by hand or spray lay-up. Storage Emissions Other possible sources of styrene emissions are storage tank losses and handling losses that occur during product loading into drums, tank trucks, tank cars, barges, or ships. Styrene production plants typically have from 2 to 12 small, fixed-roof monomer storage tanks. Storage tank losses are either working losses that occur while filling the tank, or breathing losses due to expansion from temperature changes. Both can be estimated using equations for storage tank emissions given in the U. S. Environmental Protection Agency's "Estimating Air Toxic Emissions from Organic Liquid Storage Tanks" report. In the absence of specific data on the storage tank, two emission factors were identified in the literature. Shown in Table 1, both are for uncontrolled emissions. No facilities are known to currently control emissions with floating roof tanks or incineration, although several use condensing units to recover styrene.

TABLE 1. STYRENE STORAGE EMISSION FACTORS

Emission Source	Estimated Emission Factor
Breathing Loss	0.0016 lb/gal-yr storage capacity

Emission Source	Estimated Emission Factor
Working Loss	0.000179 lb/gal gallons throughput

Resin Process Emissions
Section 4.4 of EPA AP-42 was removed from the EPA website as of 3/18/98 because the emission factors presented in that section, "Polyester Resin Operations", appeared to under predict styrene emissions from most polyester resin operations. EPA suggests that there is no AP-42 factor or estimation method for this category at this time. In the case of permits, sources are expected to use "best available data", not necessarily AP-42, to determine their emissions. In place of section 4.4, the user is referred to the Potentially Useful For Emissions Estimation link, where EPA has posted material which document and analyze recent data on emissions from this source category. The emission estimation model, "Nine-Variable ORD/RTI FRP Emission Model," can be downloaded from the EPA AP-42 website at http://widit.knu.ac.kr/epa/ebtpages/Air/Air_Pollution_Monitoring/Emission_Factor/siteout/s4out5.exe . More information on this program can be downloaded from FRP Model, Version 1.0 User's Guide.

Several factors influence the styrene process emissions during fiberglass product manufacture. These include resin temperature, air temperature, air velocity in the lamination area, mold surface area, and spray gun transfer efficiency (Table 2). Control of styrene emission from fiberglass manufacturing can be accomplished with several of the options described above for resin use including: Reduction of styrene content in resin; Improved transfer efficiency of spray guns; Use vapor suppressed resins; and Use of add-on controls.

TABLE 2. FACTORS AFFECTING STYRENE EMISSIONS FROM LAMINATION

Factors	Effect on Emissions
Resin Temperatures	Emissions increase as temperature rises
Air temperatures	Emissions increase as temperature rises
Spray gun pressure/equipment atomization	Greater air flow may increase evaporation resulting in increased emissions and decreased concentration
Mold surface area	Greater surface area allows more vaporization in terms of total mass
Resin/gel coat styrene content	Increase emissions from increased styrene monomer content

Emission Measurements by Molding Process
The U. S. Environmental Protection Agency has published emission factors for fabrication processes using styrene as the monomer. These emission factors, shown in Table 3, are presented as pound VOC per pound monomer used. The following emission factors are presented but not used in the estimation of emissions from polyester resin operations. Styrene is by far the most common monomer used. Table 3 includes emission factors for vapor-suppressed (VS) resins, which can be used to reduce VOC emissions in place of non vapor-suppressed (NVS) resins. Discussions with industry representatives indicate, however, that VS gel coats are not used, nor are VS resins used in closed molding processes. The California Air Resources Board (CARB) has also developed emission factors for resins by molding process. These emission factors are shown in Table 4, and are based on resin monomer content, lay-up process, and micro environmental conditions (such as temperature, indoor versus outdoor processes, and ventilation). It should be noted that the CARB emission factors are given in pounds of monomer emitted per pound of monomer used. The emission factors published by EPA and CARB are similar for many of the processes shown in Tables 3 and 4. Notable exceptions are the emission factors for hand lay-up. The EPA emission factors are much lower than CARB's emission factors.

The emission factor ranges shown for marble casting in Tables 3 and 4 include emissions for both gel coat spraying and casting. In general, the styrene emissions from synthetic marble casting are expected to be lower than those from other processes because of the closed mold nature of the process. Emissions vary with the amount of time the resin is exposed to air, and the majority of emissions were due to gel coat spraying.

TABLE 3. VOC EMISSION FACTORS FOR POLYESTER RESIN PRODUCT FABRICATION PROCESS (a)
(Pound VOC emitted/pound monomer used)

	Resin		Gel Coat	
Process	**NVS**	**VS** (b)	**NVS**	**VS** (b)
Hand Lay-up	0.05-0.10	0.02-0.07	0.26-0.35	0.08-0.25
Spray Lay-up	0.09-0.13	0.03-0.09	0.26-0.35	0.08-0.25
Continuous Lamination	0.04-0.07	0.01-0.05	(c)	(c)
Pultrusion (d)	0.04-0.07	0.01-0.05	(c)	(c)
Filament Winding (e)	0.05-0.10	0.02-0.07	(c)	(c)
Marble Casting	0.01-0.03	0.01-0.02	(f)	(f)
Closed Molding (g)	0.01-0.03	0.01-0.02	(c)	(c)

(a) Ranges represent the variability of processes and sensitivity of emissions to process parameters. Single value factors should be selected with caution. NVS = vapor-suppresses resin. VS = vapor-suppressed resin.
(b) Factors are 30-70% of those for non vapor-suppressed resins.
(c) Gel coat is not normally used in this process.
(d) Resin factors for the continuous lamination process are assumed to apply.
(e) Resin factors for the hand lay-up process are assumed to apply.
(f) Factors unavailable. However, when case parts are subsequently sprayed with gel coat, hand and spray lay-up gel coat factors are assumed to apply.
(g) Resin factors for marble casting, a semi closed process, are assumed to apply.

TABLE 4. MONOMER BASED EMISSION FACTORS FOR POLYESTER RESIN/FIBERGLASS OPERATIONS
(Pound monomer emitted/pound monomer used)

	Resin		Gel Coat	
Process	**NVS**	**VS**	**NVS**	**VS**
Hand Lay-up Only	0.16-0.35	0.14-0.20	0.47	0.24-0.33
Spray Lay-up Only	0.09-0.13	0.05-0.09	0.16-0.35	0.13-0.25
Hand and Spray	0.11-0.19	0.06-0.13	0.31-0.38	0.16-0.27
Marble Casting	0.01-0.03	0.01-0.03	0.26-0.35	0.13-0.25
Continuous Lamination	0.06-0.13	0.06-0.13	NA	NA
Pultrusion	0.06-0.13	0.06-0.13	NA	NA
Filament Winding	0.06-0.13	0.03-0.09	0.26-0.35	0.13-0.25
Closed Molding	0.01-0.03	0.01-0.03	NA	NA

NA - Not applicable; gel coat normally not used for these processes.

Applicable Requirements

Air District Rules and Regulations

Polyester Resin Operations are subject to the requirements of Regulation 8, Rule 50 (Polyester Resin Operations).

Best Available Control Technology (BACT)

BACT for the particulate sources at polyester resin operations are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Resin Manufacturing
- Polyester Resin Operations – Molding and Casting
- Polyester Resin Operations – Hand and Spray Layup
- Polyester Resin Operations – Panel Manufacturing
- Polyester Resin Operations - Pultrusion

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions

Standardized conditions for gel coat and resin applications are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

REFERENCES

1. Air & Waste Management Association - *Air Pollution Engineering Manual*, Van Nostrand Reinhold, New York, 1992, pgs 362-363.

2. EPA AP-42, Chapter 4.12 - *Polyester Resin Plastics Product Fabrication*, September 1988.

3. EPA National Risk Management Research Laboratory, Air Pollution Prevention and Control Division, in cooperation with Research Triangle Institute - *FPR Model*.

4. The Minnesota Technical Assistance Program (MnTAP) - *MnTAP Fact Sheet: Reducing Volatile Emissions in Fiber Reinforced Plastics Industry*, July 13, 2000.

11.13 TUB GRINDERS

December 15, 2023

Process Description

This chapter covers the permitting of tub grinders. Tub grinders are typically used to grind wood pieces from bigger to smaller pieces. The tub grinder may be powered by electricity or by a prime diesel engine. The permitting of the prime diesel engine is detailed in permit handbook chapter 2.3.1 (stationary) or 2.3.3 (portable). The tub grinder may be stationary and located primarily within one facility's boundaries or may be portable from one location to another.

Completeness Determination

The following Air District forms should be completed and fees provided for tub grinders Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Form A for watering system (one per facility)
4. Form A (one per device) for any particulate abatement device (i.e., baghouse).
5. Fees, calculated per Regulation 3 (Schedule F).
6. If the tub grinder is powered by a diesel engine, refer to the chapter for stationary (2.3.1) or portable (2.3.3) diesel engines for additional forms and fees that are required for the diesel engine.

Emission Calculations

To approximate the particulate emissions for wood grinding, the emission factor for "Log Debarking" from a previous edition of AP-42, Table 10.3-1 of (0.024 lb TSP/ton) will be used with the throughput quantity of wood processed, as provided by the applicant. Approximately 60% of the particulate emissions are assumed to be PM10. Water suppression will also provide 50% abatement of particulate emissions.

PM10 (lb/yr) = (THROUGHPUT tons/yr)(0.024 lb TSP/ton)(0.60 lb PM10/lb TSP)(0.50)

If the tub grinder is powered by electricity, there are no other criteria pollutant emissions. However, if it is powered by a diesel engine, emissions from the diesel engines must also be added to that of the tub grinder. Refer to the chapter for stationary (2.3.1) or portable (2.3.3) diesel engines for emission calculation procedures for the combustion of diesel fuel.

Applicable Requirements

Air District Rules and Regulations

The tub grinder is subject to the requirements of Regulation 6-1. If the tub grinder is powered by a diesel engine, refer to the chapter for stationary (2.3.1) or portable (2.3.3) diesel engines for applicable requirements.

Best Available Control Technology (BACT)

BACT for tub grinders are specified in the BACT/TBACT Workbook. The following are applicable BACT requirements for:

Crushing and Grinding
- Wood Processing Equipment

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for tub grinders are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.14 LANDFILL GAS FLARES

December 15, 2023

Process Description

Modern landfills are managed facilities for the disposal of solid waste. Landfills are located, designed, operated and monitored for landfill gas, as well as other factors (i.e., groundwater contamination). A landfill's gas collection system requires frequent monitoring and operational adjustments to optimize its performance. Landfill gas (LFG) is a natural byproduct of the decomposition of organic material in landfills. LFG is composed of roughly 50 percent methane (the primary component of natural gas), 50 percent carbon dioxide (CO2) and a small amount of non-methane organic compounds. Methane is a potent greenhouse gas 28 to 36 times more effective than CO2 at trapping heat in the atmosphere over a 100-year period[40].

LFG is extracted from landfills using a series of wells and a blower/flare (or vacuum) system. This system directs the collected gas to a central point where it can be processed and treated depending upon the ultimate use for the gas. From this point, the gas can be flared or beneficially used in an LFG energy project (i.e., see Biogas Engines). Using LFG helps to reduce odors and other hazards associated with LFG emissions and prevents methane from migrating into the atmosphere and contributing to local smog and global climate change.

This chapter will cover the permitting of landfill flares.

Completeness Determination

The following Air District forms should be completed and fees provided for stationary natural gas engines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form A (1 per flare).
3. Form C (1 per flare).
4. Manufacturer specification data including maximum fuel consumption, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
5. Landfill gas constituent profile.
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule K)

Emission Calculations

The primary pollutants from landfill gas flares are the products of combustion, including oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM_{10} and $PM_{2.5}$)). In calculating emissions, emission factor data from the manufacturer or the applicant proposed emission limits (i.e., in lbs/MMBTU of gas) should be used to estimate emissions for NOx and CO. In addition, manufacturer or actual source test data, if available, may be used to estimate emissions of criteria or toxic air contaminants. Total reduced sulfur (TRS) in the landfill gas is generally assumed to be converted to SO_2 emissions.

The following are an example emission factor calculation for SO_2 emissions based on a TRS limit of 300 ppmv as H2S and with a landfill gas (LFG) heat content of 500 BTU/scf:

$$300E-6\,\frac{lb-mole\ S}{lb-mole\ LFG}\times\frac{lb-mole\ \mathrm{SO2}}{lb-mole\ S}\times 64\,\frac{lb\ \mathrm{SO2}}{lb-mole\ SO2}\times\frac{1}{387}\,\frac{lb-mole\ LFG}{scf}\times 500\,\frac{BTU}{scf}$$
$$=0.1\,\frac{lb\ SO2}{MMBTU}$$

Emission factors for criteria and toxic pollutants can also be found in EPA AP-42, Chapter 3.2 Natural Gas-fired Reciprocating Engines and the California Air Toxics Emission Factors (CATEF) database (Internal Combustion Engines; Natural Gas). For example, EPA's AP-42, Compilation of Air Pollutant Emission Factors, Table 2.4-5 "Emission Rates for Secondary Compounds Exiting Control Devices" specifies a PM emission factor of 17

[40] AR5 Synthesis Report: Climate Change 2014 — IPCC.

lbs/million dscf methane. Assuming the landfill gas contains 50% methane with a heat content of 500 BTU/dscf, the following is an example emission factor calculation for PM_{10} emissions:

$$\frac{17\ lb\ PM10}{1E6\ dscf\ CH4} \times \frac{0.5\ dscf\ CH4}{1\ dscf\ LFG} \times \frac{dscf\ LFG}{500\ BTU} \times 1E6 \frac{BTU}{MMBTU} = 0.017 \frac{lb\ PM10}{MMBTU}$$

$PM_{2.5}$ emissions are assumed to be the same as PM_{10} emissions.

Total non-methane organic compound (NMOC) emission rates may be based on the Air District's regulatory limit for landfill gas flares (Regulation 8-34-301.3: 30 ppmv of NMOC in the exhaust at 3% O2, expressed as methane). Maximum precursor organic compounds (POC) emissions have the potential to be 100% of NMOC emissions. Therefore, using a conservative approach, POC emissions calculated below are assumed to be 100% NMOC emissions. Non-precursor organic compound (NPOC) emissions are calculated using the Air District's standard assumption that NPOC emissions have the potential to be 5% of NMOC emissions.

The 30 ppmv NMOC outlet concentration is equivalent to an NMOC emission rate of 1.306 ×10-2 lbs/MMBtu, as determined below:

(30 ppmv at 3% O2) (20.9-0)/(20.9-3) = 35 ppmv at 0% O2

$$\frac{35\ scf\ NMOC}{1E6\ scf\ flue} \times \frac{9628\ scf\ flue}{MMBTU} \times \frac{lbmole\ NMOC}{387\ scf\ NMOC} \times 16 \frac{lbs\ NMOC}{lbmol\ NMOC} = 0.014 \frac{lb\ NMOC}{MMBTU}$$

The NPOC emission rate calculated at 5% of NMOC emissions is:

(0.014 lbs POC/MM BTU)*(0.05 lbs NPOC/lbs POC) = 7E-4 lbs NPOC/MM BTU

The permit evaluator may choose the most representative emission factors to calculate emissions. Toxic air contaminant (TAC) emissions can be calculated based on site-specific landfill gas constituent data (e.g., maximum permitted TAC limits) and default TAC concentrations for Bay Area landfills that the Air District summarized for Rule 11-18 purposes. Hazardous air pollutant (HAP) emissions are a subset of these TAC emissions as determined by the current EPA list of HAPs. Residual TAC emissions can be calculated by assuming 98% destruction efficiency for each individual compound detected in the landfill gas at the landfill site. Secondary TAC emissions include formaldehyde and acid gases (hydrogen chloride and hydrogen fluoride) that form due to the presence of halogenated compounds in the landfill gas. Formaldehyde emissions can be calculated using the Air District's standard factor for enclosed landfill gas flares (0.18 lbs/million scf of landfill gas burned), which is based on a landfill gas fired turbine emission factor from the California Air Toxic Emission Factor (CATEF) database. PAHs and Dioxin emission factors are from EPA source tests from five municipal solid waste facilities.[41] Site-specific landfill gas data and default halogenated compounds concentrations should be used to determine the maximum expected concentrations of chlorine and fluorine in the landfill gas. These ions are converted to hydrogen chloride and hydrogen fluoride during combustion (100% conversion is assumed).

Greenhouse Gas Emissions

GHG emissions are not a regulated New Source Review (NSR) pollutant under 40 CFR 52.21(b)(50), unless they are emitted from a facility that exceeds the 250 ton per year major PSD threshold for another pollutant besides GHGs. Landfills are not in one of the 28 PSD source categories and unless the permit facility exceeds the 250-ton major PSD facility thresholds for any pollutant, GHG emissions are not required to be calculated.

Applicable Requirements

Air District Rules and Regulations

[41] EPA, 2007. Field Test Measurements at Five Municipal Solid Waste Landfills with Landfill Gas Control Technology. https://www.arb.ca.gov/ei/an-delete/landfill_st2.pdf

Landfill gas flares are subject to the Ringelmann No. 1 limitations of Regulation 6-1-301. Properly operated and maintained landfill flares are expected to meet this requirement. Each stack is also subject to the Regulation 6-1-310, Section 6-1-310.1, particulate weight limitation of 0.15 grains/dscf. Note that the permit evaluator should also review Regulation 6-1-310.3 to determine whether the flare has a Potential to Emit TSP (as defined in Regulation 2-1-217) greater than 1,000 kg per year. If it does, it must meet the limits specified in Table 6-1-311.1 (Process Weight Rate vs. Allowable TSP Emission Limits). The template permit conditions will require initial source testing at each engine and subsequent periodic testing of the flares.

Landfill gas flares are required to meet the requirements of Regulation 8, Rule 34. Regulation 8-34-301.3 requires the use of enclosed ground flares that have either a destruction efficiency of 98% by weight for NMOC or that emit no more than 30 ppmv of NMOC (as methane at 3% O_2, dry basis) from the flare. The permit evaluator should review the manufacturer's specifications to determine if the proposed flare will comply with these NMOC destruction efficiency and outlet concentration limits. Continuous temperature monitoring (pursuant to Regulation 8-34-507) will ensure that this flare complies with 8-34-301.3 on an on-going basis. The flare should also be equipped with a data recording system that will maintain all records required pursuant to Sections 501.2 and 501.3.

In accordance to Regulation 9-1-301, a person shall not emit from sources, other than ships, SO2 in quantities which result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. In accordance with Regulation 9-1-302, a person shall not emit from any source, a gas stream containing SO2 in excess of 300 ppm (dry). The template permit conditions will require annual source testing and quarterly analyses of the fuel sulfur content to ensure compliance with the limits.

New Source Performance Standards (NSPS)
The federal Emission Guidelines for Municipal Solid Waste (MSW) Landfills (40 CFR Part 60, Subpart Cc) requires that landfills subject to this requirement have sufficient landfill gas control system capacity to control all of the landfill gas that is expected to be generated by the landfill during the life of the collection system (typically about 10-15 years). Compliance with Regulation 8, Rule 34 will also ensure compliance with 40 CFR Subpart Cc.

New Emission Guidelines (EG) for existing MSW Landfills were adopted in 2016 (40 CFR Part 60, Subpart Cf). The revised EG applies to landfills that accepted waste after November 8, 1987, and commenced construction, reconstruction, or modification on or before July 17, 2014. 40 CFR Part 60, Subpart Cf requires affected landfills to submit a state plan to the EPA that implements the EG contained in this subpart. For approval, a state plan must include provisions for the installation of a gas collection and control system within 30 months after the first annual report in which the NMOC emission rate equals or exceeds 34 megagrams per year. The permit evaluator should use the EPA LandGEM Model to demonstrate that the NMOC emission rate complies with Subpart Cf requirements.

40 CFR Part 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, will continue to apply to MSW landfills that commenced construction, reconstruction, or modification after May 30, 1991, and on or before July 17, 2014 until there is an approved state or federal plan that implements the emission guidelines in 40 CFR Part 60, Subpart Cf. Currently, California's state plan has not been fully approved.

On March 26, 2020, the EPA adopted changes to 40 CFR Part 60, Subpart Cf, which allowed impacted sources to demonstrate compliance with landfill gas control, operational, monitoring, record-keeping, and reporting requirements by following the corresponding requirements in the NESHAP for MSW Landfills (40 CFR Part 63, Subpart AAAA).

National Emission Standards for Hazardous Air Pollutants (NESHAP)
To assess applicable requirements under Subpart AAAA, the permit evaluator should calculate HAP emissions for this site based on the maximum projected landfill gas generation rate and the maximum detected concentration for each HAP, determined from recent site-specific landfill gas analyses. If site-wide HAP emissions are found to be less than 10 tons/year for any single HAP and less than 25 tons/year for all HAPs combined, then the site is not a major source of HAP emissions. In this case, the only applicable requirements from this Subpart AAAA NESHAP are the requirement to have and follow a start-up, shutdown, and malfunction plan and a requirement to submit semi-annual reports instead of the annual report required under Part 60, Subpart Cc above.

State Requirements:

CARB Methane Rule: CCR Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Regulations to Achieve Greenhouse Gas Emission Reductions Subarticle 6, Methane Emissions from Municipal Solid Waste Landfills, Sections 95460-95476 is the state regulation adopted to reduce methane emissions from municipal solid waste landfills and applies to all MSW landfills that received waste after January 1, 1977. This rule requires operation of an enclosed flare that achieves a methane destruction efficiency of at least 99% by weight and specifies monitoring and operational requirements for shutdown, restart, and startup scenarios. It also contains periodic source testing, monitoring, and recording requirements. After three years of annual testing shows compliance with the methane limit, the regulation allows testing to be reduced to once every three years.

BACT
A landfill gas collection and control system that meets the requirements of Regulation 8, Rule 34 satisfies the BARCT and BACT control requirements for POC emissions from the landfill waste decomposition process.

BACT for landfill flare is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for biogas fired engines:

- Flare – Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill
- Flare – Digester Gas or Landfill Gas from Hazardous Waste Landfill

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

CEQA
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for biogas engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.15 MATERIAL RECOVERY OPERATIONS

July 3, 2023

Process Description
Material Recovery Facilities (MRFs, such as those operated by organic waste operators at landfills) handle non-hazardous general waste, including municipal solid waste (MSW), recyclable materials, green waste (composting), and construction and demolition (C&D) debris. Composting Operations are separately covered in chapter 11.9.

Material Recovery (MR) operations are generally made up a number of sources of air pollution which store, convey, measure, and discharge the non-hazardous general wastes. The following sources at the MRFs shall be permitted:

> Paper/Cardboard sorting line, with conveyors and screens (conveyors can be grouped together as one source if they are in the same general area, but any screens should be permitted separately)
>
> Metal/Plastic/Glass sorting line, with conveyors, screens (conveyors can be grouped together as one source if they are in the same general area, but any screens should be permitted separately)
>
> Residue/Trash Sorting Line, with conveyors (conveyors can be grouped together as one source if they are in the same general area, but any screens should be permitted separately)
>
> Construction and Demolition (C&D) material processing (conveyors can be grouped together as one source if they are in the same general area, but any screens should be permitted separately)

Completeness Determination
The following Air District forms should be completed and fees provided for the MR operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source). Note the number of transfer points in the description, where applicable.
3. Process Diagram and Map of the Material Recovery Operation sources.
4. Form A for any watering system (one per facility)
5. Form A (one per device) for any particulate abatement device (i.e., baghouse).
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule F for all sources).

Emission Calculations
The storage of the material handling stockpile will be the primary sources for precursor organic compounds (POC). Particulate emissions are primarily from wind erosion from the static piles, the storage and handling of stockpiles at the facility, and associated vehicle traffic.

VOC Emissions
Organic emissions from stockpiling operations are due to the biological degradation of materials from the process. Emission factors are based on the results from stockpiling operations presented in the California Air Resource Board (CARB) report "ARB Emissions Inventory Methodology for Composting Facilities" dated March 2, 2015. For the static (feedstock) stockpiles, the VOC emission factor of 0.2 lb of VOC per wet ton per day may be used based on the CARB Report, Table III-1.

$$Stockpile\ Emission\ Factor\ for\ VOC\ (unabated) = (0.2\ \ lb/wet\ ton)$$

In most Bay Area cities, residential recyclables (metal, glass, plastic, paper, and old corrugated cardboard (OCC)) have been source-separated from MSW and put into the recycle bins before curb collection and then sent to the nearby MRF facilities. The recyclables processed by the conveyors and screens would have very low PM emissions. As stated in the EPA AP-42 Section 13.2.4.3, aggregate handling emission factors, "it is reasonable to expect that the silt content and emission factors are interrelated", since the silt content of the recyclables generally are low, handling the recyclables in the screening and conveying processes does not generate much dust in the work area.

The particulate matter emission factor for handling of the recyclables is from AP-42 Section 13.2.4 Aggregate Handling and Storage Piles Table 13.2.4-1, November 2006 version.

The following equation may be used for estimation of particulate emissions during a batch drop of materials, such as adding material to stockpile or removing it from a stockpile and dropping it into a truck. This equation will be used to estimate particulate emissions due to material handling.

$$E = k(0.0032)[\frac{\left(\frac{U}{5}\right)^{1.3}}{(\frac{M}{2})^{1.4}}]$$

Where
E = emission factor (lb/ton)
k = particle size multiplier = 0.35, for $PM_{10,}$ 0.053 for $PM_{2.5}$
U = mean wind speed (mph) = 2.27 (SCAQMD inward face velocity requirement of 200 ft/min for MRF with 5% enclosure openings)
M = material moisture content (%) = typical value of 6% for paper, 5% for OCC [42]
M = material moisture content (%) = typical value 2% for plastic, glass and metal[2]
M = material moisture content (%) = 11% for residue (residential rubbish)
(AP-42 Table 13.2.4-1, misc. MSW fill materials)

E (PM_{10}) = 0.35*(0.0032)*[$(2.27/5)^{1.3}$]/[$(6/2)^{1.4}$] = 0.000086 lb/ton for paper-transfer point
E (PM_{10}) = 0.35*(0.0032)*[$(2.27/5)^{1.3}$]/[$(5/2)^{1.4}$] = 0.000111 lb/ton for OCC-transfer point
E (PM_{10}) = 0.35*(0.0032)*[$(2.27/5)^{1.3}$]/[$(2/2)^{1.4}$] = 0.000401 lb/ton for plastic, glass and metal-transfer point
E (PM_{10}) = 0.35*(0.0032)*[$(2.27/5)^{1.3}$]/[$(11/2)^{1.4}$] = 0.000037 lb/ton for residue-transfer point

E ($PM_{2.5}$) = 0.053*(0.0032)*[$(2.27/5)^{1.3}$]/[$(6/2)^{1.4}$] = 1.305E-5 lb/ton for paper-transfer point
E ($PM_{2.5}$) = 0.053*(0.0032)*[$(2.27/5)^{1.3}$]/[$(5/2)^{1.4}$] = 1.685E-5 lb/ton for OCC-transfer point
E ($PM_{2.5}$) = 0.053*(0.0032)*[$(2.27/5)^{1.3}$]/[$(2/2)^{1.4}$] = 6.076E-5 lb/ton for Plastic, Glass and Metal-transfer point
E ($PM_{2.5}$) = 0.053*(0.0032)*[$(2.27/5)^{1.3}$]/[$(11/2)^{1.4}$] = 5.586E-6 lb/ton for Residue-transfer point

PM10 and PM2.5 Emissions from conveyors and screens

Conveyers and screen emission factors are from EPA AP-42, Table 11.19.2-2, Crushed Stone Processing and Pulverized Mineral Processing. Since the moisture contents of the recyclables are greater than 1.5%, as indicated in AP-42 Chapter 11-19 which states wet material typically contains >1.5% water, controlled EFs are used here.

PM10 Emission Factor for screens = 0.00074 lb/ton-transfer point

PM10 Emission Factor for conveyors = 4.6 x 10^{-5} lb/ton-transfer point

PM2.5 Emission Factor for screens = 0.000050 lb/ton-transfer point

PM2.5 Emission Factor for conveyors = 1.3x 10^{-5} lb/ton-transfer point

2 Table 4-1, Tchobanoglous G., Theisen H. and Vigil S.A. (1993) Integrated Solid Waste Management, Engineering Principles and Management Issues, McGraw-Hill.

Total PM10 and PM2.5 Emissions for (metal, glass, plastic, paper, and OCC) Sorting Lines:
To determine the PM10 and PM2.5 emissions per day, multiple the quantity of each material processed by the emission factors for material handling and conveyors and screens and then multiply by the number of transfer points for the MRF source. To determine the PM10 emissions per year, multiply daily emission by 365.

PM Emissions from conveyor sort line and handling C&D waste

The particulate matter emission factor for handling of the C&D waste is from AP-42 Section 13.2.4 Aggregate Handling and Storage Piles Table 13.2.4-1, November 2006 version.

The following equation may be used for estimation of particulate emissions during a batch drop of materials.

$$E = k(0.0032)[\frac{\left(\frac{U}{5}\right)^{1.3}}{(\frac{M}{2})^{1.4}}]$$

Where
E = emission factor (lb/ton)
k = particle size multiplier = 0.35, for $PM_{10,}$ 0.053 for $PM_{2.5}$
U = mean wind speed (mph) = 7.6[43]
M = material moisture content (%) = 19.3% for C&D waste [44]
E (PM_{10}) = $0.35*(0.0032)*[(7.6/5)^{1.3}]/[(19.3/2)^{1.4}]$ = 0.000081 lb/ton for C&D
E ($PM_{2.5}$) = $0.053*(0.0032)*[(7.6/5)^{1.3}]/[(19.3/2)^{1.4}]$ = 1.22E-5 lb/ton for C&D

Total PM10 and PM2.5 Emissions from conveyor sort line and handling C&D waste:
To determine the PM10 and PM2.5 emissions per day, multiple the quantity of material processed by the emission factor and then multiply by the number of transfer points for the MRF source. To determine the PM10 emissions per year, multiply daily emission by 365.

PM10 and PM2.5 Emissions From Road Dust:
Emissions from vehicle traffic on paved and/or unpaved roads to and from the storage piles should also be accounted in the emissions for the storage piles. A paved roads emission factor equation is provided in Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on paved surfaces at industrial sites:

$E = k(sL)^{0.91}(W)^{1.02}$ lb/VMT [Equation 1]

An unpaved roads emission factor equation is provided in Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on unpaved surfaces at industrial sites:

$E = k(s/12)^a(W/3)^b((365\text{-}P)/365))$ lb/VMT [Equation 1a]

and for vehicles traveling on publicly accessible roads, dominated by light duty vehicles:

$E = [k(s/12)^a(S/30)^d/(M/0.5)^c – C]((365\text{-}P)/365))$ lb/VMT [Equation 1b]

The following provides an explanation of the variables in the equation and the average values recommended for use (only if actual more specific and precise values are not available), if the source-specific values are not known:

43 https://wind.willyweather.com/ca/alameda-county/pleasanton.html

3 Asakura, et al. (2010). Characteristics of fine processed construction and demolition waste in Japan and method to obtain fines having low gypsum component and wood contents. Waste Management & Research, 28(7), 634-646.

E = Emission Factor (lb/VMT)
k = Particle size multiplier (dimensionless); for PM_{10}, k=0.0022 for Equation 1
k = 1.5 for Equation 1a, 1.8 for Equation 1.b
for $PM_{2.5}$, k = 0.00054 for Equation 1, k = 0.15 for Equation 1a, 0.18 for Equation 1.b
sL = road surface silt loading; sL = 70 g/m^2
a = Empirical Constants; a = 0.9 for Equation 1a, 1 for Equation 1b
b = Empirical Constants; b = 0.45
c = Empirical Constants; c = 0.2 for Equation 1b
d = Empirical Constants; d = 0.5 for Equation 1b
s = Silt content of road surface (%); s = See Table 13.2.2-1[45] and use the mean value for the applicable industry. (For example, for stone and gravel processing s=4.8 for plant roads, 7.1 for material storage areas.)
W = Mean vehicle weight (tons); W = 21 tons for Equation 1,
W=146 tons for Equation 1a, 2 tons for Equation 1b
M = surface material moisture content (%); M = 6.5
S = Mean vehicle speed (mph); S = 24 for Equation 1a, 33 for Equation 1b
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
for PM_{10}, C = 0.00047[46] and for PM2.5, C= 0.00036[31]
P = Number of days with greater than, or equal to, 0.01 inches of precipitation per year; 70[47]

For example, the PM_{10} and $PM_{2.5}$ emission factors used for paved roads are calculated as follows:

$E_1\ (PM_{10}) = 0.0022(12)^{0.91}(21)^{1.02}$
$\mathbf{E_1\ (PM_{10}) = 0.47\ lb/VMT}$

$E_1\ (PM_{2.5}) = 0.00054(12)^{0.91}(21)^{1.02}$
$\mathbf{E_1\ (PM_{2.5}) = 0.12\ lb/VMT}$

The PM_{10} and $PM_{2.5}$ emission factors used for unpaved roads at industrial sites are calculated as follows:

$E_{1a}\ (PM_{10}) = (1.5)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
$\mathbf{E_{1a}}\ (PM_{10}) \mathbf{= 3.05\ lb/VMT}$

$E_{1a}\ (PM_{2.5}) = (0.15)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
$\mathbf{E_{1a}\ (PM_{2.5}) = 0.31\ lb/VMT}$

The permit evaluator should determine which emission factor equation (1, 1a, or 1b) is most appropriate depending on the unpaved surfaces or roads where the sources will be situated. The permit evaluator should also obtain information from the applicant regarding the maximum vehicle weight and miles traveled per year by all vehicles involved on driving on the unpaved roads at the facility. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[48].

Furthermore, if railcars or ships are involved in the transportation of materials, then also the combustion emissions from the use of these transport vehicles should also be calculated and included in the facilities cumulative increase.

Toxic Air Contaminants

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45 Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 3.
46 Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 6.
47 Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 9.
48 Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 13.

Ammonia
During the stockpiling operations, ammonia (NH_3) is formed from the biological degradation process. For the stockpiles, an emission factor of 0.02 lb/wet ton-day was derived based on factors used in the CARB report. For a conservative estimate, the abatement efficiency of 0%, presented in the CARB report Table III-3 for a static pile with no biofilter, will be used for the stockpiles.

$$Stockpile\ Emission\ Factor\ for\ NH_3(unabated) = (0.02\ lb/wet\ ton)$$
$$Emissions\ = (Emission\ Factor) \times (Throughput) \times (Storage\ period)$$

Toxic Air Contaminants from VOCs
Organic emissions from stockpiling operations are due to the biological degradation of materials from the process. For the static stockpiles, the VOC emission factor of 0.2 lb of VOC per wet ton per day may be used based on the *CARB Report, Table III-1: Recommend Emission Factors for Greenwaste and Food Waste*.

A summary of the toxic air contaminants in VOC weight fractions, derived from multiple source tests, are provided in the following tables:

Table I: Summary of Toxic Air Contaminants from VOCs

Table I-1: Feedstock Pile - Green Waste Only

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	1.44E-02
1,4-Dichlorobenzene	1.98E-04
2-Propanol (Isopropyl alcohol, IPA)	1.72E-04
Acetaldehyde	1.21E-02
Allyl Chloride (3-Chloropropene)	5.95E-05
Benzene	8.20E-05
Carbon disulfide	6.02E-05
Chloroethane	6.77E-05
Chloroform	1.25E-04
Ethylbenzene	1.02E-04
Ethylene Dichloride (1,2-dichloroethane)	8.16E-05
Hexane	1.66E-04
Methanol (Methyl alcohol)	4.66E-02
Methyl Ethyl Ketone (2-butanone)	5.49E-03
Naphthalene	9.14E-05
Propene (Propylene)	1.72E-04
Styrene	2.31E-04
Toluene	2.41E-04
Vinyl acetate	5.87E-03
Xylenes	1.03E-04

Table I-2: Feedstock Pile - Food Waste and Green Waste

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	8.25E-03
1,4-Dichlorobenzene	4.21E-04
2-Propanol (Isopropyl alcohol, IPA)	1.13E-03
Acetaldehyde	8.96E-02
Allyl Chloride (3-Chloropropene)	2.19E-04
Benzene	2.24E-04
Carbon disulfide	2.18E-04
Chloroethane	1.85E-04
Chloroform	3.42E-04
Ethylbenzene	3.04E-04
Ethylene Dichloride (1,2-dichloroethane)	2.84E-04
Hexane	7.86E-03
Methanol (Methyl alcohol)	9.68E-02
Methyl Ethyl Ketone (2-butanone)	5.36E-02
Naphthalene	2.81E-04
Propene (Propylene)	9.45E-05
Styrene	2.98E-04
Toluene	2.64E-04
Vinyl acetate	1.45E-02
Xylenes	3.15E-04

Applicable Requirements
Air District Rules and Regulations
Regulation 6, Rule 1: Particulate Matter – General Requirements
The facility is expected to comply with Regulation 6-1-301 Ringelmann No. 1 Limitation, 6-1-305 Visible Particles.

Regulation 6-1-311 does not apply to sources at this facility because these sources are Type B (fugitive) sources, which do not have a vent that is of regular geometry that can be modified/enclosed to conduct source test using approved methods. The Staff Report for Regulation 6-1 indicates that Sections 6-1-310, 311, 320, and 330 apply only to sources with a Type A emissions point.

Regulation 6, Rule 6: Prohibition of Trackout
BAAQMD Regulation 6, Rule 6 was adopted in 2018. The purpose of this Rule is to limit the quantity of particulate matter in the atmosphere through control of trackout of solid materials onto paved public roads outside the boundaries of Large Bulk Material Sites, Large Construction Sites, and Large Disturbed Surface sites including landfills. Pleasanton Garbage Service is subject to this new rule. The requirements of the Rule will be enforced through the permit conditions.

Regulation 7, Rule 1: Odorous Substances
This material recovery facility and transfer station operation is not expected to be violating this regulation as shown in the attached Transfer Processing Report, provided that the facility has and follows an Odor Impact Minimization Plan (OIMP). The OIMP includes an odor monitoring protocol, an odor complaint response protocol, and design considerations and procedures to minimize odors. Each operating day the operator would

do site inspection and temperature reading at the stockpiles. If questionable on-site odors are detected by site personal, operations personnel will investigate and determine the likely source of the odor and access of on-site management practices to resolve the odor event and take steps to reduce the odor-generating capacity of the on-site material. For example, for odors generated after running the stockpile, the operator would choose to increase turning frequency, increase pile porosity, add odor-absorbing amendment like sawdust.

Regulation 8, Rule 2: Miscellaneous Operations
Organic emissions from miscellaneous operations that are not subject to any other Regulation 8 rules may be subject to Regulation 8, Rule 2, Section 301. However, this section only applies to sources with organic emissions emitted from a stack. Since it is not possible to conduct source testing on fugitive organic emission sources, such as the greenwaste stockpiles and the MSW storage and handling operations, to assess compliance with the Regulation 8-2-301 total carbon concentration limit, these sources are not subject to Regulation 8-2-301.

Best Available Control Technology (BACT)
BACT for the particulate sources at MRF are not yet specified in the BACT/TBACT Workbook.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration
- ❑ School Notification
- ❑ Health Risk Assessment
- ❑ Overburdened Communities

Permit Conditions
Standardized conditions for crushing and grinding equipment are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

11.16 COMPOSTING OPERATIONS

December 15, 2023

Process Description

Composting is the deliberate decomposition of yard waste or other solid waste (such as food wastes), resulting in a humus-like substance beneficial to the soil. Composting also serves as an alternative to landfilling reusable resources. The resulting compost is a mixture of ingredients used to fertilize and improve the soil. The resulting mixture is rich in plant nutrients and beneficial organisms, such as worms and fungal mycelium.

Composting operations are generally made up of organic material stockpiles. The descriptions of the composting sources should include descriptions of the material stored in the storage piles and whether the storage piles are covered and abated to reduce the potential particulate (PM10 and PM2.5) and organic emissions. Biofilters are used for controlling odorous and volatile organic compound air emissions from composting operations. They work based on the concept of an active biological film supported by a substrate – the same principle as composting. The volatile compounds are absorbed on to the surface of the media and bio-oxidized by the microbes present. As long as the media is appropriate, installed in a manner that does not allow the air flow to channel or short-circuit, and the moisture and temperature levels are maintained, biofilters work very efficiently to oxidize a broad spectrum of volatile chemicals at low part-per-million concentrations.

In a covered aerated static pile (CASP) composting operation, pre-processed, water conditioned feedstock will be placed over an aeration system consisting of in-floor perforated channels connected to blowers to force air into the active compost piles. Since this forced air system eliminates or reduces the need to mechanically turn the active compost piles for aeration, the particulate emissions generated during turning the piles are reduced/eliminated, and the potential for odors from disturbing the compost piles is reduced. The other emission reduction associated with the conversion from windrow composting to CASP composting is that the active, aerated compost piles will be covered with a layer of mature compost or other biofilter media. The biofilter abates organic and ammonia emissions, generated from the decomposition of waste feedstock, through physical scrubbing action and microbial activity. If properly operated, the use of a biofilter has been shown to greatly reduce odors and emissions of organic compounds and ammonia from the active composting phase. Abatement by water spray is common to reduce particulate emissions and ensure composting and biofilter media is maintained at the correct moisture content.

Through temperature monitoring of the CASP, the operator can assess if more air should be introduced to an active compost pile to cool the pile if reaching the top end of the temperature range and to maintain aerobic conditions. Temperatures in the range of 130 to 140 °F are referenced as ideal conditions for active composting. In addition to monitoring temperature and adjusting aeration, adequate moisture in the biofilter cover and initial feedstock is necessary for optimum microbial activity. Without adequate moisture, microbial activity is inhibited – the feedstock does not compost and the biofilter does not effectively reduce emissions from the active composting phase, as represented.

Completion of the active composting stage is signaled by a consistent drop in or stabilization of pile temperature below 122 °F at the end of a well-operated active stage period of about 22 days. Ideally, the stabilized material is removed from the forced air system and biofilter cover and placed into separate stockpiles for curing when most of the decomposition of organic matter has finished and the temperature has stabilized. The decomposition process does continue to a lesser degree during the curing phase. Some compost operations either aerate the curing piles or periodically turn the curing piles to maintain oxygen levels necessary to prevent anaerobic conditions and reduce pile temperature. The addition of water may also be necessary to maintain biological activity in the curing piles and to reduce temperature. The curing phase can last from 40 days to several months depending on the stability of material at the end of the active phase and the maturity requirements of the compost product.

The active and curing phases should be permitted as separate sources as well as the feedstock piles and finished compost, because they each have different emissions. The following are typical descriptions of composting sources:

S-# Feedstock Pile, Green Waste Only, abated by A-# Water Spray
tons/day and ### tpy of green waste

S-# Feedstock Pile, Food Waste and Green Waste, abated by A-# Water Spray,
tons/day and ### tpy of food waste and green waste

S-# Compost – Active Phase, ## acres maximum capacity
tons/day and ## tpy of composting green waste and food waste
Abated by
A-# Biofilter, a minimum of 6 inches thick, consisting of wood chips, screenings of bulk grindings, 4-6 inches in size with forced positive aeration, and by
A-# Water Spray

S-# Compost – Curing Phase, ## acres maximum capacity
tons/day and ## tpy of composting green waste and food waste

S-# Finished Compost, ## acres maximum capacity
tons/day and ## tpy of composting green waste and food waste

Completeness Determination
The following Air District forms should be completed and fees provided for the MR operations. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for facility).
2. Form G (one per source).
3. Process Diagram and Map of the Composting Operation source(s).
4. Form A for any watering system (one per facility)
5. Form A (one per device) for biofilter for each composting source which uses one.
6. If Health Risk Assessment is triggered, Form HRA (one per source).
7. Fees, calculated per Regulation 3 (Schedule G-1 for the composting sources (for both Active Phase and Curing Phase) and F for other sources).

Emission Calculations
The storage of the material handling stockpile and the biological process involved with the composting operations will be the primary sources for precursor organic compounds (POC). Particulate emissions are primarily from wind erosion from the static piles, the storage and handling of stockpiles at the facility, and associated vehicle traffic.

VOC Emissions
Organic emissions from composting operations are due to the aeration and biological degradation of materials from the process. Emission factors are based on the results from composting operations presented in the California Air Resource Board (CARB) report *"ARB Emissions Inventory Methodology for Composting Facilities"* dated March 2, 2015. For composting operations, the VOC emission factor of 3.58 lb/wet ton may be used for green waste and food waste, as indicated in Table III-1: Recommended Emission Factors for Greenwaste and Foodwaste of the CARB report. In Appendix A, Table A-1, the emission factor approved by San Joaquin Valley Air Pollution Control District (SJVAPCD) and the South Coast Air Quality Monitoring District(SCAQMD) indicates a windrow emission factor of 5.71 lb VOC/wet ton for green waste, food waste, and grape pomace.

For the static (feedstock) stockpiles, the VOC emission factor of 0.2 lb of VOC per wet ton per day may be used based on the *CARB Report, Table III-1.*

Acetone is a non-precursor organic compound (NPOC) that needs to be subtracted from the VOC emissions to determine the emissions for POCs. The calculation of acetone emissions is explained in the Toxic Air Contaminants from VOCs section later in this chapter.

As for the abatement factors, studies conducted in the South Coast and San Joaquin Valley Air Districts indicate that a CASP system accompanied by biofiltration reduces VOC emissions by up to 90% as compared to uncontrolled windrow operations. For a conservative estimate, VOC emissions will be reduced by 80% during the active phase with a biofilter in place. A reduction factor will not be applied to the curing phase or the static stockpiles.

$$Composting\ Emission\ Factor\ for\ VOC\ (unabated) = (5.71\ lb/wet\ ton)$$

$$Composting\ Emission\ Factor\ for\ VOC\ (abated\ by\ biofilter\ on\ active\ phase) = (5.71\ lb/wet\ ton) \times [(90\% \times (1-80\%) + (10\%)] = 1.5988\ lb/wet\ ton$$

$$Stockpile\ Emission\ Factor\ for\ VOC\ (unabated) = (0.2\ lb/wet\ ton)$$

The emission calculations for POC and NPOC are presented below:

$$Emissions = (Emission\ Factor) \times (Throughput) \times (Storage\ period)$$

Particulate Matter

Particulate natter (PM) emissions will be generated during material handling and storage. No specific PM emission factors are available for waste feedstock and compost product handling activities. The Air District has used AP-42's aggregate handling (Chapter 13.2.4) and crushed stone processing (Chapter 11.19.2) emissions factors for similar applications to estimate emissions from waste feedstock and compost handling activities. Note that using these factors for waste handling emissions will result in conservative estimates because the moisture content in aggregate and crushed stone is less than 4.8% and 2.88%, respectively, whereas the moisture content in waste feedstock and compost product is higher than 30%.

PM10 and PM2.5 Emissions From Material Handling:

PM emissions for storage piles include emissions from vehicle and equipment traffic on paved and unpaved roads to and from storage piles, emissions from material transfer to and from the piles, emissions from wind erosion, and combustion emissions from cargo carriers (locomotives and marine vessels). Emissions from vehicle and equipment traffic associated with stockpiles must be included in PM emissions, such as emissions from vehicle and equipment traffic between active composting and curing piles.

The particulate matter emission factor for handling of the material for composting is from AP-42 Section 13.2.4 Aggregate Handling and Storage Piles Table 13.2.4-1, November 2006. The following equation is used for estimation of particulate emissions during a batch drop of aggregate materials, such as adding material to stockpile or removing it from a stockpile and dropping it into a truck. Lacking any more appropriate data, this equation will be used to estimate particulate emissions due to the batch drop of fresh and shredded green waste, wood waste, and compost as the material moves through each processing stage. The equation is appropriate for material silt contents ranging from 0.44%-19%. From Table 13.2.4-1, silt content for miscellaneous landfill fill materials is about 12%. The maximum moisture content for use in the equation is 4.8%. As indicated earlier, using these factors for waste handling emissions will result in conservative estimates because the moisture content in waste feedstock and compost product is higher than 30%.

$$E = k(0.0032)\left[\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right]$$

Where,

E = emission factor (lb/ton)

k = particle size multiplier = 0.35, for PM_{10}, 0.053 for $PM_{2.5}$

U = mean wind speed (mph) = 8 mph

M= material moisture content (%) = 4.8%

E (PM_{10}) = 0.35*(0.0032)*[$(8/5)^{1.3}$]/[$(4.8/2)^{1.4}$] = 0.00061 lb/ton-transfer point

E ($PM_{2.5}$) = 0.053*(0.0032)*[$(8/5)^{1.3}$]/[$(4.8/2)^{1.4}$] = 0.000092 lb/ton-transfer point

To determine the PM10 and PM2.5 emissions per day, multiple the quantity of material processed per day by the emission factor and then multiply by the number of transfer points for the source. To determine the PM10 and PM2.5 emissions per year, multiply daily emission by 365.

$$Emissions = (Emission\ Factor) \times (\ Throughput) \times (Transfer\ Points)$$

Wind Erosion Emission Factor
It has been determined that AP-42 Chapter 13.2.5 (Industrial Wind Erosion) is not appropriate for use with stockpiles or composting operations. Chapter 13.2.5 uses assumptions regarding the wind speed with a larger, completely exposed, and dry stockpile. The feed stockpiles and composting operations have a higher moisture content than coal, which is the basis for Chapter 13.2.5. The emission calculations from AP-42 Chapter 11.9-4 (Western States Coal Mining) is more appropriate given the material and situation at the facility.

AP-42 Table 11.9-4 specifies an emission factor of 0.38 tons of total suspended solids (TSP) per acre per year. The particle size multiplier used to calculate PM10 and PM2.5 is based on the multiplier from AP-42 Section 13.2.4-1. An abatement factor of 70% will be applied to the emission calculations due to the high moisture content from food waste.

$$Particle\ Size\ Multiplier\ (PM_{10}) = 0.35$$
$$Particle\ Size\ Multiplier\ (PM_{2.5}) = 0.053$$

$$Wind\ Erosion\ Emissions\ (TSP) = \left(\frac{0.38\ tons\ TSP}{acre - year}\right) \times (\ \#\#\ acre) \times \left(\frac{2{,}000\ lb}{ton}\right) \div \left(\frac{365\ days}{year}\right) \times (1 - 70\%)$$

$$Daily\ Emissions\ (PM_{10}) = 0.35 \times (TSP\ lb\ /day)$$
$$Daily\ Emissions\ (PM_{2.5}) = 0.053 \times (TSP\ lb\ /day)$$

To determine the PM10 and PM2.5 emissions per year, multiply daily emission by 365.

PM10 and PM2.5 Emissions From Road Dust:
Emissions from vehicle traffic on paved and/or unpaved roads to and from the storage piles should also be accounted in the emissions for the storage piles. A paved roads emission factor equation is provided in Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on paved surfaces at industrial sites:

E = $k(sL)^{0.91}(W)^{1.02}$ lb/VMT [Equation 1]

An unpaved roads emission factor equation is provided in Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I) for vehicles traveling on unpaved surfaces at industrial sites:

E = $k(s/12)^a(W/3)^b((365-P)/365))$ lb/VMT [Equation 1a]

and for vehicles traveling on publicly accessible roads, dominated by light duty vehicles:

E = $[k(s/12)^a(S/30)^d/(M/0.5)^c - C]((365-P)/365))$ lb/VMT [Equation 1b]

The following provides an explanation of the variables in the equation and the average values recommended for use (only if actual more specific and precise values are not available), if the source-specific values are not known:

E = Emission Factor (lb/VMT)
k = Particle size multiplier (dimensionless); for PM_{10}, k=0.0022 for Equation 1
k = 1.5 for Equation 1a, 1.8 for Equation 1.b
for $PM_{2.5}$, k = 0.00054 for Equation 1, k = 0.15 for Equation 1a, 0.18 for Equation 1.b
sL = road surface silt loading; sL = 7.4 g/m^2 (mean silt loading for municipal solid waste landfills)[49]
a = Empirical Constants; a = 0.9 for Equation 1a, 1 for Equation 1b
b = Empirical Constants; b = 0.45
c = Empirical Constants; c = 0.2 for Equation 1b
d = Empirical Constants; d = 0.5 for Equation 1b
s = Silt content of road surface (%); s = See Table 13.2.2-1[50] and use the mean value for the applicable industry. (For example, for stone and gravel processing s=4.8 for plant roads, 7.1 for material storage areas.)
W = Mean vehicle weight (tons); W = 21 tons for Equation 1,
W=146 tons for Equation 1a, 2 tons for Equation 1b
M = surface material moisture content (%); M = 6.5
S = Mean vehicle speed (mph); S = 24 for Equation 1a, 33 for Equation 1b
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
for PM_{10}, C = 0.00047[51] and for PM2.5, C= 0.00036[31]
P = Number of days with greater than, or equal to, 0.01 inches of precipitation per year; 70[52]

For example, the PM_{10} and $PM_{2.5}$ emission factors used for paved roads are calculated as follows:

E_1 (PM_{10}) = $0.0022(7.4)^{0.91}(21)^{1.02}$
E_1 (PM_{10}) = 0.30 lb/VMT

E_1 ($PM_{2.5}$) = $0.00054(7.4)^{0.91}(21)^{1.02}$
E_1 ($PM_{2.5}$) = 0.074 lb/VMT

The PM_{10} and $PM_{2.5}$ emission factors used for unpaved roads at industrial sites are calculated as follows:

E_{1a} (PM_{10}) = $(1.5)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} (PM_{10}) = 3.05 lb/VMT

E_{1a} ($PM_{2.5}$) = $(0.15)(4.8/12)^{0.9}(146/3)^{0.45}(365\text{-}70/365)$
E_{1a} ($PM_{2.5}$) = 0.31 lb/VMT

$$Emissions = (Emission\ Factor) \times (\ VMT\ Throughput)$$

The permit evaluator should determine which emission factor equation (1, 1a, or 1b) is most appropriate depending on the unpaved surfaces or roads where the sources will be situated. The permit evaluator should also obtain information from the applicant regarding the maximum vehicle weight and miles traveled per year by all vehicles involved on driving on the unpaved roads at the facility. If watering is

[49] Chapter 13.2.1, Paved Roads of AP-42 (Fifth Edition, Volume I)
[50] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 3.
[51] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 6.
[52] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 9.

used to suppress dust, a maximum abatement efficiency of 70% may be used. If chemical dust suppressants are used, a maximum abatement efficiency of 80% may be used[53].

Furthermore, if railcars or ships are involved in the transportation of materials, then also the combustion emissions from the use of these transport vehicles should also be calculated and included in the facilities cumulative increase.

Toxic Air Contaminants

Ammonia

During the composting operations, ammonia (NH_3) is formed from the biological degradation process. Emission factors are based on the results from composting operations presented in the CARB report "ARB Emissions Inventory Methodology for Composting Facilities" dated March 2, 2015. A factor of 0.78 pounds of NH_3 per wet ton of material is used for composting. 70% of the NH_3 emissions (0.546 lb/wet-ton) occur in the active phase of composting and 30% of the NH_3 emissions (0.234 lb/wet-ton) occur in the curing phase. From Table III-3: Control Techniques for Composting Operations in the CARB report, positive aerated static piles with a biofilter cover can reduce NH_3 emissions by 53%:

$$Composting\ Emission\ Factor\ for\ NH_3(unabated) = (0.78\ lb/wet\ ton)$$

$$Composting\ Emission\ Factor\ for\ NH_3(abated\ by\ biofilter\ in\ active\ phase) = (0.78\ lb/wet\ ton) \times [(70\% \times (1-53\%) + (30\%)] = 0.49062\ lb/wet\ ton$$

For the stockpiles, an emission factor of 0.02 lb/wet ton-day was derived based on factors used in the CARB report. For a conservative estimate, the abatement efficiency of 0%, presented in the CARB report Table III-3 for a static pile with no biofilter, will be used for the stockpiles.

$$Stockpile\ Emission\ Factor\ for\ NH_3(unabated) = (0.02\ lb/wet\ ton)$$
$$Emissions = (Emission\ Factor) \times (Throughput) \times (Storage\ period)$$

Toxic Air Contaminants from VOCs

Organic emissions from composting operations are due to the aeration and biological degradation of materials from the process. Emission factors are based on the results from composting operations presented in the California Air Resource Board (CARB) report *"ARB Emissions Inventory Methodology for Composting Facilities"* dated March 2, 2015. For composting operations, the VOC emission factor of 3.58 lb/wet ton may be used for green waste and food waste, as indicated in Table III-of the CARB report. In Appendix A, Table A-1, the emission factor approved by San Joaquin Valley Air Pollution Control District (SJVAPCD) and the South Coast Air Quality Monitoring District (SCAQMD) indicates a windrow emission factor of 5.71 lb VOC/wet ton for green waste, food waste, and grape pomace.

For the static stockpiles, the VOC emission factor of 0.2 lb of VOC per wet ton per day may be used based on the *CARB Report, Table III-1: Recommend Emission Factors for Greenwaste and Food Waste*.

Acetone is a non-precursor organic compound (NPOC) that needs to be subtracted from the VOC emissions to determine the emissions for POCs. For the composting operations, 0.47% of acetone per pound of VOC is based on the University of California, Davis article titled "Volatile Organic Compound Emissions from Green Waste Composting: Characterization and Ozone Formation". In addition, source test data from multiple facilities for composting and stockpiles is available to quantify acetone and other TACs.

A summary of the toxic air contaminants in VOC weight fractions, derived from multiple source tests, are provided in the following tables:

Table I: Summary of Toxic Air Contaminants from VOCs

[53] Chapter 13.2.2, Unpaved Roads of AP-42 (Fifth Edition, Volume I), pg. 13.

Table I-1: Feedstock Pile - Green Waste Only

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	1.44E-02
1,4-Dichlorobenzene	1.98E-04
2-Propanol (Isopropyl alcohol, IPA)	1.72E-04
Acetaldehyde	1.21E-02
Allyl Chloride (3-Chloropropene)	5.95E-05
Benzene	8.20E-05
Carbon disulfide	6.02E-05
Chloroethane	6.77E-05
Chloroform	1.25E-04
Ethylbenzene	1.02E-04
Ethylene Dichloride (1,2-dichloroethane)	8.16E-05
Hexane	1.66E-04
Methanol (Methyl alcohol)	4.66E-02
Methyl Ethyl Ketone (2-butanone)	5.49E-03
Naphthalene	9.14E-05
Propene (Propylene)	1.72E-04
Styrene	2.31E-04
Toluene	2.41E-04
Vinyl acetate	5.87E-03
Xylenes	1.03E-04

Table I-2: Feedstock Pile - Food Waste and Green Waste

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	8.25E-03
1,4-Dichlorobenzene	4.21E-04
2-Propanol (Isopropyl alcohol, IPA)	1.13E-03
Acetaldehyde	8.96E-02
Allyl Chloride (3-Chloropropene)	2.19E-04
Benzene	2.24E-04
Carbon disulfide	2.18E-04
Chloroethane	1.85E-04
Chloroform	3.42E-04
Ethylbenzene	3.04E-04
Ethylene Dichloride (1,2-dichloroethane)	2.84E-04
Hexane	7.86E-03
Methanol (Methyl alcohol)	9.68E-02

Table I-2: Feedstock Pile - Food Waste and Green Waste

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Methyl Ethyl Ketone (2-butanone)	5.36E-02
Naphthalene	2.81E-04
Propene (Propylene)	9.45E-05
Styrene	2.98E-04
Toluene	2.64E-04
Vinyl acetate	1.45E-02
Xylenes	3.15E-04

Table I-3: Compost - Active Phase

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	7.23E-02
1,4-Dichlorobenzene	2.22E-04
2-Propanol (Isopropyl alcohol, IPA)	2.59E-04
Acetaldehyde	4.29E-02
Allyl Chloride (3-Chloropropene)	1.08E-04
Benzene	1.60E-04
Carbon disulfide	3.74E-04
Chloroethane	8.30E-05
Chloroform	1.63E-04
Ethylbenzene	3.50E-04
Ethylene Dichloride (1,2-dichloroethane)	5.37E-04
Hexane	3.18E-04
Methanol (Methyl alcohol)	4.88E-02
Methyl Ethyl Ketone (2-butanone)	7.82E-02
Naphthalene	7.14E-04
Propene (Propylene)	5.89E-03
Styrene	3.53E-04
Toluene	6.30E-04
Vinyl acetate	3.01E-03
Xylenes	4.36E-04

Table I-4: Compost - Curing Phase

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	1.08E-01
1,4-Dichlorobenzene	6.10E-04

Table I-4: Compost - Curing Phase

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
2-Propanol (Isopropyl alcohol, IPA)	7.37E-04
Acetaldehyde	2.83E-02
Allyl Chloride (3-Chloropropene)	8.75E-04
Benzene	5.42E-04
Carbon disulfide	1.30E-03
Chloroethane	2.68E-04
Chloroform	4.99E-04
Ethylbenzene	8.06E-04
Ethylene Dichloride (1,2-dichloroethane)	5.78E-04
Hexane	6.42E-04
Methanol (Methyl alcohol)	3.07E-02
Methyl Ethyl Ketone (2-butanone)	3.77E-02
Naphthalene	1.12E-03
Propene (Propylene)	3.21E-02
Styrene	6.34E-04
Toluene	2.54E-03
Vinyl acetate	7.67E-04
Xylenes	1.24E-03

Table I-5: Finished Compost

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Acetone	4.86E-02
1,4-Dichlorobenzene	3.56E-03
2-Propanol (Isopropyl alcohol, IPA)	1.46E-03
Acetaldehyde	1.86E-02
Allyl Chloride (3-Chloropropene)	1.86E-03
Benzene	1.89E-03
Carbon disulfide	7.75E-03
Chloroethane	1.56E-03
Chloroform	2.89E-03
Ethylbenzene	2.57E-03
Ethylene Dichloride (1,2-dichloroethane)	2.40E-03
Hexane	2.09E-03
Methanol (Methyl alcohol)	7.77E-04
Methyl Ethyl Ketone (2-butanone)	1.75E-03
Naphthalene	3.11E-03
Propene (Propylene)	6.87E-02

Table I-5: Finished Compost

Toxic Air Contaminant	Weight Fraction[4], lb TAC/lb VOC
Styrene	2.53E-03
Toluene	6.96E-03
Vinyl acetate	2.09E-03
Xylenes	5.15E-03

A template spreadsheet is available for use in calculating the TACs from VOCs using the emission factors provided above.

Applicable Requirements
Air District Rules and Regulations
Regulation 6, Rule 1: Particulate Matter – General Requirements
The facility is expected to comply with Regulation 6-1-301 Ringelmann No. 1 Limitation, 6-1-305 Visible Particles as long as proper handling of the materials and composting operations. The requirements of the Rule will be enforced through the permit conditions.

Regulation 6-1-311 does not apply to sources at this facility because these sources are Type B (fugitive) sources, which do not have a vent that is of regular geometry that can be modified/enclosed to conduct source test using approved methods. The Staff Report for Regulation 6-1 indicates that Sections 6-1-310, 311, 320, and 330 apply only to sources with a Type A emissions point.

Regulation 6, Rule 6: Prohibition of Trackout
BAAQMD Regulation 6, Rule 6 was adopted in 2018. The purpose of this Rule is to limit the quantity of particulate matter in the atmosphere through control of trackout of solid materials onto paved public roads outside the boundaries of Large Bulk Material Sites, Large Construction Sites, and Large Disturbed Surface sites including landfills. Pleasanton Garbage Service is subject to this new rule. The requirements of the Rule will be enforced through the permit conditions.

Regulation 7, Rule 1: Odorous Substances
This material recovery facility and transfer station operation is not expected to be violating this regulation as shown in the attached Transfer Processing Report, provided that the facility has and follows an Odor Impact Minimization Plan (OIMP). The OIMP includes an odor monitoring protocol, an odor complaint response protocol, and design considerations and procedures to minimize odors. Each operating day the operator would do site inspection and temperature reading at the stockpiles. If questionable on-site odors are detected by site personal, operations personnel will investigate and determine the likely source of the odor and access of on-site management practices to resolve the odor event and take steps to reduce the odor-generating capacity of the on-site material. For example, for odors generated after running the stockpile, the operate would choose to increase turning frequency, increase pile porosity, add odor-absorbing amendment like sawdust.

Regulation 8, Rule 2: Miscellaneous Operations
Organic emissions from miscellaneous operations that are not subject to any other Regulation 8 rules may be subject to Regulation 8, Rule 2, Section 301. However, this section only applies to sources with organic emissions emitted from a stack. Since it is not possible to conduct source testing on fugitive organic emission sources, such as the green waste stockpiles and the MSW storage and handling operations, to assess compliance with the Regulation 8-2-301 total carbon concentration limit, these sources are not subject to Regulation 8-2-301.

Regulation 9- Inorganic Compounds, Rule 2, Hydrogen Sulfide
The ground level concentration limit on hydrogen sulfide (H_2S) is 0.06 ppm average over 3 minutes or 0.03 ppm average over 60 minutes. H_2S is generated due to anaerobic decomposition of organic material. The production of H_2S is not anticipated as long as the facility maintains aerobic conditions at the sources. H_2S is usually detected by smell well before the concentrations approach the limits in Section 9-2-301. Both the facility and the Air District inspection staff should monitor for the potential compliance issues regarding hydrogen sulfide.

Best Available Control Technology (BACT)
BACT for Composting is specified in the BACT/TBACT Workbook.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- Offsets
- Prevention of Significant Deterioration
- School Notification
- Health Risk Assessment
- Overburdened Communities

Permit Conditions
Standardized conditions for crushing and grinding equipment are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.

12.1 BANKING

July 3, 2023

Process Description
This chapter covers applications for the banking of emission reduction credits for bankable pollutants, as defined in Regulation 2-4-203, for applicants to obtain offsets required per Regulation 2-2, Sections 302 and 303. Emission reduction credits are defined in Regulation 2-2-211:

2-2-211 **Emission Reduction Credit:** Emission reductions associated with a physical change, change in method of operation, change in throughput or production, or other similar change at a source that are in excess of the reductions required by applicable regulatory requirements, and that are real, permanent, quantifiable, and enforceable, as calculated in accordance with Section 2-2-605.

In order to qualify for emission reduction credits, the emission reductions must be a bankable reduction as specified in the standards of Sections 301 through 305 of the Emission Banking rule (Regulation 2-4).

Completeness Determination
The following is required to complete a banking application:

1. Completed Application for Emission Reduction Credits Form P-401 (one per application).
2. Documentation to verify emission reductions (such as operating logs, material purchase records, fuel use records, and/or source test results). Measurements and/or calculations before and after reductions are achieved, including a discussion of the calculations and/or measurement methods. The documentation should be for the 3-year period immediately preceding the submittal of a complete banking application (i.e., the baseline period). The emission reduction credit calculation procedures should be in accordance with Regulation 2-2-605. For shutdown sources, the applicant must be able to demonstrate that the emission reductions from the shutdown source will not result in a similar increase of emissions at other sources in the Bay Area because of continued demand for the product or service, per Regulation 2-4-303.2.
3. Pay all applicable fees (filing fee and initial fee) for each permitted source for which emission reduction credits are being requested, per Regulation 3-311. The permit evaluator should review the facility's prior renewal invoice to verify the correct Schedule in Regulation 3 to use to calculate the applicable initial fees for the source(s) in the banking application.

Per Regulation 2-4-402, the permit evaluator shall determine whether the banking application is complete not later than 30 calendar days following receipt of the application, or after a longer time period agreed upon in writing by both the applicant and the permit evaluator. If the permit evaluator determines that the application is not complete, the applicant shall be notified in writing that the application is incomplete.

The banking fees (filing fee and initial fee) for each permitted source for which emission reduction credits are being requested shall be calculated per Regulation 3-311. The permit evaluator should review the facility's prior renewal invoice to verify the correct Schedule in Regulation 3 to use to calculate the applicable initial fees for the source(s) in the banking application. The banking application fees could be quite high in comparison to the quantity of emission reduction credits available for banking.

In addition, Regulation 2-4-303.5 prohibits banking of emission reductions at facilities belonging to companies that have received offsets of the same pollutant from the Small Facility Bank. Once those offsets have been reimbursed, the remaining emission reductions may be banked. Many applicants cancel after they receive the invoice and realize how much credit they will receive. The permit evaluator should review the applying facility's cumulative increase to see whether it has received offsets from the Small Facility Bank and notify the applicant, accordingly, and provide an invoice for all applicable fees and request additional documentation, if needed, to verify emission reductions, in the written notification to the applicant regarding the incomplete status of their application.

The permit evaluator should make sure that applicant still wants to proceed ahead with their banking application by making sure that they have paid all invoiced fees and provided all requested documentation to complete their banking application.

If, at the end of 90 days from first notifying the applicant of their incomplete status, no requested documentation or fees are submitted and the application is still incomplete, the permit evaluator may cancel the banking application with written notification to the applicant, per Regulation 2-4-402.

Emission Reduction Credit Calculations
Regulation 2, Rule 4 governs Emissions Banking. The emission calculation procedure in Section 2-4-601 refers to the emission calculation procedures in Section 600 of Regulation 2, Rule 2.

Below are the general steps of calculating emission reduction credits:
1. Determine baseline period.
2. Estimate baseline emissions using baseline throughput and baseline emission rate.
3. Adjust downward baseline throughout, emission rates, and/or emissions with any exceedance of a limit and/or a permit condition.
4. Adjust downward baseline throughout, emission rates, and/or emissions to comply with the most stringent of RACT, BARCT, and applicable District rules and regulations in effect or contained in the most recently adopted Clean Air Plan, if applicable.

Per Section 2-2-603.2, the baseline period consists of the 3-year period immediately preceding the submittal of a complete banking application.

Per Section 2-2-603.3, the baseline throughput is the lesser of (i) the actual average throughput during the baseline period or (ii) the average permitted throughput during the baseline period, if limited by a permit condition (excluding any throughputs and/or emissions that exceed any permit limits).

Per Section 2-2-603.4, the baseline emissions are the actual average annual emissions during the baseline period (excluding any emissions that exceed any regulatory or permit limits). If the applicant does not have sufficient verifiable records of the source's operation to substantiate the emission rate during any portion(s) of the baseline period, the applicant is not entitled to credit to emissions during any such periods.

Per Section 2-2-603.5, the baseline emission rate is the emission rate per unit of throughput during the baseline period, calculated by dividing the source's baseline emissions by its baseline throughput. If available, results of the source tests conducted within the baseline period may be used to determine the baseline emission rate. However, if only results of the tests conducted outside the baseline period are available, permit evaluator may use those results provided that it was for the same material and the source had not gone through any operational method change. If no source tests were conducted for the source, permit evaluator should use engineering judgment to determine if results of the tests conducted for another source can be used, with (and not limited to) the following considerations: the source test results are for the same source category, and same material.

Per Section 2-2-603.6, the baseline emission rate must be adjusted downward to comply with the most stringent of RACT, BARCT, and applicable District rules and regulations in effect or contained in the most recently adopted Clean Air Plan, if applicable. Per Regulation 2-2-225 RACT differs for sources that are going to continue to operate versus sources that will be shutdown.

Per Section 2-2-603.7, the adjusted baseline emissions are the adjusted baseline emission rate multiplied by the baseline throughput.

Regulation 2-2-605.2 defines ERCs as the difference between the adjusted baseline emissions before the change and the source's potential to emit after the change. For sources which are shut down, the potential to emit is zero.

Regulation 2-4-602 and 603 provide the calculation procedure for converting filterable PM_{10} to Filterable $PM_{2.5}$ and condensable PM_{10} to condensable $PM_{2.5}$, respectively.

Applicable Requirements

Air District Rules and Regulations

The ERC calculation should be performed in accordance with the procedures outlined in Regulation 2-2-603 and 2-2-605.

Regulation 2-2-211 Emission Reduction Credits defines ERCs to be any emission reductions associated with a physical change, change in method of operation, change in throughput of production, or other similar change at a source that are in excess of the reductions required by applicable regulatory requirements, and that are real, permanent, quantifiable, and enforceable.

Regulation 2-4-302.1 Bankable Reductions for Closures states that if it is unclear whether the emission reduction from a source closure will be replaced by an emission increase elsewhere within the Air District, the emission reduction credits are only bankable if the applicant accepts a condition restricting use of the deposits to offsetting emission increases in the same or closely related industries.

Regulation 2-4-303.3 prohibits banking of emission reductions due to the shutdown of sources or the installation of controls on sources excluded from Air District regulations (pursuant to Regulation 1-110) or exempt from permit requirements (pursuant to Regulation 2-1).

In addition, Regulation 2-4-303.5 prohibits banking of emission reductions at facilities belonging to companies that have received offsets of the same pollutant from the Small Facility Bank. Once those offsets have been reimbursed, the remaining emission reductions may be banked. The permit evaluator should review the facility's (per Regulation 2-1-213) cumulative increase to see whether it has received offsets from the Small Facility Bank.

Regulation 2-4-405 Publication, Public Comment and Inspection requires the Air District to publish a public notification of the preliminary decision before approving the banking of any emission reduction in excess of 40 tons per year of any pollutant.

California Environmental Quality Act (CEQA)

The Air District has determined that emissions banking is not a "project" as that term is used in CEQA, because it does not involve a "physical change in the environment." (See Pub. Res. Code § 21065.) Moreover, even if the issuance of a banking certificate were considered to be a "physical change in the environment," it can be seen with certainty that the mere issuance of the certificate will not have any significant environmental impacts because simply issuing a certificate does not authorize any emissions. (See CEQA Guidelines, 14 Cal. Code Regs. 15061(b)(3).) Accordingly, no CEQA environmental document is required at the time of issuance of a banking certificate. In addition, the Air District has determined that this permit action is categorically exempt from CEQA per Air District Regulation 2-1-312.10, "Applications to deposit emission reductions in the emissions bank pursuant to Regulation 2, Rule 4 or Regulation 2, Rule 9." The action is further exempt under the "common sense" exemption. (CEQA Guidelines § 15061(b)(3)).

Permit Conditions

Per Regulation 2-4-301, the permit evaluator may include a condition in an authority to construct involving bankable reductions stating that the emission reductions shall be eligible for banking after being demonstrated by source test or other means acceptable to the Air District. Conditions are commonly imposed on banking applications when an emission reduction is permanent at the source, but it is unclear whether the reduction will be replaced by an emission increase elsewhere at the facility or within the Air District (per Regulation 2-4-302.1), or to ensure the permanency of the closure.

LIST OF APPENDICES

A. Permit Exemption Guidance
B. Data Form Guidance
C. Fee Calculation Guidance
D. Completeness Determination Checklist
E. Evaluation Report Template Guidance
F. Frequently Asked Questions

A. PERMIT EXEMPTION GUIDANCE

May 13, 2024

Air District Regulation 2 Rule 1 describes the permit requirements for sources of air pollution. In general, any equipment or operation that emits pollutants into the atmosphere requires an Authority to Construct before installation of the equipment or start of the operation. Upon receipt of the Authority to Construct and after start-up of the equipment or operation, a Permit to Operate is required for continued operation of the equipment or operation. Any air pollution control equipment associated with a source that requires a District permit also requires an Authority to Construct and/or Permit to Operate.

Unless a source of emissions is excluded from Air District Regulations per Regulation 1 or exempted from Air District permit requirements by a specific section of Regulation 2-1, a permit is required for any source of air pollution. Figure 2-1-101 Permit/Exemption Flow Chart illustrates the process of determining whether permits are required for a specific source of air pollution. A source of air pollution that does not require a Permit to Operate may require a certificate of registration.

Regulation 2, Rule 1
Permit / Exemption Flow Chart

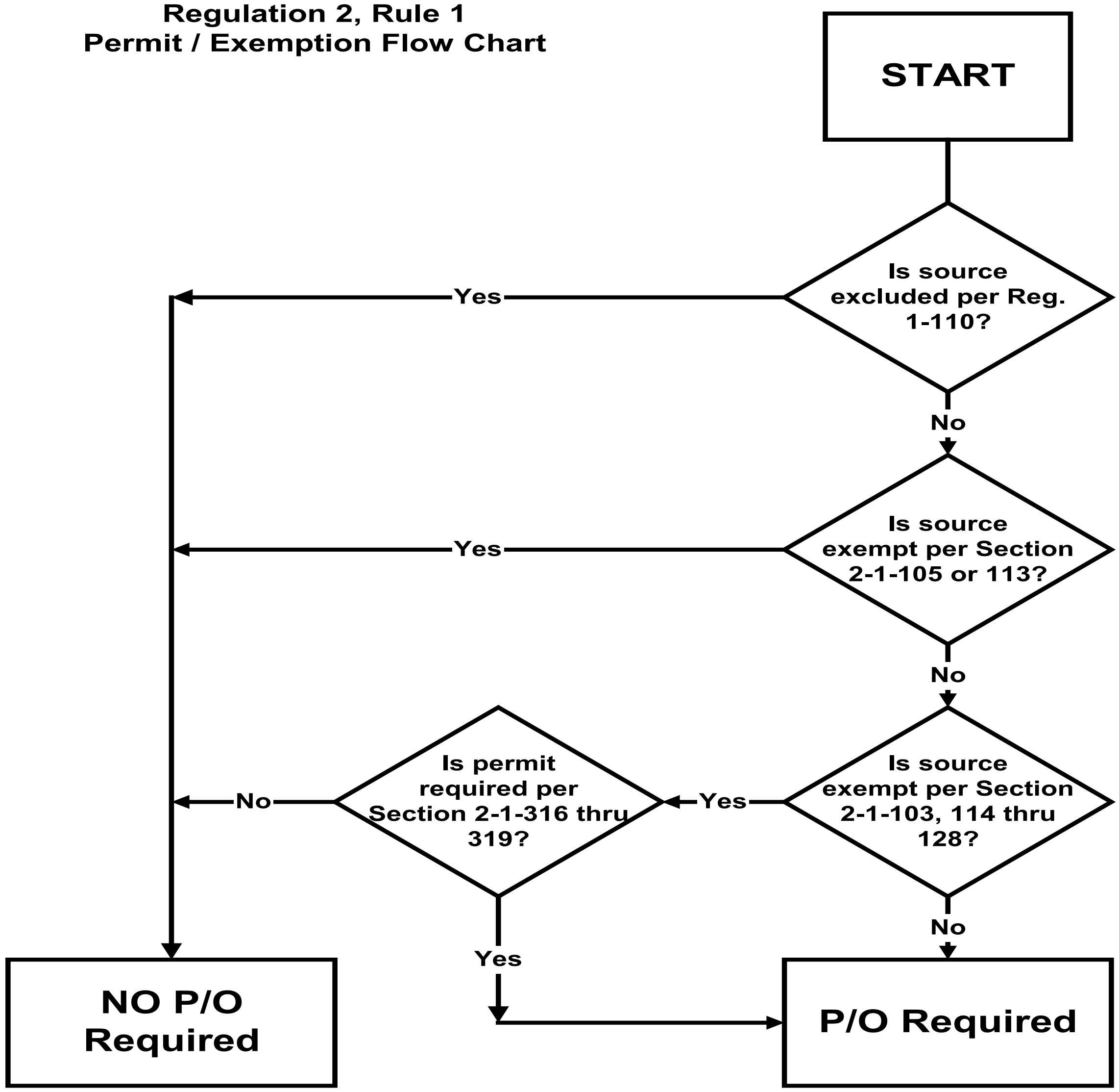

Figure 2-1-101

Explanation of Figure 2-1-101

1. First, review the proposed equipment or operation to see if it is excluded from Air District regulation per Regulation 1-110. Permit exclusions exclude specific equipment or operations from any Air District regulation (including permitting requirements and operational standards). If the source meets one of the exclusions in Regulation 1-110, then the source is exempt from permitting requirements, per the regulation it met.
2. If a source is not excluded per Regulation 1-110, then review whether the source is exempt per Regulations 2-1-105 or 2-1-113. If the source meets one of the exemptions in Regulations 2-1-105 or 2-1-113, then the source is exempt from permitting requirements, per the regulation it met.
3. If none of the listed exemptions in Regulations 2-1-105 or 2-1-113 apply to the equipment or operation, then review Regulations 2-1-103 and 2-1-114 through 128 to see whether these exemption apply.
4. If none of the exemptions listed in Regulations 2-1-103 and 2-1-114 through 128 apply, then the source(s) most likely requires an Authority to Construct and/or Permit to Operate (go to General Application Guidance for instructions on applying for a permit.)
5. If one or more of the exemptions in Regulations 2-1-103 and 2-1-114 through 128 do apply,
   a) The emissions of toxins from the source must be at a rate that it satisfies the Air District's Toxic Best Available Control requirements and risk limits of Regulation 2, Rule 5.
   b) The source cannot be a public nuisance pursuant to Regulation 2-1-317;
   c) If it is a new or modified source at a PSD Major Facility, the emissions from hazardous substances must be less than the quantities listed in Regulation 2-1-318; and
   d) The source must not emit more than 5 tons per year of any regulated air pollutant, after abatement (Regulation 2-1-319.1).
6. If the emissions do not result in the requirement of a permit per Regulation 2-1-316 through 2-1-319, then the source(s) are most likely exempt from permitting requirements per the exemptions identified in Regulations 2-1-103 and 2-1-114 through 128.
7. If the emissions do result in the requirement of a permit per Regulation 2-1-316 through 2-1-319, then the source(s) most likely requires an Authority to Construct and/or Permit to Operate (go to General Application Guidance for instructions on applying for a permit.)

Applicants who are unsure about whether or not a permit is required or wish confirmation of an exemption should submit a permit application for the source or operation; and the Air District will make the final determination. Note that a filing fee is required for any application for exemption per Regulation 3-337.

The following are hyperlinks to the direct citation of the exemptions that apply for each source category.

Select the type of equipment/operation from list below:

- ❑ Combustion Equipment
- ❑ Organic Liquid Storage Tanks
- ❑ Coating Operations (including Graphic Arts Printing)
- ❑ Solvent Cleaning
- ❑ Electronic & Semiconductor Industry
    - o Semiconductor Manufacturing
    - o Printed Circuit Board Manufacturing
- ❑ Wastewater Storage
- ❑ Wastewater Treatment
- ❑ Sub-Slab Depressurization
- ❑ Abrasive Blasting Operations
- ❑ Miscellaneous Operations
    - o Portable Equipment
    - o General Sources and Operations
    - o Quarries, Mineral Processing and Biomass Facilities
    - o Furnaces, Ovens and Kilns
    - o Food and Agricultural Equipment
    - o Material Working and Handling Equipment
    - o Casting and Molding Equipment
    - o Testing Equipment
    - o Chemical Processing Equipment
    - o Miscellaneous Equipment
    - o Not Subject to Any Rule

Excerpts from Regulation 1:

Regulation 1-110

1-110 **Exclusions:** District Regulations shall not apply to the following:

110.1 Engines used to propel motor vehicles and defined by the Vehicle Code of the State of California.

110.2 Deleted May 17, 2000.

110.3 Aircraft.

110.4 Fires from residential cooking.

110.5 Open outdoor fires, other than for the disposal of waste propellants, explosives or pyrotechnics by manufacturing facilities; recreational fires and outdoor cooking fires, except as limited by Regulation 5.

110.6 Any emission point which is not an intended opening and from which no significant quantities of air contaminants are emitted.

110.7 Smoke generators intentionally operated to train observers in appraising the shade of emissions.

110.8 Air contaminants, where purposely emitted for the sole purpose of a specific beneficial use, and where essentially all of the air contaminants are confined to the area in which such beneficial use is obtained. The quantity and nature of the air contaminants, and the proportion of air contaminants used in relation to amounts of other materials involved in the beneficial use of air contaminants, shall conform to accepted practice in type of use employed.

110.9 Agricultural sources except as provided in:

9.1 Regulation 5: Open Burning; and

9.2 Regulation 2: Permits.

(Renumbered 3/17/82; Amended 12/19/90; 11/3/93; 5/17/00; 5/2/01; 7/19/06; 7/9/08)

Regulation 2-1-103 [see policy]

2-1-103 **Exemption, Source not Subject to any District Rule:** Any source that is not already exempt from the requirements of Section 2-1-301 and 302 as set forth in Sections 2-1-105 to 2-1-128, is exempt from Section 2-1-301 and 302 if the source meets all of the following criteria:

103.1 The source is not in a source category subject to any of the provisions of Regulation 6(1), Regulation 8(2) excluding Rules 1 through 4, or Regulations 9 through 12; and

103.2 The source is not subject to any of the provisions of Sections 2-1-316 through 319; and

103.3 Actual emissions of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO_2), $PM_{2.5}$, PM_{10} and carbon monoxide (CO) from the source are each (i) less than 10 pounds per highest day; or (ii) if greater than 10 pounds per highest day, total emissions are less than 150 pounds per year, per pollutant; and

103.4 The source is not an ozone generator (a piece of equipment designed to generate ozone) emitting 1 lb/day or more of ozone.

Note 1: Typically, any source may be subject to Regulation 6, Particulate Matter and Visible Emissions. For the purposes of this section, Regulation 6 applicability shall be limited to the following types of sources that emit $PM_{2.5}$ and PM_{10}: combustion source; material handling/processing; sand, gravel or rock processing; cement, concrete and asphaltic concrete production; tub grinder; or similar $PM_{2.5}$ and PM_{10}-emitting sources, as deemed by the APCO.

Note 2: If an exemption in a Regulation 8 Rule indicates that the source is subject to Regulation 8, Rules 1 through 4, then the source must comply with all applicable provisions of Regulation 8, Rules 1 through 4, to qualify for this exemption.

(Adopted 6/7/95; Amended 5/17/00; 12/21/04)

Regulation 2-1-105

2-1-105 **Exemption, Registered Statewide Portable Equipment:** Equipment that complies with all applicable requirements of and is registered under the Statewide Portable

Equipment Registration Program (California Code of Regulations Title 13, Division 3, Chapter 3, Article 5) is exempt from the requirements of Sections 2-1-301 and 302. If the equipment ceases to qualify for this exemption for any reason (for example, if it remains at any fixed location for more than twelve months or otherwise ceases to be portable as defined by the Program), the equipment shall be subject to the requirements of Regulation 2 as if it were a new source.

(Adopted 6/7/95; Amended 10/7/98; 5/17/00)

Regulation 2-1-113

2-1-113 Exemption, Sources and Operations:

113.1 The following sources and operations are exempt from the requirements of Sections 2-1-301 and 302, in accordance with the California Health and Safety Code:

1.1 Single and multiple family dwellings used solely for residential purposes.

1.2 Agricultural sources (as defined in Section 2-1-239) with actual emissions of each regulated air pollutant, excluding fugitive dust and greenhouse gases, less than 50 tons per year. Agricultural sources engaged in composing and other similar biomass processing that primarily process green materials or animal waste products derived from agricultural operations shall not become ineligible for this exemption for processing material from non-agricultural operations as long as the facility processes less than 500 tons per year of such material from non-agricultural operations.

1.3 Any vehicle. Equipment temporarily or permanently attached to a vehicle is not considered to be a part of that vehicle unless the combination is a vehicle as defined in the Vehicle Code. Specialty vehicles may include temporarily or permanently attached equipment including, but are not limited to, the following: oil well production service unit; special construction equipment; and special mobile equipment.

1.4 Tank vehicles with vapor recovery systems subject to state certification, in accordance with the Health and Safety Code.

113.2 The following sources and operations are exempt from the requirements of Sections 2-1-301 and 302:

2.1 Road construction, widening and rerouting.

2.2 Restaurants, cafeterias and other retail establishments for the purpose of preparing food for human consumption.

2.3 Structural changes which do not change the quality, nature or quantity of air contaminant emissions.

2.4 Any abatement device which is used solely to abate equipment that does not require an Authority to Construct or Permit to Operate.

2.5 Architectural and industrial maintenance coating operations that are exclusively subject to Regulation 8, Rules 3 or 48, because coatings are applied to stationary structures, their appurtenances, to mobile homes, to pavements, or to curbs. This does not apply to coatings applied by the manufacturer prior to installation, nor to the coating of components removed from such structures and equipment.

2.6 Portable abatement equipment exclusively used to comply with the tank degassing or vacuum truck control requirements of Regulation 8, Rules 5, 40 or 53.

2.7 Equipment that transports, holds or stores California Public Utilities Commission regulated natural gas, excluding drivers.

2.8 Deleted May 17, 2000

2.9 Deleted May 17, 2000

2.10 Deleted May 17, 2000

2.11 Teaching laboratories used exclusively for classroom experimentation and/or demonstration.

2.12 Laboratories located in a building where the total laboratory floor space within the building is less than 25,000 square feet, or the total number of fume hoods within the building is less than 50, provided that Responsible Laboratory Management Practices, as defined in Section 2-1-224, are used. Buildings connected by passageways and/or corridors shall be considered as separate buildings, provided that structural integrity could be maintained in the absence of the passageways and/or corridors and the buildings have their own separate and independently operating HVAC and fire suppression systems. For the purposes of this subsection, teaching laboratories that are exempt per Section 2-1-113.2.11 are not included in the floor space or fume hood totals. In addition, laboratory units for which the owner or operator of the source can demonstrate that toxic air contaminant emissions would not occur, except under accidental or upset conditions, are not included in the floor space or fume hood totals.

2.13 Maintenance operations on natural gas pipelines and associated equipment, provided that emissions from such operations consist solely of residual natural gas that is vented after the equipment is isolated or shut down.

2.14 [Deleted 12/19/2012]

2.15 Asbestos and asbestos containing material renovation or removal conducted in compliance with Regulation 11, Rule 2 and Regulation 3.

2.16 Closed landfills that have less than 1,000,000 tons of decomposable solid waste in place and that do not have an operating landfill gas collection system.

2.17 Closed landfills that have not accepted waste for at least 30 years and that never had a landfill gas collection system.

2.18 Construction of a building or structure that is not itself a source requiring a permit.

2.19 Vacuum trucks subject to Regulation 8, Rule 53 and processing regulated material as defined in that rule.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 11/15/00; 5/2/01; 7/19/06; 4/18/12; 12/06/17)

Regulation 2-1-114 through 128

2-1-114 Exemption, Combustion Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, only if the source does not emit pollutants other than combustion products, and those combustion products are not caused by the combustion of a pollutant generated from another source, and the source does not require permitting pursuant to Section 2-1-319. However, for the purposes of this permit exemption determination, sources subject to Section 2-114.1.2, 2-1-114.2.1, and 2-1-114.2.3 are not subject to Section 2-1-316.

114.1 Boilers, Heaters, Steam Generators, Duct Burners, and Similar Combustion Equipment:

1.1 Any of the above equipment with less than 1 million BTU per hour rated heat input.

1.2 Any of the above equipment with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof.

114.2 Internal Combustion Engines and Gas Turbines:

2.1 Internal combustion (IC) engines and gas turbines with a maximum output rating less than or equal to 50 bhp.

2.2 Internal combustion (IC) engines and gas turbines used solely for instructional purposes at research, teaching, or educational facilities.

2.3 Portable internal combustion engines which are at a location for less than 72 consecutive hours.

2.4 Any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship, boat, or barge.

2.5 Any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship, boat, or barge and which is also used to supply mechanical or electrical power to ancillary equipment (e.g., crane, drill, winch, etc.) which is affixed to or is a part of the vehicle, train, ship, boat, or barge.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 8/1/01, 12/06/17, 12/15/21)

2-1-115 Exemption, Particulate Sources at Quarries, Mineral Processing and Biomass Facilities: The following potential PM_{10} sources are exempt from the requirements of sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

115.1 Sources located at quarrying; mineral or ore handling or processing; concrete production; asphaltic concrete production; marine bulk transfer stations; concrete or asphaltic concrete recycling; vehicle shredding; glass manufacturing; handling or processing of cement, coke, lime, flyash, fertilizer, or catalyst; or other similar facility which meets one of the following:

1.1 Mixer and other ancillary sources at concrete or aggregate product production facilities with a maximum rated production capacity less than 15 cubic yards (yd^3) per hour;

1.2 Other source at a facility with a maximum throughput less than 5000 tons per year;

1.3 Operating, loading and unloading a crusher or grinder which processes exclusively material with a moisture content greater than or equal to 20 percent by weight;

1.4 Operating, loading and unloading the following sources which process exclusively material with a moisture content greater than or equal to 5 percent by weight:

1.4.1 Screen or other size classification;

1.4.2 Conveyor, screw, auger, stacker or bucket elevator;

1.4.3 Grizzly, or other material loading or unloading;

1.4.4 Storage silos;

1.4.5 Storage or weigh hopper/bin system.

1.5 Haul or access roads;

1.6 Drilling or blasting.

115.2 Sources located at biomass recycling, composting, landfill, POTW, or related facilities specializing in the operation of, but not limited to, the following:

2.1 Tub grinder powered by a motor with a maximum output rating less than 10 horsepower;

2.2 Hogger, shredder or similar source powered by a motor with a maximum output rating less than 25 horsepower;

2.3 Other biomass processing/handling sources at a facilities with a total throughput less than 500 tons per year.

(Amended 6/7/95; 5/17/00)

2-1-116 Exemption, Furnaces, Ovens and Kilns: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

116.1 Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enameling drying ovens.

116.2 Crucible furnaces, pot furnaces, induction furnaces, cupolas, electric arc furnaces, reverbatories, or blast furnaces with a capacity of 1000 lbs or less each.

116.3 Crucible furnaces, pot furnaces, or induction furnaces for sweating or distilling that process 100 tons per year of all metals or less.

116.4 Drying or heat-treating ovens with less than 10 million BTU per hour capacity provided that a) the oven does not emit pollutants other than combustion products and b) the oven is fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof.

116.5 Ovens used exclusively for the curing of plastics which are concurrently being vacuum held to a mold, or for the softening and annealing of plastics.

116.6 Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.

116.7 Ovens used exclusively for curing potting materials or castings made with epoxy resins.

116.8 Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity or any combination thereof.

116.9 Parts cleaning, bake-off, and similar ovens that meet both of the following:

9.1 Oven is equipped with a secondary combustion chamber or abated by a fume incinerator; and

9.2 Internal oven volume is 1 cubic yard or less.

116.10 Electric ovens used exclusively for curing or heat-treating where no significant off-gassing or evaporation of any air contaminants occurs.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-117 Exemption, Food and Agricultural Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

117.1 Smokehouses or barbecue units in which the maximum horizontal inside cross sectional area does not exceed 20 square feet.

117.2 Equipment at facilities other than restaurants, cafeterias or other retail operations, which is used to dry, cook, fry, bake, or grill less than 1000 tons per year of food products.

117.3 Any oven with a total production of yeast leavened bakery products of less than 10,000 pounds per operating day, averaged over any period of seven consecutive days, and which is heated either electrically or exclusively by natural gas firing with a maximum capacity of less than 10 million BTU per hour.

117.4 Equipment used exclusively to grind, blend, package, or store tea, cocoa, spices, or coffee.

117.5 Equipment used to dry, mill, grind, blend, or package less than 1000 tons per year of dry food products such as seeds, grains, corn, meal, flour, sugar, and starch.

117.6 Equipment used to convey, transfer, clean, or separate less than 1000 tons per year of dry food products or waste from food production operations.

117.7 Storage equipment or facilities containing dry food products; which are not vented to the outside atmosphere, or which handle less than 1000 tons per year.

117. 8 Coffee, cocoa and nut roasters with a roasting capacity of less than 15 pounds of beans or nuts per hour; and any stoners or coolers operated in conjunction with these roasters.

117.9 Containers, reservoirs, tanks, or loading equipment used exclusively for the storage or loading of beer, wine or other alcoholic beverages.

117.10 Fermentation tanks for beer or wine. Fermentation tanks used for the commercial production of yeast for sale are not exempt.

117.11 Brewing operations at facilities producing less than 3 million gallons per year of beer.

117.12 Fruit sulfuring operations at facilities producing less than 10 tons per year of sulfured fruits and vegetables.

(Adopted 10/19/83; Amended 4/16/86; 7/17/91; 6/7/95; 5/17/00)

2-1-118 Exemption, Surface Preparation and Cleaning Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

118.1 Permanent abrasive blasting source, as defined by Regulation 12, Rule 4, that has a confined volume less than 100 cubic feet (ft^3) and is abated by a particulate filter.
118.2 Blast cleaning equipment using a suspension of abrasive in water.
118.3 Portable abrasive blasting equipment used on a temporary basis within the District.
118.4 Equipment, including solvent cold cleaners using an unheated solvent mixture for surface preparation, cleaning, wipe cleaning, fluxing or stripping by use of solutions with a VOC content less than or equal to 50 grams per liter (0.42 lb/gal).
118.5 Equipment using a heated solvent mixture for steam cleaning, surface preparation, fluxing, stripping, wipe cleaning, washing or drying products, provided that a) only solutions containing less than 2.5 percent VOC (wt) are used; and b) any combustion sources used in the process are exempt under Section 2-1-114.
118.6 Equipment or operations which use unheated solvent and which contain less than 1 gallon of solvent or have a liquid surface area of less than 1 ft^2. This exemption does not apply to solvent stations at semiconductor manufacturing operation fabrication areas or aerospace stripping operations.
118.7 Deleted December 21, 2004
118.8 Batch solvent recycling equipment where all of the following apply:
8.1 Recovered solvent is used primarily on site (more than 50% by volume); and
8.2 Maximum heat input (HHV) is less than 1 million BTU per hour; and
8.3 Batch capacity is less than 150 gallons.
118.9 Wipe cleaning at a facility with a net solvent usage less than 20 gallons per year, or which emits to the atmosphere less than 150 lb/year of VOC from all wipe cleaning operations. At a facility with total wipe cleaning emissions greater than 150 lb/yr, wipe cleaning operations may be grouped per Section 2-1-401.4.
118.10 Any solvent cleaning or surface preparation source which employs only non-refillable hand held aerosol cans.
118.11 Spray gun cleaning performed in compliance with Regulation 8, provided the cleaning is associated with a source, such as a spray booth, subject to the requirements of Section 2-1-301 and 302.

(Adopted 10/19/83; Amended 4/16/86; 8/2/89; 7/17/91; 6/7/95; 5/17/00; 12/21/04)

2-1-119 Exemption, Surface Coating and Printing Equipment: The following equipment and operations are exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.
119.1 Any powder coating operation, or radiation cured coating operation where ultraviolet or electron beam energy is used to initiate a reaction to form a polymer network.
119.2 Any coating, adhesive, dipping, laminating, screening, masking, electrodeposition, resist application, or similar source or operation at any facility that is not operated or conducted as part of a graphic arts operation, which:
2.1 Consumes a total of less than 30 gallons of coating, adhesive, laminate or resist per year on a facility wide basis, or emits less than 150 pounds per year of uncontrolled VOC on a facility wide basis, resulting from the application of these materials; or
2.2 Uses exclusively materials that contain less than one percent VOC (wt).
At a facility with emissions from these sources or operations of greater than 150 lb/yr, these sources or operations may be grouped per Section 2-1-401.3.
119.3 Any coating source which employs only non-refillable hand held aerosol cans.
119.4 An oven associated with an exempt coating source, provided that the oven is electrically heated, or the oven is fired exclusively with natural gas, liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and

their mixtures) and the maximum firing rate is less than 10 million BTU per hour.

119.5 Any graphic arts operation that emits less than 400 pounds of VOC emissions per month on a facility-wide basis.

(Adopted 10/19/83; Amended 4/16/86; 7/17/91; 6/7/95; 5/17/00; 12/21/04; 11/19/08)

2-1-120 Exemption, Dry Cleaning Equipment: Any dry cleaning facility which uses (gross consumption) less than 200 gallons of petroleum solvent or any other non-halogenated solvent in any single year is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319; the facility is in compliance with the registration requirement in Regulation 8, Rule 17, Section 404; and the equipment does not use solvent that contains perchloroethylene or more than 1% by weight of any other halogenated compound.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 3/4/09)

2-1-121 Exemption, Material Working and Handling Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

121.1 Equipment used for buffing, carving, cutting, drilling, grinding, machining, planing, routing, sanding, sawing, shredding, stamping or turning of wood, ceramic artwork, ceramic precision parts, leather, metals, plastics, rubber, fiberboard, masonry, glass, silicon, semiconductor wafers, carbon or graphite, provided that organic emissions from the use of coolant, lubricant, or cutting oil are 5 ton/yr or less.

121.2 Equipment used for pressing or storing sawdust, wood chips or wood shavings.

121.3 Equipment used exclusively to mill or grind coatings and molding compounds in a paste form provided the solution contains less than one percent VOC (wt).

121.4 Tumblers used for the cleaning or deburring of metal products without abrasive blasting.

121.5 Batch mixers with a rated working capacity of 55 gallons or less.

121.6 Mixing equipment provided no material in powder form is added and mixture contains less than one percent VOC (wt).

121.7 Equipment used exclusively for the mixing and blending of materials at ambient temperature to make water based adhesives.

121.8 Equipment used exclusively for the mixing and packaging of lubricants or greases.

121.9 Presses used exclusively for extruding metals, minerals, plastics or wood.

121.10 Presses used for the curing of rubber products and plastic products. The use of mold release products or lubricants is not exempt unless the VOC content of these materials is less than or equal to 1 percent, by weight, or unless the total facility-wide uncontrolled VOC emissions from the use of these materials are less than 150 lb/yr.

121.11 Platen presses used for laminating.

121.12 Roll mills or calendars for rubber or plastics.

121.13 Equipment used exclusively for forging, pressing, rolling, stamping or drawing metals or for heating metals immediately prior to forging, pressing, rolling, stamping or drawing, provided that: (1) maximum fuel use rate is less than 10 million BTU/hr; (2) no lubricant with an initial boiling point less than 400^{o}F is used; and (3) organic emissions are 5 ton/yr or less.

121.14 Atmosphere generators used in connection with metal heat treating processes.

121.15 Equipment used exclusively for the sintering of glass or metals.

121.16 Equipment used exclusively for the melting or applying of wax containing less than one percent VOC (wt).

121.17 Equipment used exclusively for conveying and storing plastic pellets.

121.18 Solid waste transfer stations that receive or load out a total of all material less than 50 tons/day.

121.19 Inactive solid waste disposal sites which do not have an operating landfill gas collection system.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-122 Exemption, Casting and Molding Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

122.1 Molds used for the casting of metals.

122.2 Foundry sand mold forming equipment to which no heat is applied, except processes utilizing organic binders yielding in excess of 0.25% free phenol by weight of sand.

122.3 Shell core and shell-mold manufacturing machines.

122.4 Equipment used for extrusion, compression molding and injection molding of plastics. The use of mold release products or lubricants is not exempt unless the VOC content of these materials is less than or equal to 1 percent, by weight, or unless the total facility-wide uncontrolled VOC emissions from the use of these materials are less than 150 lb/yr.

122.5 Die casting machines.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-123 Exemption, Liquid Storage and Loading Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

123.1 Storage tanks and storage vessels having a capacity of less than 260 gallons.

123.2 Tanks, vessels and pumping equipment used exclusively for the storage or dispensing of any aqueous solution which contains less than 1 percent (wt) organic compounds. Tanks and vessels storing the following materials are not exempt.

- 2.1 Sulfuric acid with an acid strength of more than 99.0% by weight.
- 2.2 Phosphoric acid with an acid strength of more than 99.0% by weight.
- 2.3 Nitric acid with an acid strength of more than 70.0% by weight.
- 2.4 Hydrochloric acid with an acid strength of more than 30.0% by weight.
- 2.5 Hydrofluoric acid with an acid strength of more than 30.0% by weight.
- 2.6 More than one liquid phase, where the top phase contains more than one percent VOC (wt).

123.3 Containers, reservoirs, tanks or loading equipment used exclusively for:

- 3.1 Storage or loading of liquefied gases.
- 3.2 Storage or loading of organic liquids or mixtures containing organic liquids; where the initial boiling point of the organics is greater than 302°F and exceeds the actual storage temperature by at least 180°F. This exemption does not apply to the storage or loading of asphalt or asphalt emulsion with a sulfur content equal to or greater than 0.5 wt%.
- 3.3 The storage or loading of petroleum oils with an ASTM D-93 (PMCC) flash point of 130°F or higher, when stored or loaded at a temperature at least 36°F below the flash point.
- 3.4 The storage or loading of lubricating oils.
- 3.5 The storage of fuel oils with a gravity of 40 API or lower and having a capacity of 10,000 gallons or less.
- 3.6 The storage or loading of liquid soaps, liquid detergents, tallow, or vegetable oils, waxes or wax emulsions.
- 3.7 The storage of asphalt or asphalt emulsion with a sulfur content of less than 0.5 wt%. This does not include the storage of asphalt cutback with hydrocarbons having an initial boiling point of less than 302°F.
- 3.8 The storage of wine, beer or other alcoholic beverages.
- 3.9 The storage of organic salts or solids in an aqueous solution or suspension, provided that no liquid hydrocarbon layer forms on top of the aqueous phase.
- 3.10 The storage or loading of fuel oils with a gravity of 25 API or lower.
- 3.11 The storage and/or transfer of an asphalt-water emulsion heated to 150°F or less.

123.4 Tank seal replacement. For any tank subject to Regulation 8, Rule 5, any new seal must comply with the applicable provisions of Regulation 8, Rule 5, and the District must receive written notification of the tank source number and seal type at least three days prior to the installation.

(Adopted 10/19/83; Amended 7/11/84; 7/17/91; 6/7/95; 5/17/00)

2-1-124 **Exemption, Semiconductor Manufacturing**: Semiconductor fabrication area(s) at a facility which complies with all of the following are exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

124.1 Net solvent usage is less than 20 gallons of VOC per year on a facility wide basis; or uncontrolled VOC emissions to the atmosphere resulting from the usage of solvent are less than 150 pounds per year of VOC on a facility wide basis, and

124.2 Maskant and/or coating usage is less than 30 gallons per year, on a facility wide basis; or uncontrolled VOC emissions from the application of maskant and coatings are less than 150 pounds per year on a facility wide basis.

(Adopted 10/19/83; Amended 1/9/85; 4/16/86; 7/17/91; 6/7/95; 10/20/99; 5/17/00)

2-1-125 **Exemption, Printed Circuit Board Manufacturing Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

125.1 Equipment used exclusively for:

1.1 Plating of printed circuit boards.

1.2 Buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding or turning of printed circuit boards.

1.3 Soldering. This section does not exempt fluxing and finger cleaning (see Section 2-1-118.4).

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-126 **Exemption, Testing Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

126.1 Equipment used for hydraulic or hydrostatic testing.

126.2 Bench scale laboratory equipment or processes used exclusively for chemical or physical analyses or experimentation, quality assurance and quality control testing, research and development, or similar bench scale equipment, excluding pilot plants.

126.3 Equipment used for inspection of metal products.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-127 **Exemption, Chemical Processing Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

127.1 Equipment used exclusively for the dyeing or stripping (bleaching) of textiles provided that only solutions containing less than one percent VOC (wt) are used.

127.2 Photographic process equipment by which an image is reproduced upon material sensitized to radiant energy.

127.3 Containers, reservoirs, or tanks used exclusively for electrolytic plating with, or electrolytic polishing of, or electrolytic stripping of the following metals: aluminum, brass, bronze, cadmium, copper, iron, nickel, tin, zinc and precious metals.

127.4 Containers, reservoirs, or tanks used exclusively for etching (not chemical milling), except where ammonia or ammonium-based etchants are used.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-128 **Exemption, Miscellaneous Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

128.1 Comfort air conditioning or comfort ventilating systems which are not designed to remove air contaminants generated by or released from specific units of equipment.

128.2 Refrigeration units except those used as, or in conjunction with, air pollution control equipment.

128.3 Vacuum producing devices in laboratory operations which are used exclusively in connection with other equipment which is exempted by this Rule, and vacuum producing devices which do not remove or convey air contaminants from another source.

128.4 Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers.

128.5 Natural draft hoods, natural draft stacks or natural draft ventilators.

128.6 Vacuum cleaning system used exclusively for industrial commercial or residential housekeeping purposes.

128.7 Equipment used to liquefy or separate oxygen, nitrogen or the rare gases from the air.

128.8 Equipment used exclusively to compress or hold dry natural gas, excluding drivers.

128.9 Equipment used exclusively for bonding lining to brake shoes.

128.10 Equipment used exclusively for the manufacture of water emulsions of waxes, greases or oils.

128.11 Brazing, soldering or welding equipment.

128.12 Pharmaceutical manufacturing equipment with annual VOC emissions less than 150 pounds per source. Material working and handling equipment such as mills, grinders, blenders, granulators, tablet presses, capsule fillers, packagers, and conveyors are only exempt if the source also processes less than 100 tons per year of pharmaceutical products.

128.13 Equipment used exclusively to blend or package cosmetics.

128.14 Any wastewater (oil-water) separator, as defined in Regulation 8, Rule 8, which processes less than 200 gallons per day of waste water containing organic liquids.

128.15 Exploratory drilling activities for methane recovery at waste disposal sites, for natural gas or for oil. Production wells for the above operations are not exempt.

128.16 Passive aeration of soil, only if:

16.1 The duration of the passive aeration operation will not exceed three months, and

16.2 The soil is not being used as a cover material at a landfill.

128.17 Ozone generators which produce less than 1 pound per day of ozone.

128.18 Any source or operation which exclusively uses consumer products regulated by the California Air Resources Board (California Code of Regulations Title 17, Article 2, Sections 94507-94517).

128.19 Any source or operation deemed by the APCO to be equivalent to a source or operation which is expressly exempted by Sections 2-1-113 through 128.

128.20 Wastewater pumping stations where no treatment is performed, excluding any drivers.

128.21 Modification, replacement, or addition of components that have only fugitive emissions during routine operation (e.g. valves, flanges, pumps, compressors, relief valves, process drains) at existing permitted equipment at petroleum refineries, chemical plants, bulk terminals or bulk plants, provided that:

21.1 the modification, replacement or addition of the components will not result in any increase in emissions of any source at the facility (other than the fugitive emissions from the components being modified, replaced or added) in such a manner as to result in a modification of such source as defined in Section 2-1-234 (e.g., through debottlenecking of a source);

21.2 the total allowable fugitive emissions from all additional components installed pursuant to this exemption at a given process unit during any consecutive twelve month period do not exceed 10 lb/day (or, for components that are not associated with a process unit, the total allowable fugitive emissions from all additional components installed at the facility that are not associated with a process unit during any twelve-month period do not exceed 10 lb/day), based on the maximum fugitive emissions rate allowed under District regulations;

21.3 the components installed satisfy the “typical control technology” listed in the BACT/TBACT Workbook;

21.4 the components meet applicable requirements of Regulation 8 rules; and

21.5 fugitive emissions from the components are included when calculating emissions from the equipment on which the components are installed for purposes of applying District regulations to that equipment (e.g., BACT and offsets requirements).

128.22 Fuel cells that use phosphoric acid, molten carbonate, proton exchange membrane, solid oxide or equivalent technologies.

128.23 Structure demolition that does not involve asbestos or asbestos containing materials.

(Adopted 10/19/83; Amended 7/16/86; 7/17/91; 6/7/95; 5/17/00; 11/15/00; 12/21/04)

Regulation 2-1-301

2-1-301 **Authority to Construct:** Any person who, after July, 1972, puts in place, builds, erects, installs, modifies, modernizes, alters or replaces any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, shall first secure written authorization from the APCO in the form of an authority to construct. Routine repairs, maintenance, or cyclic maintenance that includes replacement of components with identical components is not considered to be an alteration, modification or replacement for the purpose of this Section unless the APCO determines the changes to be non-routine. The use or operation of the source shall initiate the start-up period in accordance with Section 2-1-411.

(Amended 3/17/82; 10/19/83; 7/17/91; 5/17/00)

Regulation 2-1-302

2-1-302 **Permit to Operate:** Before any person, as described in Section 2-1-401, uses or operates any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, such person shall first secure written authorization from the APCO in the form of a permit to operate.

302.1 Permit to Operate, MFR: Any facility subject to the requirements of Regulation 2, Rule 6, Major Facility Review, shall comply with the permitting requirements included in that Rule in addition to securing a permit to operate under this Rule.

302.2 Permit to Operate, Accelerated Permitting Program: Unless subject to any of the provisions of Sections 2-1-316 through 319, a temporary permit to operate may be obtained to authorize operation of a new source or a modification or alteration of an existing source under this Section pending full review for the following categories of operation:

2.1 A new source or a modification of an existing source if the following conditions are satisfied:

1.1 The source will not have the potential to emit POC, NPOC, NOx, SO_2, $PM_{2.5}$, PM_{10}, or CO in an amount of 10 pounds or more on any day, determined without taking into account the effect of any abatement device or equipment; or the source has been pre-certified under Section 2-1-415; and

1.2 The source will not have the potential to emit toxic air contaminants in an amount that exceeds any of the trigger levels set forth in Table 2-5-1 of Regulation 2, Rule 5, determined without taking into account the effect of any abatement device or equipment; and

1.3 The source is not subject to the public notice requirements of Section 2-1-412.

2.2 An abatement device that is a replacement for an existing abatement device, provided that the replacement will not increase the potential to emit any regulated air pollutant from the abatement device and the source(s) whose emissions it abates.

2.3 An alteration of an existing source, as defined in Section 2-1-233.

An applicant seeking a permit for a new, modified or altered source that is in any of the preceding categories may apply for a temporary permit to operate under the Accelerated Permitting Program by submitting (i) a permit application form and source data form(s) properly filled out with all required information; (ii) payment of applicable fees (the minimum permit fee required to install and operate each source); (iii) a statement explaining which of the categories in subsections 2.1 through 2.3 above the source is in; (iv) a certification that the source meets all of the requirements of that category; (v) a certification that the source is not subject to Sections 2-1-316 through 2-1-319; and (vi) a certification that the applicant has reviewed all applicable New Source Performance Standards and has determined that the application will comply. The APCO shall issue a temporary Permit to Operate promptly upon determining that the application contains all of the elements required by (i)-(vi) of the preceding sentence. The owner or operator of the source may begin construction or operation of the source, or of the modification or alteration of the source, immediately upon receipt of the temporary Permit to Operate. The APCO shall complete a full review of the application and take final action in accordance with Section 2-1-408 within the time period provided for in that section. Any applicable offset requirements under Regulation 2, Rule 2, Sections 302 and 303 shall be satisfied before final permit issuance. The temporary Permit to Operate shall cease to be effective upon final action by the APCO under Section 2-1-408 (or if the permit application is canceled or withdrawn prior to such final action). During periods that the source is operating under the temporary Permit to Operate, the operator shall keep records sufficient to demonstrate that emissions do not exceed applicable qualifying levels for the Accelerated Permitting Program as set forth in subsections 2.1 through 2.3 above.

302.3 Permit to Operate, Temporary Operation: A temporary permit may be obtained to allow an operator to test equipment, processes, or new formulations. A temporary permit may also be obtained for a temporary source which replaces critical equipment during scheduled maintenance. The APCO may issue a non-renewable temporary Permit to Operate a temporary operation at any source, subject to the following:

3.1 The proposed operation will comply with all requirements of Regulation 1 and Regulations 5 through 12.

3.2 The permit shall expire 3 months after issuance.

3.3 The operator shall provide offsets, at a ratio of 1.15 to 1, for all increased emissions of NO_x, POC, SO_2, $PM_{2.5}$, and PM_{10} resulting from the use of the temporary permit.

3.4 The operator shall certify that the temporary operation is for one of the following purposes:

4.1 Equipment testing

4.2 Process testing, including new formulations

4.3 Temporary replacement of an existing permitted source with an identical or functionally equivalent source

3.5 The operator shall comply with the provisions of Regulation 2-2-301, except that the cost-effectiveness analysis shall consider the short duration of the operation.

(Amended 11/3/93; 6/7/95; 10/7/98; 11/15/00)

Regulation 2-1-316 through 2-1-319

2-1-316 New or Modified Sources of Toxic Air Contaminants or Hazardous Air Pollutants: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302.

316.1 If a new or modified source emits one or more toxic air contaminants in quantities that exceed the trigger levels listed in Table 2-5-1 of Regulation 2-5 and the source did not have a valid exemption from Regulation 2-1-302 when the source was constructed or modified, then the source shall be subject to the requirements of Sections 2-1-301 and 302, unless the owner or operator of the source can demonstrate to the satisfaction of the APCO that the source:

1.1 Will comply with the TBACT requirement of Regulation 2-5-301 (if applicable); and

1.2 Will comply with the project risk limits of Regulation 2-5-302 (if applicable).

316.2 If a new or modified source, or group of related sources in a proposed construction or modification will emit 2.5 or more tons per year of any single hazardous air pollutant or 6.25 or more tons per year of any combination of hazardous air pollutants, then the source or group of sources shall be subject to the requirements of Sections 2-1-301 and 302.

(Adopted 4/16/86; Amended 7/17/91;Renumbered and Amended 6/7/95;Amended 5/17/00; 6/15/05)

2-1-317 Public Nuisance Sources: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302. If any exempt source receives two or more public nuisance violations, under Regulation 1, Section 301 or Section 41700 of the California Health & Safety Code, within any consecutive 180-day period, then the source shall be subject to the requirements of Section 2-1-301 and 302. Such a source will be treated as loss of exemption source under Section 2-1-414, and will be subject to the annual permit to operate fee specified in Regulation 3. This section does not apply to a source that is exempt per section 2-1-113.

(Adopted 6/7/95; Amended 5/17/00)

2-1-318 Hazardous Substances: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302. If a new or modified source at a PSD Major Facility, as defined in Regulation 2, Rule 2, Section 220.3, emits the following air contaminants in excess of the quantities listed below, then it is subject to the requirements of Sections 2-1-301 and 302.

318.1 0.6 ton per year of lead,

318.2 0.007 ton per year of asbestos (excepting demolition, renovation, and waste disposal),

318.3 0.0004 ton per year of beryllium,

318.4 0.1 ton per year of mercury,

318.5 1 ton per year of vinyl chloride,

318.6 3 tons per year of fluorides,

318.7 7 tons per year of sulfuric acid mist, and

318.8 10 tons per year of reduced sulfur compounds (including hydrogen sulfide).

(Adopted 10/19/83; Renumbered and Amended 6/7/95; Amended 5/17/00)

2-1-319 Source Expressly Subject to Permitting Requirements: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any source meeting any of the following criteria shall be subject to the requirements of Section 2-1-302:

319.1 The emission rate of any regulated air pollutant from the source is greater than 5 tons per year, after abatement.

319.2 The source is subject to the requirements of Section 2-1-316, 317, or 318.

(Adopted May 17, 2000)

Regulation 2-5-301

2-5-301 Best Available Control Technology for Toxics (TBACT) Requirement: The applicant shall apply TBACT to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million (10^{-6} or 1.0E-6), and/or a chronic hazard index greater than 0.20.

(Amended December 7, 2016)

Regulation 2-5-302

2-5-302 Project Risk Requirement: The APCO shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project risk exceeds any of the following project risk limits:

302.1 a cancer risk of 10.0 in one million n (10 x 10-6 or 10E-6); or for a project located within an Overburdened Community as defined in Regulation 2-1-243 (other than a project at an Essential Public Service), a cancer risk of 6.0 in one million (6.0 x 10-6 or 6.0E-6);

302.2 a chronic hazard index of 1.0;

302.3 an acute hazard index of 1.0.

(Amended December 7, 2016; Amended December 15, 2021)

B. DATA FORM GUIDANCE

March 1, 2024

The following instructions are intended to assist permit applicants on the completion of Air District forms. Use blue or black ink to complete the forms. Click on the desired items below to find the instructions for each form: Note that on the various forms, that the terms facility (used on Permit Application Cover, Facility Creation, and Facility Contact forms), plant, company, or business (used on various data forms) are used synonymously.

FORMS (DOWNLOAD)	FORMS INSTRUCTIONS
Permit Application Cover Form	Permit Application Cover Form
Facility Creation Form	Facility Creation Form
Facility Contacts Form	Facility Contacts Form
A	A
C	C
CD	CD
F	F
FF	FF
G	G
ICE	ICE
P	P
HRA	HRA
S	S
SC	SC
SS	SS
T	T
Appendix H	Appendix H

FORM Permit Application Cover	ONE completed Form is required per permit application. The Application Cover form is required for all permit application requests, including but not limited to: ¬ New devices/operations including replacements ¬ Modify existing devices/operations ¬ Change permit condition If your application triggers CEQA, then the CEQA Worksheet is required.
DATA FORM FIELD	**SPECIFIC LINE INSTRUCTIONS**
Application Title	Provide a title that identifies this application.
Project Description	Enter a brief summary of the permit(s) being requested.
Facility Name	Enter name of Facility (company) who is requesting permit.
BAAQMD Facility ID	If you are an existing facility, fill the facility ID is available on your permit or invoice issued by BAAQMD. ¬ If this application is for a new facility (not currently permitted by BAAQMD), you must also submit a Facility Creation and Facility Contacts forms.
Application Contact	Fill out this section only if it is application contact is different than Owner or Operator contact(s). If Owner or Operator is to be application contact, mark the box indicating who is application contact. Note that all correspondence regarding this application will be sent to the indicated application contact person unless this section is not filled in. However, all issued permits will be sent to owner contact.
First Name	Enter first name of application contact.
Last Name	Enter last name of application contact.
Business Name of Contact	Enter the Business or Company Name of Application Contact if different from that of the Facility Name indicated in the Form.
Contact Title	Enter title of application contact.
Address	Enter mailing street address of application contact.
City	Enter city of application contact.
E-mail Address	Enter e-mail address of application contact.
Primary Phone	Enter primary telephone number of application contact.
Alternate Phone	Enter an alternate telephone of application contact, if available.
Fax Number	Enter fax number of application contact, if available.
Small Business & Green Business Certification	This section is optional. The questions refer to the facility that the permits will be issued to, not any third party filling out the forms on behalf of the facility. The Small Business questions does not apply to gas dispensing facilities.
Proximity to a School (K-12)	You are required to identify whether the devices/operations in the permit application (specifically the emission points/outlets) are within 1000 feet of the outer boundary of a kindergarten through 12th grade school. Suggested online places to find school locations are www.greatschools.net or school locator using Google Earth.
CEQA	Answer each question by marking Yes or No. If you indicated Yes to Part 6A, you would need to fill out page 2 of this form (CEQA Worksheet). Question 6B is to identify whether this application is a smaller part of a larger project that could trigger CEQA when considered as a whole.
Application Billing Contact	Fill out this section only if it is application contact is different than Owner or Operator or Billing contact(s). If Owner or Operator or Billing is to be application billing contact, mark the box indicating who is application billing contact. Note that all invoices regarding this application will be sent to the indicated application billing contact person unless this section is not filled in.
First Name	Enter first name of application billing contact.
Last Name	Enter last name of application billing contact.

FORM Permit Application Cover	ONE completed Form is required per permit application. The Application Cover form is required for all permit application requests, including but not limited to: ¬ New devices/operations including replacements ¬ Modify existing devices/operations ¬ Change permit condition If your application triggers CEQA, then the CEQA Worksheet is required.
DATA FORM FIELD	**SPECIFIC LINE INSTRUCTIONS**
Business Name of Contact	Enter the Business or Company Name of Application Billing Contact if different from that of the Facility Name indicated in the Form.
Contact Title	Enter title of application billing contact.
Address	Enter mailing street address of application billing contact.
City	Enter city of application billing contact.
E-mail Address	Enter e-mail address of application billing contact.
Primary Phone	Enter primary telephone number of application billing contact.
Alternate Phone	Enter an alternate telephone of application billing contact, if available.
Fax Number	Enter fax number of application billing contact, if available.
Certification/Signature	The person responsible for the information on this form should sign and complete this section of the form.

CEQA Worksheet	**SPECIFIC LINE INSTRUCTIONS**
CEQA Documentation	Provide a title that identifies this application.
Date of Document/Notice of Expected Date of Completion	If there is a approved or to be approved CEQA document (Environment Impact Report, Negative Declaration, etc.) prepared or to be prepared by the Lead Agency, please provide date of document or expected date of document.
Electronic Link to document, if available	Provide electronic link, if available, for copy of document.
Lead Agency Name	The Lead Agency is the primary authority to implement or approve a project, such as when it adopts air quality plans for the region, issues stationary source permits, or adopts rules and regulations
Lead Agency Contact Name	Enter Lead Agency Contact Name, if available.
Lead Agency Contact Phone	Enter Agency Contact Phone number, if available.
Lead Agency Contact E-mail Address, if available	Enter Lead Agency Contact E-mail Address, if available.
Related Projects	If the related projects were also submitted as separate BAAQMD permit applications, provide the Application number as it was assigned. The number was also provided on the Authority to Construct permit if it was issued.
Name of Related Prior or Current Project	If available, enter name of related project.
BAAQMD Application #, if available	If available, enter BAAQMD Application #.
Description of Related Project	If available, enter description of related project.
Certification/Signature	The person responsible for the information on this form should sign and complete this section of the form.

FORM Facility Creation	ONE completed Form is required per permit application.
Facility Name	Enter name of company requesting a permit, or exemption
Owning Entity	Enter name of a parent company, if applicable.
Type of Business	Check one box only.
Facility Physical Address/Location	Check box if a street address does not exist and submit map with location clearly marked on the map.

Street Address or Intersection or Nearest Street	Enter Address or nearest street intersection or nearest street if a street address does not exist.
Address Line 2 (optional)	Enter Suite #, mail stop, or additional postal information
City	Enter City where equipment or operations is to be located.
Zip	Enter zip code where equipment or operations is to be located.
Overburdened Community	Check box yes or no based on the physical location of the Facility. (https://www.baaqmd.gov/about-air-quality/interactive-data-maps)
NAICS Code	Use website URL on form to list, choose and enter the most applicable 6-digit code that describes the type of facility.
Name	Enter Name of Person Providing Form Information
Title	Enter Title of Certification Contact
Signature	Sign or electronically sign this document
Date	Enter Date of Submittal
Phone	Enter Phone Number of Certification Contact

FORM Facility Contacts	One completed Form is required per permit application.
Purpose	Check Box new facility or Update Information
Facility Name	Enter name of company requesting a permit update, or exemption
BAAQMD Facility ID	Enter Facility ID, Plant Number or Site Number or Leave Blank
Owner First Name	Enter Owner Contact First Name
Owner Last Name	Enter Owner Contact Last Name
Business Name of Contact	Enter Contact Business Name if different From Facility
Contact Title	Enter Owner Contact Title
Address Line 1	Enter Owner Contact Address
Address Line 2	Enter Suite #, mail stop, or additional postal information
City	Enter City for Owner Contact Address
State	Enter State for Owner Contact
Zip Code	Enter Zip for Owner Contact Address
E-mail address	Enter Email for Owner Contact
Primary Phone	Enter primary Phone Number for Owner Contact
Alternative Phone	Enter Alternative Phone Number for Owner Contact
Fax number	Enter Fax Number for Owner Contact
Operator Contact	Check Box if the Operator Contact is the Same as the Owner Contact
Business Name of Contact	Enter if Different from the Facility Name
First Name	Enter Operator Contact First Name
Last Name	Enter Operator Contact Last Name
Address Line 1	Enter Operator Contact Address
Address Line 2	Enter Suite #, mail stop, or additional postal information
City	Enter City for Operator Contact Address
State	Enter State for Operator Contact
Zip Code	Enter Zip for Operator Contact Address
E-mail Address	Enter Email for Operator Contact
Primary Phone	Enter primary Phone Number for Operator Contact
Alternative Phone	Enter Alternative Phone Number for Operator Contact
Fax Number	Enter Fax Number for Operator Contact
Billing Contact	Check Box if the Billing Contact is the Same as the Owner and/or Operator Contact
First Name	Enter Billing Contact First Name
Last Name	Enter Billing Contact Last Name
Address Line 1	Enter Billing Contact Address
Address Line 2	Enter Suite #, mail stop, or additional postal information
City	Enter City for Billing Contact Address
State	Enter State for Billing Contact
Zip Code	Enter Zip for Billing Contact Address
E-mail Address	Enter Email for Billing Contact
Primary Phone	Enter primary Phone Number for Billing Contact
Alternative Phone	Enter Alternative Phone Number for Billing Contact
Fax Number	Enter Fax Number for Billing Contact
Name	Enter Name of Person Providing Form Information
Title	Enter Title of Certification Contact
Signature	Sign or electronically sign this document
Date	Enter Date of Submittal
Phone	Enter Phone Number of Certification Contact

FORM A	ABATEMENT DEVICE	This form should be completed for each abatement device, which is used to abate the emissions of a source that requires a permit. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of the page.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
Line 1	Business Name	Enter name of business.
	Plant No.	Enter plant number, if known.
Line 2	Name or Description	Enter name or description of abatement device.
	Abatement Device	Enter abatement device number. The applicant may number the abatement device any number of their choosing as long as it is entirely numerical. If this field is left blank, the Air District will assign an abatement device number.
Line 3	Make, Model, and Rated Capacity	Enter make, model, and rated capacity of abatement device.
Line 4.	Abatement Device Code	Using the table on the second page of Form A, enter the abatement device codes.
	Date of Initial Operation	Enter Date of Initial Operation. If abatement device not yet in operation, then enter desired start-up date or ASAP. For dates, use the format MM/DD/YYYY.
Line 5.	With regard to air pollutant flow into this abatement device, what source(s) and/or abatement device(s) are immediately upstream?	Enter the source(s) and/or abatement device(s) that are to be abated by this abatement device.
Line 6.	Typical gas temperature at inlet (°F)	Enter the typical inlet temperature into the abatement device. Provide your best guess or estimate on this value.
Line 7 through 13	Weight Percent Reduction & Basis Code	Enter your best guess or estimate of the abatement efficiency of the abatement device. This field should be completed or else this abatement device is assumed to have no abatement efficiency. Make sure to provide documentation from the manufacturer to support the abatement device indicated.
Line 14	Check box if this Abatement Device burns fuel; complete lines 1, 2, and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.	Check the box, only if this abatement device burns fuel. If this box is checked, make sure to complete Form C and complete lines 1, 2, and 15 through 36 (using the same abatement device number indicated in Line 2 above) and attach this Form A with it.
Line 15	With regard to air pollutant flow from this abatement device, what source(s), abatement device(s) and/or emission point(s) are immediately downstream?	Enter the source(s), abatement device(s), and/or emission points that this abatement devices exhaust to.

FORM C	Fuel Combustion Source	This form should be completed for each fuel combustion source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of the page.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
1	Company Name	Enter name of business.
	Plant No.	Enter plant number, if known.
	Source No.	Enter source number.
2	Equipment Name & Number, or Description	Enter Equipment Name and Model, or Description of Fuel Combustion Source.
3	Make, Model	Enter the make and model of the equipment.
4	Date of modification or initial operation	Enter date of the modification or initial operation of the source. If unknown, leave blank.
5	SIC No.	Enter Standard Industrial Code.
7.	Equipment type	Indicate by checking the box what the equipment type. (Check only one item.)
8	Overfire air?	Indicate yes or no to this question. If yes, indicate the percent of overfired air.
9	Fuel gas recirculation?	Indicate yes or no to this question. If yes, indicate the percent of fuel gas recirculation.
10	Air preheat?	Indicate yes or no to this question.
11	Low NOx burners?	Indicate yes or no to this question.
12	Maximum flame temperature	Enter the maximum flame temperature in °F.
13	Combustion products	Enter the exhaust wet gas flowrate in acfm and the temperature in °F.
14	Typical operating time	Enter the operating hours per day, days per week, and weeks per year.
15	Typical % of total annual usage (%)	Enter the percentage of usage between December through February, March through May, June through August, and September through November. The range of acceptable percentages is between 0 and 25.
16	With regard to air pollutant flow into this source, what source(s), abatement device(s) and/or emission points are immediately downstream?	Enter the source(s), abatement device(s) and/or emission points that are to be vented from this source.
	SECTION A	Complete one line in Section A for each fuel used. Please use the units at the bottom of each table. N/A means "Not Applicable"
	SECTION B	Section B is OPTIONAL.

FORM CD	COATER DATA WORKSHEET	This form should be completed for each coating source or grouping of coating sources. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
1	Business Name	Enter name of business.
2	Make, Model, and Rated Capacity of Equipment	Enter make, model, and rated capacity of equipment.
3	Year equipment was installed	Enter date equipment was installed. If not yet installed, indicate so.
4	Typical operating time	Enter the operating hours per day, days per week, and weeks per year.
5	Description of typical products coated	Enter description of typical products coated.
6	Items Coated	Indicate by checking boxes whether metal, plastic, or wood is coated. Check all that apply.
7 through 11	Type of Coater	Indicate by checking box whether the source is a Spray Booth, Roller Coater, Flow Coater, Dipping operation, or other. If other, fill in the blank to indicate what other is.
12 through 17	Spraying Method	Indicate by checking box whether the spraying method is air-atomized, air-assisted, airless, electrostatic (air atomized, airless, disc), HVLP, or other. If other, fill in the blanks to indicate what others is.
18	Drying Method – Air Dried	If the drying method is air dried, check the box and skip lines 19 and 20.
19.	Drying/Curing Oven	
	Electric/Infrared	Enter the make, model, and BTU/hr rating, if Electric/Infrared Oven is used.
	Gas fired	Enter the make, model, and BTU/hr rating, if Gas fired oven is used.
20	If more than one oven is associated with this coating source, please indicate how many, and provide a description for each	Fill in this blank, if applicable.
	Coating Usage Table	List the names, makers, and product codes of your most commonly used coatings. Please estimate the maximum annual use of each coating as applied (coating + thinner) in gallons. In the next column, enter your normal mix ratio in parts paint to parts thinner. And the VOC Content (lb/gal), if known. If you need more space, please continue on a sheet of paper. Provide copies of the Material Safety Data Sheets for these listed coatings and thinners.
	Total maximum usage of all coatings (gal/yr)	Enter the total number of gallons of all paints used in one year in this blank space below as an estimate your maximum annual coating usage. Your permit will be restricted to this level, so you may want to overestimate to allow for some growth.
	Maximum cleanup solvent use (gal/yr)	Estimate the maximum amount of solvent you use to clean your coating equipment. Provide copies of the Material Safety Data Sheets for these listed cleanup solvent.
	Type of cleanup solvent used	Enter the type of cleanup solvent used. Provide copies of the Material Safety Data Sheets for these listed cleanup solvent.

FORM F	Semiconductor Manufacturing Area	This form should be completed for each semiconductor manufacturing operation (one cleanroom environment). Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.

1. Complete Lines 1, 2, 3, 5, and 6 of Data Form F.
2. Add Acetone usages indicated in Part A, Section 1 (Solvent Sinks), Section 2 (Solvent Spray Stations), Section 3 (Solvent Vapor Stations), and Section 4 (Wipe Cleaning Operation) together and input that quantity on the Acetone blank on Data Form F.
3. Repeat Step 1 for Butyl Acetate, Chloroflurocarbons, Ethyl Acetate, Ethylene Glycol, Hexamethyldisilazane, Isopropyl Alcohol (IPA), Methanol, Methyl Ethyl Ketone (MEK), Methylene Chloride, Trichloroethane, Trichloroethylene, Toluene, Xylene, and Phenol.
4. Add the usages of Solvent Mixtures indicated in Part A, Section 1 (Solvent Sinks) and Section 2 (Solvent Spray Stations) together and input that quantity on the Stripper blank on Data Form F (no trade names or material code need be specified).
5. Add the usages of Solvent Mixtures indicated in Part A, Section 3 (Solvent Vapor Stations) and Section 4 (Wipe Cleaning Operations) together and input that quantity on the Other blank on Data Form F (no material code need be specified).
6. Transpose all data from Part B, Section 1 (Coating Operations) to Maskant # 1, 2, and/or 3 blanks on Data Form F. Use the Material Safety Data Sheets to complete the composition blanks of Data Form F.
7. If Solvent-Based Developer usage is indicated, check “negative” for Photoresist Operations in Data Form F.
8. If no Solvent-Based Developer usage is indicated, check “positive” for Photoresist Operations in Data Form F.
9. Transpose all data from Part B, Section 2 (Solvent-Based Developer) to Developer # 1, 2, and/or 3 blanks on Data Form F. Use the Material Safety Data Sheets to complete the composition blanks of Data Form F.
10. Transpose Ammonia usage from Part C, Section 1 (Inorganic Liquids) to Aqueous Ammonia blank in Data Form F.
11. Transpose Hydrochloric Acid usage from Part C, Section 1 (Inorganic Liquids) to Aqueous Hydrochloric blank in Data Form F.
12. Transpose Hydrofluoric Acid usage from Part C, Section 1 (Inorganic Liquids) to Aqueous Hydrofluoric Acid blank in Data Form F.
13. Transpose Nitric Acid usage from Part C, Section 1 (Inorganic Liquids) to Nitric Acid usage blank in Data Form F.
14. Transpose Arsine usage from Part C, Section 2 (Organic and/or Inorganic Gases) to Arsine usage blank in Data Form F.
15. Transpose Phosphine usage from Part C, Section 2 (Organic and/or Inorganic Gases) to Phosphine usage blank in Data Form F.
16. Add remaining gases (other than Arsine and Phospine) usages indicated in Part C, Section 2 (Organic and/or Inorganic Gases) together and input that quantity on the Other Dopant gases blank in Data Form F.
17. Add all precursor solvents and solvent mixtures indicated in Part B, Section 3 (Other Miscellaneous Solvent Usage) together and input to the Other Organics (precursor) blank on Data Form F.
18. Add all non-precursor solvents and solvent mixtures indicated in Part B, Section 3 (Other Miscellaneous Solvent Usage) together and input to the Other Organics (non-precursor) blank on Data Form F.

FORM FF	Semiconductor Manufacturing Operations	This form should be completed for each semiconductor manufacturing operation (one cleanroom environment). Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
	Plant No.	Enter plant number, if known.
	Business Name	Enter name of business.
	Source No.	Enter source number.
	Source Description	Enter source description.
	Initial Date of Operation	Enter date of initial operation of equipment. If source is not yet in operation, indicate desired startup date or "ASAP" (as soon as possible). Only a proper date such as 05/25/2005 can be used. A date such as late 1996 should be changed to 11/1/1996.
Part A – Solvent Cleaning Operations	Solvent Sinks Solvent Spray Stations Solvent Vapor Stations Wipe Cleaning Operations	Maximum annual throughput is the amount of material that will appear as a permit condition limit. The usage limit should be set high enough so that it is not likely to be exceeded while taking into consideration Air District BACT, offset, and toxics requirements. Enter material code for type of solvent, if known. Make sure to include Material Safety Data Sheets for solvent mixtures.
Part B – Coating Operations	Photoresist Solvent-Based Developer Other Miscellaneous Solvent Usage	Maximum annual throughput is the amount of material that will appear as a permit condition limit. The usage limit should be set high enough so that it is not likely to be exceeded while taking into consideration Air District BACT, offset, and toxics requirements. Enter material code for type of solvent, if known. Make sure to include Material Safety Data Sheets for compounds.
Part C – Other Operations Involving Materials That Are Toxic	Inorganic Liquids Organic and/or Inorganic Gases	Maximum annual throughput is the amount of material that will appear as a permit condition limit. The usage limit should be set high enough so that it is not likely to be exceeded while taking into consideration Air District BACT, offset, and toxics requirements. Enter material code for type of solvent, if known.
	Compliance Determination Worksheet	Completion required for those sections that exist in fab area source.

FORM G	General Air Pollution Source	This form should be completed for each source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of the page.
LINE #	DATA FORM FIELD	SPECIFIC LINE INSTRUCTIONS
1	Business Name	Enter name of business.
	Plant No.	Enter plant number, if known.
2	SIC No.	Enter Standard Industrial Code.
	Date of Initial Operation (new)	Enter date of initial operation of equipment. If source is not yet in operation, indicate desired startup date or "ASAP" (as soon as possible).
3	Name or Description	Enter name or description of source.
	Source No.	Enter source number. If this is a new source, the applicant may select a number of their choosing. If this is for a modification of an existing source, write in the assigned source number.
4	Make, Model, and Rated Capacity of Equipment	Enter make, model, and rated capacity of equipment.
5	Process Code	Enter Process Code (see Tables G-1 through G-7).
	Material Code	Enter Material Code.
	Usage Unit	Enter usage unit (see Material Code table for usage unit).
6	Total throughput, last 12 months	Enter MAXIMUM projected, annual total throughput in the usage unit indicated in Line 5.
	Maximum operating rate	Enter the MAXIMUM operating rate per usage unit indicated in Line 5.
7	Typical % of total annual usage (%)	Enter the percentage of usage between December through February, March through May, June through August, and September through November. The range of acceptable percentages is between 0 and 25.
8	Typical operating time	Enter the operating hours per day, days per week, and weeks per year.
9	For batch or cyclic processes	If applicable, enter the minutes per cycle and the minutes between cycles.
10	Exhaust gases from source	If available, enter the exhaust wet gas flowrate in cubic feet per minute and the flowrate temperature.
	Approximate water vapor content	If available, enter the volume % of water vapor content.
	EMISSION FACTORS	If known (by applicant), enter the emission factor and basis codes (see second page of G form for basis codes) for the pollutant, if it is emitted from the source. DO NOT CHECK THE BOX and enter all emission factors prior to any abatement.
11	Particulate	
12	Organics	
13	Nitrogen Oxides (as NO_2)	
14	Sulfur Dioxide	
15	Carbon Monoxide	
16	Other	If applicable, fill in what Other is.
17	Other	If applicable, fill in what Other is.
18	With regard to air pollutant flow into this source, what source(s), abatement device(s) and/or emission points are immediately downstream?	Enter the source(s), abatement device(s) and/or emission points that are to be vented from this source.

FORM ICE	Internal Combustion Engines	This form should be completed for each internal combustion engine. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 2 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
1	SUMMARY	Check the box that applies to the engine: New Construction – engine installed or to be installed on or after September 1, 2001; Modification – changes to engine which already has an Air District permit; Loss of Exemption – engine installed before September 1, 2001.
	Company Name	Enter name of business.
	Plant No.	Enter plant number, if known.
	Source Description	Enter source description.
	Source No.	Enter source number.
	Initial Date of Operation	Enter date of initial operation of equipment. If source is not yet in operation, indicate desired startup date or "ASAP" (as soon as possible). Only a proper date such as 05/25/2005 can be used. A date such as late 1996 should be changed to 11/1/1996.
	Operating Schedule	Should give the total number of hours allowed for testing. For example, 20 hours could be represented as 1 hr per day, 1 day per week, 20 weeks per year.
2	ENGINE INFORMATION	Check the box if the engine is portable as defined by Regulation 2-1-413.
	Engine Type	Check the box that applies. 4 cycle is the same as 4 stroke. Most engines are 4 stroke but there are a small number of 2 stroke in use.
	Engine Manufacturer	Enter the engine manufacturer and not the generator set manufacturer.
	EPA/CARB Engine Family Name	Should be entered for any engine later than the year 2000. Could be found on the ARB website (https://www.arb.ca.gov/msprog/offroad/cert/cert.php).
	Engine Displacement	Enter the engine displacement in cubic inches.
	Maximum rated output (bhp)	Enter the maximum rated output in brake horsepower. The engine displacement in cubic inches is greater than the maximum rated output in bhp.
	Typical load as % of bhp rating	Enter typical load as percentage of brake horsepower.
	Is this an emergency/standby engine?	Check the box that applies.
	Certification	Check the box that applies. If "None" is checked, please further check the box that applies. In general, diesel engines are lean-burn.
	Primary Use	Check the box that applies. If "Other" is checked, please fill out blank with what the "Other" is.
3.	ABATEMENT DEVICE INFORMATION	Complete this section only if the engine exhausts to an add-on abatement device. Check the box if the engine has more than one add-on abatement device and complete a separate Form A for the additional abatement devices.

FORM ICE	Internal Combustion Engines	This form should be completed for each internal combustion engine. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 2 of this two-page form.
	Abatement device number	Enter abatement device number. The applicant may number the abatement device any number of their choosing as long as it is entirely numerical. If this field is left blank, the Air District will assign an abatement device number.
	Device type	Check the box that applies. If "Other" is checked, please fill out blank with what the "Other" is.
	Make, Model, and Rated Capacity	Enter make, model, and rated capacity of abatement device.
	Abatement device control efficiencies at typical operation	Fill in with known data. Use the basis codes listed. In unknown, leave blank.
4	EMISSION POINT/STACK INFORMATION	Check the box if the engine has more than one stack or has a continuous pollutant emission monitor and complete a separate Form P for the additional stacks.
	Emission point number	Enter emission point number, if known. Check box that applies if it is a new or existing emission point. An existing emission point is that which the information is already been processed in a prior permit application.
	Stack outlet height from ground level	Enter outlet height from ground level in feet.
	Diameter of stack outlet or Outlet cross-section area	Enter diameter of stack outlet in feet or outlet cross – section area in square inches.
	Direction of outlet	Check box that applies to indicate whether outlet direction is horizontal or vertical.
	Exhaust rate at typical operation or Exhaust temperature at typical operation	Enter exhaust rate at typical operation in actual cubic feet per minute.
5	RISK ASSESSMENT INFORMATION	Complete this section even if a health risk assessment may not be required.
	Distance from engine to the property line of the nearest residence	Enter distance from engine to the property line of the nearest residence in feet or check box if greater than one mile.
	Distance from engine to the property line of the nearest school	Enter distance from engine to the property line of the nearest school in feet or check box if greater than 1000 feet.
	Describe the nearest non-residential, non-school site	Check box that applies. If "Other", make sure to explain what "Other" is.
	Distance from engine to the property line of the nearest non-residential, non-school site	Enter distance from engine to the property line of the nearest non-residential non-school site in feet or check box if greater than one mile.
6	FUEL DATA	
	Fuel Code	Enter the fuel code: Diesel Oil (98) Fuel Oil No. 2 (392) Bio Diesel B100 (815) Bio Diesel B20 Blend (816) Gasoline (551) Natural Gas (189) Landfill Gas (511) Digester Gas (493) Liquid Petroleum Gas (LPG) (160)

FORM ICE	Internal Combustion Engines	This form should be completed for each internal combustion engine. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 2 of this two-page form.
	Name	Enter the name of the fuel.
	Maximum Fuel Usage	Enter the maximum fuel usage. Maximum fuel use rate units: gallons/hr for liquid fuels and SCF/hr for gaseous fuel. SCF = standard cubic foot
	Typical Heat Content	Enter heat content and circle the units. If you are using diesel or natural gas, you may skip this entry. Heat content units: BTU/gallon for liquid fuels, BTU/SCF for gaseous fuels.
	Sulfur Content	Enter sulfur content of fuel. If you are using diesel or natural gas, you may skip this entry. Sulfur content units: weight % for liquid fuels, ppmv for gaseous fuels. (ppmv = parts per million by volume)
	Emission Factors	Enter emission factors in grams/brakehp-hr, lb/gal, lb/therm, or lb/SCF.
7	CERTIFICATION	Sign certification after reviewing statement.

FORM HRA	REQUEST OF INFORMATION Risk Screen Analysis	This form should be completed for each source that emits a Toxic Air Contaminant(s) [or for a group of sources that exhaust through a common volume source). You must provide a plot plan (drawn to scale, if possible) and a local map (aerial photos are recommended, which clearly show the location of your site, the source(s), abatement devices, property lines, and any surrounding buildings within 300 feet of each source or abatement device, facility boundaries, and zoning of the surrounding areas out to 1,500 feet beyond the property line. Have numbers for each building on the map. A good source of free aerial photos can be found at Google Maps [Enter the plant address at the "Search the map" box and click on the "Satellite" box, then press on the [Search Map] button.]
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
	Plant Name	Enter name of business.
	Plant No.	Enter plant number, if known.
	Source Description	Enter description of source.
	Source Number	Enter source number, if known.
	Emission Point	Enter emission point, if known.
SECTION A		
1	Does the source exhaust at clearly defined emission point; i.e., a stack or exhaust pipe?	Answer the questions by checking the appropriate box. If the answer is NO, you have finished Section A (the remaining questions in Section A do not apply), go on to Section B.
2-8		If the answer to Line 1 was YES, answer the remaining questions by checking the appropriate boxes or filling the blanks with the answer requested. After completing Line 8, go on to Section B.
SECTION B		
1	Is the emission source located within a building?	Answer the question by checking the appropriate box. If the answer is NO, you have finished Section B (the remaining questions in Section B do not apply), go on to Section C.
2-3		If the answer to Line 1 was YES, answer the remaining questions by checking the appropriate boxes or filling the blanks with the answer requested. After completing Line 3, go on to Section C.
SECTION C		Provide building dimensions. Use Line B1 only for building with source/stack on the roof or with fugitive emissions inside building. Use Lines B2-B9 for buildings within 300 feet which are surrounding the source location. Distances and direction are optional, IF map and/or aerial photo are adequately labeled with the locations of buildings. Make sure to check which units (in feet or in meters). Provide comments in the blank provided for any details that need additional clarification (i.e., list buildings that are co-occupied by your employees and other workers, residents, students, etc.). After completing this section, go on to Section D.

FORM HRA	REQUEST OF INFORMATION Risk Screen Analysis	This form should be completed for each source that emits a Toxic Air Contaminant(s) [or for a group of sources that exhaust through a common volume source). You must provide a plot plan (drawn to scale, if possible) and a local map (aerial photos are recommended, which clearly show the location of your site, the source(s), abatement devices, property lines, and any surrounding buildings within 300 feet of each source or abatement device, facility boundaries, and zoning of the surrounding areas out to 1,500 feet beyond the property line. Have numbers for each building on the map. A good source of free aerial photos can be found at Google Maps [Enter the plant address at the "Search the map" box and click on the "Satellite" box, then press on the [Search Map] button.]
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
SECTION D		Answer the remaining questions by checking the appropriate boxes or filling the blanks with the answer requested. Indicate on maps or aerial photos the residential and nonresidential areas surrounding the facility.

FORM HRA	Health Risk Assessment	This form should be completed for each source that emits a Toxic Air Contaminant(s) [or for a group of sources that exhaust through a common volume source). You must provide a plot plan (drawn to scale, if possible) and a local map (aerial photos are recommended, which clearly show the location of your site, the source(s), abatement devices, property lines, and any surrounding buildings within 300 feet of each source or abatement device, facility boundaries, and zoning of the surrounding areas out to 1,500 feet beyond the property line. Have numbers for each building on the map. A good source of free aerial photos can be found at Google Maps [Enter the plant address at the "Search the map" box and click on the "Satellite" box, then press on the [Search Map] button.]
Section 1	Facility Name	Enter the Name of the Facility
	BAAQMD Facility ID	Leave Blank for a New facility or Enter Facility ID, or Plant Number or Site Number for an existing facility
Section 2	Area Map	Check Yes and attach map or confirm map is being submitted with the application package.
Section 3	Building Information	Confirm measurement units submitted are in either Feet or Meters.
	Building Number	Choose a number to identify a specific building on the Map Submittal. One for each Building within a 1500 Ft radius around the Facility.
	Building Name	Choose a named to identify a specific building on the Map Submittal.
	Height	Enter the Height of the specific building
	Width	Enter the Width of the specific building
	Length	Enter the Length of the specific building
	Type of Occupants	Choose from drop down choices one of the following: Employees, Other Workers, Residents, Students, Mixed Use, or No Occupants
Section 4	BAAQMD Device ID	Enter for an Existing Device or Leave Blank if the Device is New.
	Device Name	Enter the Name of the Device.
	Location	Enter the location of the Device.
	Building #	Enter the Building Number from the map submittal. Leave blank if source is located outside.
Section 5	Confidential Information	Determine if this form contains confidential information and provide and attach a separate statement why this form needs to be confidential.
	Name	Enter Name of Person Providing Form Information
	Title	Enter Title of Certification Contact
	Signature	Sign or electronically sign this document
	Date	Enter Date of Submittal
	Phone	Enter Phone Number of Certification Contact

FORM P	Emission Point	This form should be completed for each emission point. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of the page of this one-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
	Business Name	Enter name of business.
	Plant No.	Enter plant number, if known.
	Emission Point No.	Enter emission point number, if known.
	With regard to air pollutant flow into this emission point, what source(s) and/or abatement device(s) are immediately upstream?	Enter the source(s) and/or abatement device(s) that are to be vented to this emission point.
	Exit cross section area	Enter the cross-sectional area in square feet.
	Height above grade.	Enter height above grade in feet.
	Effluent Flow From Stack	
	Actual Wet Gas Flowrate	Enter the actual wet gas flow rate in cubic feet per minute in typical and maximum operating conditions.
	Percent Water Vapor	Enter percent water vapor in typical and maximum operating conditions.
	Temperature	Enter temperature in typical and maximum operating conditions.
	If this stack is equipped to measure (monitor) the emissions of air pollutants	Only answer the next two questions, if the stack is equipped with a monitor to measure the emissions of air pollutants.
	Is monitoring continuous?	Answer yes or no, if monitoring is continuous.
	What pollutants are monitored?	Indicate what pollutants are monitored.

FORM S	Surface Coating/Solvent Source	This form should be completed for each solvent emitting source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
1	Business Name	Enter name of business.
	Plant No.	Enter plant number, if known.
2	SIC No.	Enter Standard Industrial Code.
	Date of Initial Operation (new)	Enter date of initial operation of equipment. If source is not yet in operation, indicate desired startup date or "ASAP" (as soon as possible).
	Date of start-up (modification)	Enter date of start-up modification.
3	Name or Description	Enter name or description of source.
	Source No.	Enter source number. If this is a new source, the applicant may select a number of their choosing. If this is for a modification of an existing source, write in the assigned source number.
4	Make, Model, and Rated Capacity of Equipment	Enter make, model, and rated capacity of equipment.
5	Operating time	Enter the operating hours per day, days per week, and weeks per year.
6	Typical % of total annual usage (%)	Enter the percentage of usage between December through February, March through May, June through August, and September through November. The range of acceptable percentages is between 0 and 25.
7	Solvent evaporation emissions at this source vented directly to:	Indicate by the checking the applicable box, whether the source is vented to the atmosphere (not through a stack), sources, abatement devices, or emission points.
	Parts A, B, C, D, E, F, G	Indicating by checking ALL applicable box(es) , whether the source is one or more of the following: Part A – coating and graphics art operation; Part B – coating dryer; Part C – solvent cleaner; Part D – graphics art operation; Part E – fiberglass operation; Part F – manufacturer of coatings, solvents, etc; Part G – other solvent uses.
Part A	Surface Coater	The applicant may leave this area blank, as long as they have completed a Form CD and provided the material safety data sheets (MSDS) of the coatings and cleanup solvents indicated in Form CD. The Air District will complete this part for the applicant as long as Form CD and the MSDS's have been provided.
8	Coater type	Indicate by checking applicable type of coater source.
9	If sprayer, check method	Indicate by checking method, the type of sprayer used.
10	Does this coater apply only "complying coatings as defined in BAAQMD Regulation 8?	The applicant may leave this question unanswered because this question is outdated and no longer applies.
11	Of the total solvent in the coating(s), what percent evaporates at this source (applicator)? (%)	Enter the total percentage of total solvent emissions evaporated at this source.

FORM S	Surface Coating/Solvent Source	This form should be completed for each solvent emitting source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
12	Check box, if after application, heat is used for drying, baking, curing or polymerizing the coating.	Check box, if applicable.
13	Solvent used for cleanup at this source: Total, last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual solvent usage quantity that the applicant would be willing to accept as a potential solvent usage limit.
Line 14 through 22	Note specific instructions:	Lines 14 through 22: These are intended to be "as applied". So the material should include reducers, catalyst or other coating materials mixed to create the coating that comes onto a substrate (i.e., item coated). Note that the elements of line 14 through 22 may not come directly from the Safety Data Sheet of the coating.
14	Material code for coating or ink	Enter material code for type of coating applied at this source.
15	Total coating applied, last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual coating usage quantity that the applicant would be willing to accept as a potential coating usage limit.
16	Percent solids, by volume (%)	Enter volume percentage of solids in the coating.
17	Percent organic solvent, by volume (%)	Enter the volume percentage of solvent in the coating. The solvent % by volume should NOT include water. So the sum of % solvent + % solids may not necessary add up to 100% if it's a water-borne coating.
18	Density of organic solvent (lb/gal)	Enter density of solvent in the coating. Note that this is NOT the density of the coating. The VOC Content of the coating as applied is roughly equivalent to the Organic Solvent Content by volume (Line 17) multiplied by the Density of the Organic Solvent (Line 18).
19	Largest component of organic solvent (%)	Enter the percentage of the largest component of organic solvent in the coating. Only component that are organic liquids should be listed.
20	Material code of largest component	Enter material code for largest solvent component.
21	2nd largest component (%)	Enter the percentage of the 2nd largest component of organic solvent in the coating. Only component that are organic liquids should be listed
22	Material code of 2nd largest component	Enter material code for 2nd largest solvent component. Note that the remainder of the organic components (after the first two components) is given material code 201.
Part B	Coating Dryer	
23	Operation	Indicate by checking box, whether the coating dryer is a hot air/gas dryer, coating oven, curing oven, infrared, or other type. If other type, fill in what type of other it is.
24	Temperature (°F)	Indicate temperature of coating dryer.
	Oxygen present	Indicate whether oxygen is present? Check yes or no box.
	Which coating applicator(s)?	Indicate which coating applicator is drying.

FORM S	Surface Coating/Solvent Source	This form should be completed for each solvent emitting source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
Part C	Solvent Cleaner	
25	Operation	Indicate by checking the box, whether the solvent cleaner is one of the following: Degreaser – cold cleaner, vapor or conveyorized degreaser; Dry Cleaning – used for dry cleaning; OR Other – used for wipe cleaning and other operations. Make sure to fill out blank to indicate what the other operation is.
26	Net solvent usage, total last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual solvent usage quantity that the applicant would be willing to accept as a potential solvent usage limit.
27	Is all solvent used in this source "complying" as defined in BAAQMD Regulation 8?	The applicant may leave this question unanswered because this question is outdated and no longer applies.
28	Solvent used most:	
	Material Code	Enter material code for solvent used most.
	Density (lb/gal)	Enter density for solvent used most.
	Percent of Total Used (%)	Enter percentage of solvent that this solvent represents in the total of all solvents used.
29	Solvent used 2nd most	
	Material Code	Enter material code for solvent used 2nd most.
	Density (lb/gal)	Enter density for solvent used 2nd most.
	Percent of Total Used (%)	Enter percentage of solvent that this solvent represents in the total of all solvents used.
Part D	Printing Press	
30	Type	Indicate by checking the box whether the printing press is a flexographic, rotogravure, letterpress, lithographic, silk screen, or other. If other, fill out the blank to indicate what other is.
31	Total ink used, last 12 months (in lb or gal or tons)	Regardless of what the form states, the blank should be filled with the maximum, annual ink usage quantity that the applicant would be willing to accept as a potential ink usage limit.
32	Total solvent used for cleanup, etc., last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual cleanup solvent usage quantity that the applicant would be willing to accept as a potential solvent usage limit.
	Material Code	Enter material code for solvent used.
Part E	Fiberglass Operation	
33	Operation	Check the box to indicate whether it is a fiberglass dip, layup, molding, spray (chopper gun), spray (other), or other type of operation. If other, fill out the blank to indicate what other is.
34	Specify resin used	Enter the resin name.
	Total volume used, last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual resin usage quantity that the applicant would be willing to accept as a potential resin usage limit.
	Volume percent styrene (%)	Enter the percent styrene in the resin.

FORM S	Surface Coating/Solvent Source	This form should be completed for each solvent emitting source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1 of this two-page form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
	Volume percent other volatile organics (%)	Enter the percent other volatile organics in the resin.
35	Specify Catalyst used	Enter the catalyst name.
	Total volume used, last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual catalyst usage quantity that the applicant would be willing to accept as a potential catalyst usage limit.
36	Total solvent used for cleanup, etc., last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual cleanup solvent usage quantity that the applicant would be willing to accept as a potential solvent usage limit.
	Material Code	Enter material code for solvent used.
Part F	Manufacturer of Coatings, Solvents, etc.	
37	Solvent used for cleanup at this source: Total, last 12 months (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual cleanup solvent usage quantity that the applicant would be willing to accept as a potential solvent usage limit.
	Material Code	Enter material code for solvent used for cleanup.
38	Material manufactured (Material Code)	Enter material code for the material that is manufactured for Highest Production, 2nd Highest Production, and All Remaining Production.
39	Quantity manufactured, last 12 months (1,000 gal)	Regardless of what the form states, the blank should be filled with the maximum, annual quantity of material manufactured that the applicant would be willing to accept as a potential throughput limit manufactured for Highest Production, 2nd Highest Production, and All Remaining Production. Make sure that quantity is indicated per 1,000 gallon.
40	Solvent used (Material Code)	Enter material code for solvent used manufactured for Highest Production, 2nd Highest Production, and All Remaining Production.
41	Solvent evaporated during manufacturing, as volume % of material produced	Enter volume percentage of solvent evaporated during manufacturing compared to the material produced manufactured for Highest Production, 2nd Highest Production, and All Remaining Production.
Part G	Other Solvent Use	
42	Solvent evaporated most at this source	
	Material Code	Enter material code for solvent evaporated most.
	Total evaporated, last 12 mo. (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual quantity of solvent evaporated most that the applicant would be willing to accept as a potential limit.
43	Solvent evaporated 2nd most at this source	
	Material Code	Enter material code for solvent evaporated 2nd most.
	Total evaporated, last 12 mo. (gal)	Regardless of what the form states, the blank should be filled with the maximum, annual quantity of solvent evaporated 2nd most that the applicant would be willing to accept as a potential limit.

FORM SC	Solvent Cleaning Operation	This form should be completed for each solvent cleaning operation source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1.
LINE #	DATA FORM FIELD	SPECIFIC LINE INSTRUCTIONS
	SIC Number	Enter Standard Industrial Code.
	Plant No.	Enter plant number, if known.
1	Business Name	Enter name of business.
2	Date of Initial Operation (new)	Enter date of initial operation of equipment. If source is not yet in operation, indicate desired startup date or "ASAP" (as soon as possible).
	Source No.	Enter source number. If this is a new source, the applicant may select a number of their choosing. If this is for a modification of an existing source, write in the assigned source number.
3	Make, Model, and Rated Capacity of Equipment	Enter make, model, and rated capacity of equipment.
4	Operating time	Enter the operating hours per day, days per week, and weeks per year.
5	Typical % of total annual usage (%)	Enter the percentage of usage between December through February, March through May, June through August, and September through November. The range of acceptable percentages is between 0 and 25.
6	Solvent evaporation emissions at this source vented directly to:	Indicate by the checking the applicable box, whether the source is vented to the atmosphere (not through a stack), sources, abatement devices, or emission points.
7	Net solvent usage for 12-month period (gals)	Enter the maximum, annual net solvent usage that the applicant would be willing to accept as a usage limit.
8	Solvent used most: Trade name	Enter the name of the solvent, which is used most.
	% of total used	Enter percentage of solvent in the total.
9	Solvent used 2nd most: Trade name	Enter the name of the solvent, which is used 2nd most.
	% of total 2nd used	Enter percentage of solvent in the total.
8a	Material Code	Enter material code for solvent most. Air District use only.
	Density (lb/gal)	Enter density of solvent used most. Air District use only.
9a	Material Code	Enter material code for solvent used 2nd most. Air District use only.
	Density (lb/gal)	Enter density of solvent used 2nd most. Air District use only.
10	If this is a wipe cleaning operation, check box.	Check box, if it is a wipe cleaning operation and stop. The form is now complete, if this is a wipe cleaning operation.
11.	Container	
	Length (in)	Enter length of container.
	Width (in)	Enter width of container.
	Liquid volume (gal)	Enter liquid volume.
	Freeboard height (in)	Enter freeboard height. Of open-top vapor degreasing tanks, the distance from the solvent vapor-air interface to the top of the degreaser tank. Of conveyorized degreasing tanks, the distance from the top of the solvent or solvent vapor-air interface to the bottom of the lowest opening in the degreaser tank. Of cold cleaning tanks, the distance from the top of the solvent or solvent drain to the top of the tank.
12	Freeboard ratio	Enter freeboard ratio = freeboard height/shorter of length or width

FORM SC	Solvent Cleaning Operation	This form should be completed for each solvent cleaning operation source. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page 1.
LINE #	DATA FORM FIELD	SPECIFIC LINE INSTRUCTIONS
13	General information	Check either yes or no
14	Equipment type	Check box to indicate source type and go to the section that is indicated: Vapor Degreaser – go to Part A Conveyorized Degreaser – go to Part B Cold Cleaner – go to Part C
Part A Lines 15 through 19		Check either yes or no to the questions that apply.
Part B Lines 20 through 26		Check either yes or no to the questions that apply.
Part C Lines 27 through 29		Check either yes or no to the questions that apply.

FORM SS	PRINTER MATERIAL USAGE INFORMATION	This form should be completed for each printing source or grouping of printing sources. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of page.
DATA FORM FIELD		**SPECIFIC LINE INSTRUCTIONS**
TABLE		Complete the table to provide annual usage information on a facility-wide basis for each different type of materials used at the facility. Indicate whether ink and varnish usages are given in gallons or pounds. Submit a copy of the Material Safety Date Sheet (MSDS) for each material identified below. Be advised that these usage values will be included as material usage limits in permit conditions issued with your permit to operate. So, be sure that annual usage values include allowances for reasonable growth over the next few years.
Mixed fountain solution formulation		Enter the mixed foundation solution formulations for water: IPA: and fountain concentrate.

FORM T	ORGANIC LIQUID EVAPORATION	This form should be completed for each organic liquid storage tank. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of this form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
1	Business Name	Enter name of business.
	Plant No.	Enter plant number, if known.
2	SIC No.	Enter Standard Industrial Code.
	Source No.	Enter source number. If this is a new source, the applicant may select a number of their choosing. If this is for a modification of an existing source, write in the assigned source number.
	Date of start-up (modification)	Enter date of start-up modification.
3	Name or Description	Enter name or description of source.
4	Code materials* in order of highest throughput	*See Material Code Reference List
5	Total throughput (all materials), last 12 months:	Enter the MAXIMUM total throughput proposed for this source tank.
6	Typical % of total annual usage (%)	Enter the percentage of usage between December through February, March through May, June through August, and September through November. The range of acceptable percentages is between 0 and 25.
7	Usage type	Indicate by checking the applicable box, whether the tank is used for a bulk plant (truck/rail car), bulk plant (marine), vehicle service station, aircraft/marine servicing, or other. If other, explain what "other" is.
8	How many nozzles/loading arms?	If applicable, indicate the number of nozzles/loading arms.
9	Make and model of nozzles/loading arms.	If applicable, indicate the make and model of the nozzles/loading arms.
10	Nozzle/arm loads tank by	If applicable, indicate by checking the applicable box, whether the nozzle/arms load the tank by splash fill, submerged fill, part splash, or part submerged.
11	Upon loading, vapor space in tank(s) is	Indicate by checking the applicable box, whether the vapor space in the tank is vented to the atmosphere or collected by nozzle/arm and sent to an abatement device. If sent to an abatement device, indicate the Abatement Device number.
12	Annual Average	Indicate the storage vapor pressure in psia or tank temperature in ºF and Reid Vapor Pressure (psia).
13	Highest v.p. of all materials stored	Indicate highest vapor pressure in psia or high tank temperature in ºF and Reid Vapor Pressure (psia).
14	Highest ºAPI of all materials stored	Indicate highest ºAPI of all materials stored.
15	Tank Type	Indicate by checking the applicable box, whether the tank is an underground, fixed roof, internal floating roof, floating roof, pressure, or other type. If other is checked, indicate what that other is.
16	Tank Volume	Indicate the volume of the tank in thousand gallons or thousand barrels (1 barrel = 42 gallons).
17	Tank Diameter	Indicate the tank diameter in feet.
	Height or length	Indicate the tank height or length in feet.
	FIXED ROOF TANKS ONLY	Fill this section out only if the tank is a fixed roof tank..
18	Maximum fill rate	Indicate the maximum fill rate in gallons per hour or barrels per hour (1 barrel = 42 gallons).

FORM T	ORGANIC LIQUID EVAPORATION	This form should be completed for each organic liquid storage tank. Applicant should fill out the name of the person completing this form and date it at the blanks located on the bottom of this form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
19	Average height or vapor space	Indicate the average height or vapor space in feet.
	Highest head space reactivity	Indicate the highest head space reactivity.
20	Emissions vent to what source(s) and/or abatement devices(s)	If applicable, Indicate whether the emissions from the tank vent to another source or abatement device.
21	Do all gauging/sampling devices have gas-tight covers?	Indicate yes or no to this question.
22	Paint color	Indicate by checking the box, what color the tank is.
23	Paint condition	Indicate by checking the box, what condition the paint is in.
	FLOATING ROOF TANKS ONLY	Fill this section out only if the tank is a floating roof tank.
24	Shell Type	Indicate by checking, what the tank shell type is.
25	Seal Type	Indicate by checking, what the seal type is.
26	Maximum withdrawn rate	Indicate the maximum withdrawal rate in gallons per hour or barrels per hour (1 barrel = 42 gallons).
27	Do all gauging/sampling devices enter below liquid level and have gas-tight covers?	Indicate yes or no to this question.
28	Roof type	Indicate by checking, what the roof type of the tank is.
	Is emergency roof drain at least 90% covered?	Indicate yes or no to this question.

Appendix H	ENVIRONMENTAL INFORMATION FORM	This form should be completed for a permit application which is non-ministerial, categorically exempt, or having a potentially significant impact. Person completing the form should complete the certification at the end of this form.
LINE #	**DATA FORM FIELD**	**SPECIFIC LINE INSTRUCTIONS**
	Date Filed	Date completing this form.
1-7	General Information	Fill in the general information requested, unless it is not applicable. Provide as much detail as possible..
8-20	Project Description	Provide information requested, unless it is not applicable. Provide as much detail as possible. Provide attachments, if needed.
21-32	Project Description	Please check “Yes” or “No”. Provide a detailed written explanation for any item(s) checked “Yes”. Provide attachments, if needed.
33-34	Environmental Setting	Provide information requested. Provide as much detail as possible. Provide attachments, if needed.

C. FEE CALCULATION GUIDANCE
February 29, 2024
State law authorizes the Air District to assess fees to generate revenue to cover regulatory program activity costs (i.e., the Air District's direct and indirect expenditures for personnel, services and supplies, and capital outlay, related to implementing and enforcing air quality programs affecting stationary sources of air pollution). The largest portion of fees is collected, per Health and Safety Code Section 42311(a) and (f), which allows the Air District to impose permit fees sufficient to cover the full costs of programs, related to permitted sources. The Air District's Regulation 3 contains the fee schedule for new and renewed permits.

Typically, the permit fees for a new/modified source include a filing fee (defined in Regulation 3-203), initial fee (defined in Regulation 3-204), and annual permit to operate (PO) fee (defined in Regulation 3-207) for the source to be permitted/modified (per Regulation 3-302). However, additional fees are required if the source triggers a health risk assessment (per Regulation 3-329), school public notice (per Regulation 3-318), and/or if the source has been constructed or modified without a permit (per Regulation 3-310) such that late (per Regulation 3-310) and back fees (per Regulation 3-303) may apply. In addition, fees are also required for abatement devices, which are, permitted alone (per Regulation 3-302.3), alterations of a source (per Regulation 3-304), changes of conditions (per Regulation 3-306), loss of exemption (per Regulation 3-310.2), and banking of emissions reduction credit (per Regulation 3-311). In specific cases, a toxic inventory fee (per Regulation 3-320) may apply. For those applicants that qualify, a small business (defined in Regulation 3-209) discount may apply. In short, calculating permit fees accurately can be challenging. A permit fee calculation decision tree has been developed to assist in determining the types of fees required for various permit scenarios.

After determining the types of fees required (see permit fee calculation decision tree), use the table below to determine the applicable fee schedule to calculate the fees for Initial, PO (permit to operate), RAF (risk assessment fee), toxic surcharge and/or TIF (toxic inventory fee), if applicable. Once the Initial and PO (w/toxic surcharges and inventory, if applicable) fees are calculated, the Late and Back fees can be determined. The Late fees are equal in amount to the Initial fees; and the Back fees are PO fees with toxic surcharges and inventory fees prorated from the effective date of the permit requirements, not to exceed 5 years.

Permit Handbook Chapter #	Permit Handbook Source Category	Applicable Regulation 3 Fee Schedule	Notes of Interest
2	Combustion Equipment		
2.1	Boilers, Steam Generators & Process Heaters	B – Combustion of Fuel	Fees are based on maximum gross combustion capacity (MMBT/hr).
2.2	(deleted)		
2.3	Internal Combustion Engines		
2.3.1	Stationary Diesel Engines	B – Combustion of Fuel	Fees are based on maximum gross combustion capacity (MMBT/hr).
2.3.2	Stationary Natural Gas Engines	B – Combustion of Fuel	Fees are based on maximum gross combustion capacity (MMBT/hr).
2.3.3	Portable Diesel Engines	B – Combustion of Fuel	Fees are based on maximum gross combustion capacity (MMBT/hr).
2.3.4	Biogas Engines	B – Combustion of Fuel	Fees are based on maximum gross combustion capacity (MMBT/hr).
3	Petroleum Industry		
3.1	Bulk Loading Facilities	D – Gasoline Transfer at Gasoline Dispensing	Fees are based on the number of single and multi-product arms.

Permit Handbook Chapter #	Permit Handbook Source Category	Applicable Regulation 3 Fee Schedule	Notes of Interest
		Facilities, Bulk Plants and Terminals	
3.2	Gasoline Dispensing Facilities	D – Gasoline Transfer at Gasoline Dispensing Facilities, Bulk Plants and Terminals	Note that this source is NOT eligible for Small Business Discount, per 3-302.1. Fees are based on the number of single and multi-product nozzles.
3.3	Oil Water Separators	G-1, excluding oil-water separators at petroleum refineries; G-2 for petroleum refineries	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
3.4	Petroleum Refinery Fugitive Emissions	G-3	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
3.5	Natural Gas Facilities	B – Combustion of Fuell for compressor engines; C – Stationary Containers for the Storage of Organic Liquid for condensate tanks; and F – Miscellaneous Sources for dehydrators	Fees are based on maximum gross combustion capacity (MMBT/hr). Fees are based on container volume. See Schedule F for fees.
4.	Organic Liquid Storage Tanks	C – Stationary Containers for the Storage of Organic Liquid	Fees are based on container volume.
5	Coating Operations		
5.1	Spray Booths & Spray Guns	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
5.2	Coating and Ink Manufacturing	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
5.3	Graphic Arts Printing and Coating Operations	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
6	Solvent Cleaning Operations	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
6.1	Cold Solvent Cleaning	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
6.2	Vapor and Conveyorized Solvent Cleaning	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
6.3	Wipe Cleaning Operatons	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.

Permit Handbook Chapter #	Permit Handbook Source Category	Applicable Regulation 3 Fee Schedule	Notes of Interest
7	Electronic & Semiconductor Industry		
7.2	Electronic Assembly & Wave Soldering	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
7.3	Flexible and Rigid Disk Manufacturing	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
7.4	Semiconductor Manufacturing Operation	H – Semiconductor and Related Operations	Fees are based on net maximum amount of organic solvent processed through solvent cleaning and coating operations.
8	Waste Processing Industry		
8.2	Wastewater Treatment Facilities	G-1	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
9	Soil/Water Remediation		
9.1	Airstripping	G-1; Schedule F for Sub-Slab Depressurization	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
9.2	Soil Vapor Extraction – gasoline	G-1	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
9.3	Sub-Slab Depressurization	Schedule F for Sub-Slab Depressurization	See Schedule F for fees.
10	Toxic Emitting Operations		
10.1	Chrome Plating	G-1	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
10.2	Ethylene Oxide Sterilizers	G-1	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
10.4	Non-Halogenated Solvent Dry Cleaning	I – Dry Cleaners May also be subject to Schedule N – Toxic Inventory Fees	The TIF are based on total facility toxic emissions. TIF would only apply if adding unpermitted source would increase fees.
10.5	Synthetic Solvent Dry Cleaning	I – Dry Cleaners May also be subject to Schedule N – Toxic Inventory Fees	The TIF are based on total facility toxic emissions. TIF would only apply if adding unpermitted source would increase fees.
11	Miscellaneous Operations		
11.1	Abrasive Blasting	F – Miscellaneous Sources	See Schedule F for fees.
11.2	Asphalt Facilities	G-2	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
11.3	Coffee Roasting Operations	F – Miscellaneous Sources	See Schedule F for fees.

Permit Handbook Chapter #	Permit Handbook Source Category	Applicable Regulation 3 Fee Schedule	Notes of Interest
11.4	Cooling Towers	F – Miscellaneous Sources	See Schedule F for fees.
11.5	Concrete Batch Plants	G-1for Crushers or Grinders; G-2 for Concrete or Cement Batching Operations – Mixers; F for other sources	There is a specific policy for the grouping of sources and the calculation of fees at concrete batch plants and quarrying/crushing operations. See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
11.6	Crematories	G-1	See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
11.7	Crushing and Grinding	G-1 for Crushers or Grinders; G-2 for Concrete or Cement Batching Operations – Mixers; F for other sources	There is a specific policy for the grouping of sources and the calculation of fees at concrete batch plants and quarrying/crushing operations. See Schedule F for fees. Note that this source is NOT eligible for Small Business Discount, per 3-302.1.
11.8	11.8.1 Methyl Bromide Fumigation 11.8.2 Phosphine Fumigation	F – Miscellaneous Sources	See Schedule F for fees.
11.9	Misc. Organic Operations	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through solvent cleaning and coating operations.
11.10	Portable Equipment	Same as that for source type if equipment was stationary	Same as that for source type if equipment was stationary
11.11	Polyester Resin Manufacturing	F – Miscellaneous Sources	See Schedule F for fees.
11.12	Polyester Resin Operations	E – Solvent Evaporating Source	Fees are based on net maximum amount of organic solvent processed through sources on an annual basis.
11.13	Tub Grinders	F – Miscellaneous Sources	See Schedule F for fees.
11.14	Landfill Gas Flares	K - Flares	See Schedule K for fees.
11.15	Material Recovery Operations	F – Miscellaneous Sources	See Schedule F for fees.
11.16	Composting Operation	G1 for Composting Operations	See Schedule F for fees.
12.1	Banking	See Notes of Interest	Review the facility's prior renewal invoice to verify the correct Schedule in Regulation 3 to use to calculate the applicable initial fees for the source(s) in the banking application.

D. COMPLETENESS DETERMINATION CHECKLIST

June 1, 2024

A COMPLETE permit application shall typically include the following items:
(Basis: Regulation 2-1-202 and 2-1-402)

1. All required data forms/worksheets completed – See Data Form Guidance.
2. All required fees paid – See Fee Calculation Guidance.
3. A cover letter, which includes a background description of the proposed project. If the project involves an assembly line process or other complicated process, a flow diagram of the process should also be included with the background description.
4. Sufficient information to calculate emissions, including toxics, from the proposed source(s).
5. Any information requested by the Air District to determine the air quality impact from sources that are the subject of the application.
6. If a Health Risk Assessment is triggered, a completed Health Risk Screen Analysis (HRA) form – See Data Form Guidance unless the HRA information is collected in an alternate data form, such as Form ICE.
7. If the proposed source(s) is located within 1000 feet of a school or within an Overburdened Community and subject to public notice per 2-1-412:
    a. A certification stating whether the source(s) trigger the requirements of Section 2-1-412.
    b. The required public notification fee paid in Regulation 3-318.1– See Fee Calculation Guidance
    c. Identification of all schools within 0.25 mi. of the source(s).
    d. Satellite map showing the sources and school boundaries.
8. California Environmental Quality Act (CEQA)-related information that satisfies the requirements of Section 2-1-426
    a. Unless the project approval is a ministerial action or is for emissions banking, applicants shall provide, as part of a complete application, the following CEQA-related information:
        i. A completed Environmental Information Form in Appendix H of the State CEQA Guidelines or an equivalent format specified by the APCO. (see also Appendix G, Significant Effects.); or
        ii. When an agency other than the District is to be the Lead Agency under CEQA, either:
            1. A Draft or Final Environmental Impact Report prepared by or under the supervision of the Lead Agency; or
            2. A contract for the preparation of a Draft Environmental Impact Report executed by the Lead Agency together with the Initial Study prepared by the Lead Agency; or
            3. A Negative Declaration prepared by the Lead Agency; or
            4. A Notice of Preparation of a Draft EIR prepared by the Lead Agency;
            5. A copy of the Initial Study prepared by the Lead Agency, or
            6. A commitment in writing from another agency indicating that it has assumed the role of Lead Agency for the project in question.
9. If the application is subject to the New Source Review requirements of Regulation 2, Rule 2, all information required under Section 2-2-401.
    a. A detailed description of the proposed new source(s) or modification(s) for which the authority to construct is sought, including at a minimum (i) a description of the nature, location, design capacity, and typical operating schedule of the source(s) or modification(s), including specifications and drawings showing its design and plant layout, and (ii) a detailed schedule for construction of the source(s) or modification(s).

b. All information necessary for the APCO to calculate emissions to determine whether the application triggers BACT and/or PSD applicability per Rule 2-2., Note: The actual BACT determination and PSD analysis/demonstration may be started during the Completeness phase, but are done during the Evaluation phase of the application review process, including but not limited to (i) a demonstration of how the application satisfies applicable BACT standards under Sections 2-2-301 and 2-2-304, and (ii) the PSD analyses and demonstrations required under Sections 2-2-305 and 2-2-306, if applicable.
c. CEQA-related information required under Section 2-1-426; and for a new major facility, and for a modification to a major facility that will increase emissions by more than 100 tons per year of carbon monoxide, 40 tons per year of precursor organic compounds, nitrogen oxides, or sulfur dioxide, or 10 tons per year of PM2.5, an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source that demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification.
d. If the application is for (i) a new major facility or a major modification of major facility for NOx, VOC, SO2 or PM2.5 or (ii) a PSD Project, and the project may have an impact on air quality related values (including visibility) within any Class I area(s), the application shall include an analysis of potential impacts to air quality related values (including visibility) in such Class I area(s) for review and consideration by the Federal Land Manager of such Class I Bay Area Air Quality Management District December 6, 2017 2-2-16 area(s). The determination of whether a project may have an impact on air quality related values (including visibility) within a Class I Area shall be made according to the guidelines adopted by the Federal Land Managers' Air Quality Related Values Work Group in its Phase I Report—Revised (2010), Natural Resource Report NPS/NRPC/NRR—2010/232.
e. Any other information requested by the APCO.

10. If any or all part of the application has been claimed as trade secret:
    a. A public copy of application with trade secret information redacted; and
    b. A trade secret copy with trade secret items clearly marked, for each section of the application that was claimed trade secret with a statement signed by the applicant identifying the portion of the Government Code Section 6254.7 (d) upon which the assertion is based and a statement setting forth the basis for this assertion.

Additional item(s) may be required to COMPLETE a permit application: (OPTIONAL)

- Information regarding compliance status of proposed source with applicable requirements.
- Supplemental emissions information requested by the District to help determine whether the source triggers existing Reasonably Available Control Technology/Best Available Retrofit Technology (RACT/BARCT) requirements. Note: Actual RACT/BARCT determinations are conducted during the Evaluation phase of the application review process.
- If offsets are triggered per Regulation 2-2-302 and/or 2-2-303, information regarding source of offsets or banking certificate to be used.

E. EVALUATION REPORT TEMPLATE GUIDANCE

July 6, 2022

Start with the Evaluation Report Shell and then insert the applicable source category's Emission Calculations and Permit Conditions into it (use Copy and Paste in MS Word) and fill in all the blanks of the template. Reference the applicable chapter to ensure a thorough evaluation of the permit application.

Permit Handbook Chapter #	Permit Handbook Source Category	**Source Category Emission Calculations**	Source Category Permit Conditions
2	**Combustion Equipment**		
2.1	Boilers, Steam Generators & Process Heaters	spreadsheet	Conditions for Natural Gas Combustion Conditions for Natural Gas w/Diesel Fuel Backup Combustion Conditions for Other Gaseous Fuel Combustion Conditions for Diesel Fuel Combustion
2.2	(deleted)		
2.3	Internal Combustion Engines		
2.3.1	Stationary Diesel Engines	spreadsheet	Conditions for Stationary Diesel Engines Conditions for > 1000 BHP Stationary Diesel Engines
2.3.2	Stationary Natural Gas Engines	spreadsheet	Emergency Stationary Natural Gas Engines
2.3.3	Portable Diesel Engines	spreadsheet	Conditions for Portable Diesel Engine
2.3.4	Biogas Engines	spreadsheet	Conditions for Biogas Engines
3	**Petroleum Industry**		
3.1	Bulk Loading Facilities		Conditions for General Bulk Loading Conditions for Marine Loading
3.2	Gasoline Dispensing Facilities	spreadsheet	
3.3	Oil Water Separators		Conditions for Oil-Water Separators
3.4	Petroleum Refinery Fugitive Emissions		Conditions for Petroleum Refinery Fugitive Emissions
3.5	Natural Gas Facilities (review Organic Liquid Storage Tanks and Oil-Water Separators if these sources are part of facility)	Use GRI-GLYCalc Program for dehydrator.	Conditions for Natural Gas Facility Conditions for Dehydrator Conditions for Injection Wells Conditions for Natural Gas Fired Engine Conditions for Facility-Wide Conditions for Storage Tanks - General Conditions Conditions for Oil-Water Separators
4.	Organic Liquid Storage Tanks	Use TANKS4 program. Print a detailed Summary Report of the results and attach it to the Evaluation Report. Make sure to include a reference to this detailed Summary	General Conditions Add if applicable the following conditions and renumber accordingly: Additional for Internal or External Floating Roofs Additional for Fixed Roof w/Vapor Recovery System

Permit Handbook Chapter #	Permit Handbook Source Category	**Source Category Emission Calculations**	Source Category Permit Conditions
		Report in the Evaluation Report.	
5	**Coating Operations**		
5.1	Spray Booths & Spray Guns	spreadsheet	Conditions for All Types of Coating Operations Additional for carbon abatement Additional for thermal oxidation Additional for Thermal Oxidizer RACT Additional for source testing Additional for allowable temperature excursion
5.2	Coating and Ink Manufacturing		Conditions for Mixing Vat of Coating and Ink Manufacturing Conditions for Screening Mill of Coating and Ink Manufacturing
5.3	Graphic Arts Printing and Coating Operations	spreadsheet	Conditions for All Types of Coating Operations Additional for carbon abatement Additional for thermal oxidation Additional for Thermal Oxidizer RACT Additional for source testing Additional for allowable temperature excursion
6	**Solvent Cleaning Operations**		
6.1	Cold Solvent Cleaning	See new prototype all-inclusive chapter in Appendix G.	See new prototype all-inclusive chapter in Appendix G Conditions for Cold Solvent Cleaning
6.2	Vapor and Conveyorized Solvent Cleaning	spreadsheet	Conditions for All Types of Solvent Cleaning
6.3	Wipe Cleaning Operatons	spreadsheet	Conditions for All Types of Solvent Cleaning
7	**Electronic & Semiconductor Industry**		
7.2	Electronic Assembly & Wave Soldering		Conditions for Flux Bath
7.3	Flexible and Rigid Disk Manufacturing	spreadsheet	Conditions for Flexible and Rigid Disc Manufacturing
7.4	Semiconductor Manufacturing Operation REVISION 2	spreadsheet	Conditions for FABS Add if applicable the following conditions and renumber accordingly: Additional for carbon abatement Additional for thermal oxidation Additional for Thermal Oxidizer RACT Additional for source testing Additional for allowable temperature excursion
8	**Waste Processing Industry**		
8.2	Wastewater Treatment Facilities		Conditions for Wastewater Treatment Facilities Conditions for Anaerobic Digester Flares Conditions for POTW Flares Conditions for High Strength Waste

Permit Handbook Chapter #	Permit Handbook Source Category	**Source Category Emission Calculations**	Source Category Permit Conditions
			Conditions for Carbon Abatement for H2S at Wastewater Treatment Facilities
9	Soil/Water Remediation		
9.1	Airstripping		Conditions Using Carbon Adsorption Conditions Using Thermal Oxidation Conditions for Portable Using Carbon Adsorption
9.2	Soil Vapor Extraction – gasoline		Conditions Using Carbon Adsorption Conditions Using Thermal Oxidation Conditions for Portable Using Carbon Adsorption
9.3	(deleted)		
10	**Toxic Emitting Operations**		
10.1	Chrome Plating		Conditions for Decorative Chrome Plating Conditions for Hard Chrome Plating Conditions for Trivalent Chrome Plating
10.2	Ethylene Oxide Sterilizers		Conditions for Ethylene Oxide Sterilizer w/Catalytic Oxidizer Additional for Thermal Oxidizer RACT Additional for allowable temperature excursion
10.3	(deleted)		
10.4	Non-Halogenated Solvent Dry Cleaning		Conditions for Non-Halogenated Solvent Dry Cleaning
10.5	Synthetic Solvent Dry Cleaning		Conditions for Perchloroethylene Dry Cleaning
11	**Miscellaneous Operations**		
11.1	Abrasive Blasting		Conditions for Abrasive Blasting (non-BACT with no abatement) Conditions for Abrasive Blasting (non-BACT with abatement) Conditons for Abrasive Blasting (BACT with abatement)
11.2	Asphalt Facilities	spreadsheet for Batch Mix; spreadsheet for Drum Mix	Conditions for Asphalt Drum Mixer Conditions for Portable Asphalt Rubber Blending Plant
11.3	Coffee Roasting Operations		Conditions for Coffee Roasting Operations
11.4	Cooling Towers	spreadsheet	Conditions for Cooling Towers
11.5	Concrete Batch Plants	spreadsheet	Conditions for Concrete Batch Plants
11.6	Crematories	spreadsheet	Conditions for Human Crematories Conditions for Animal Crematories
11.7	Crushing and Grinding	spreadsheet	Conditions for Crushing and Grinding Operations
11.8	11.8.1 Methyl Bromide Fumigation 11.8.2 Phosphine Fumigation		Conditions for Methyl Bromide Fumigation Conditions for Phosphine Fumigation
11.9	Misc. Organic Operations		Conditions for Miscellaneous Organic Operations
11.10	Portable Equipment		Conditions for Portable Equipment
11.11	Polyester Resin Manufacturing		Conditions for Polyester Resin Manufacturing
11.12	Polyester Resin Operations		Conditions for Gel Coat and Resin Operations

Permit Handbook Chapter #	Permit Handbook Source Category	**Source Category Emission Calculations**	Source Category Permit Conditions
11.13	Tub Grinders		Conditions for Tub Grinders (powered by electricity) Conditions for Tub Grinder w/Diesel Engine (Stationary) Conditions for Portable Tub Grinders w/Diesel Engine
11.14	Landfill Gas Flares		Conditions for Landfill Gas Flares
11.15	Material Recovery Operations		Conditions for Material Recovery Operations
11.16	Composting Operations	spreadsheet spreadsheet	Condition for Composting Operations
12.1	Banking		Conditions for Banking

Evaluation Report Shell

EVALUATION REPORT

1. Background:

The Applicant has submitted an application for an Authority to Construct and/or Permit to Operate for the following:

S- {insert source description, make, model number}

{enter details of requested permit here}

☐ This facility is a Title V Major Facility and the sources/changes associated with this application will be incorporated as part of the Title V permit application (Application Number).

2. Emission Calculations:

{insert emission calculations here}

Cumulative Increase/Offsets Summary

Pollutant	Pre-Existing Cumulative Increase (TPY)	Application Emissions Increase (TPY)	Onsite Emissions Reductions Credit (TPY)	Final Cumulative Increase (TPY)	Actual or Potential Emissions > 35 TPY (Yes/No)	Offset Ratio	Offsets Required (TPY)
PM10					Yes	N/A	
NOx					Yes	N/A	
CO					Yes	N/A	N/A
POC					Yes	N/A	
NPOC					Yes	N/A	N/A
SO2					Yes	N/A	

3. Toxics Screening

Based on the identified toxic constituents in the solvent(s) requested by the applicant, the estimated total POC/NPOC emissions were compared to the respective trigger level(s) of the identified toxic constituents.

Toxic Pollutant Emitted	Hourly Emissions (lb/hr)	Health Risk Assessment Trigger Level from Table 2-5-1 (lb/hr)	Annual Emissions (lb/yr)	Health Risk Assessment Trigger Level from Table 2-5-1 (lb/yr)

According to the Regulation 2-5, a health risk assessment is required if the worst-case emissions of any toxic pollutant exceeds its respective health risk assessment trigger level. As a result,
☐ a health risk assessment was not required.
☐ a health risk assessment was required. See the interoffice memo from the Toxics Section for details. The following is a summary of the health risk assessment results:

Maximally Exposed Receptor	Maximum Cancer Risk	Maximum Chronic Hazard Index
Residential		
Off-site worker		

4. Statement of Compliance:

{Insert Applicable Requirements and BACT for each source for Pollutants Here}

Offsets
In accordance with Regulation 2-2-302, POC and/or NOx offsets are required if facility-wide POC and/or NOx emissions of precursor organic compounds will exceed 10 tons per year.

☐ Including the emission increase from this application, facility-wide POC/NOx emissions are below 10 tons per year. Therefore, offsets are not triggered.
☐ Including the emission increase from this application, facility-wide emissions of
☐ POC
☐ NOx
exceed 10 tons per year. Therefore, offsets are triggered. Offsets will be provided from:
☐ the Air District's Small Facility Banking Account [The facility meets the qualifications for a Small Facility.]
☐ Banking Certificate Number
☐ contemporaneous emission reductions from S- [see attached appendix for detailed explanation]
for the following amount:
☐ POC Offsets = TPY
☐ NOx Offsets = TPY

Prevention of Significant Deterioration (PSD)
☐ PSD modeling is not triggered.
☐ PSD modeling is triggered, per Regulation 2-2-304, 305, 306, or 308.
{describe in detail the PSD review results}

Risk Management
☐ For each pollutant, emissions are less than its trigger level. A health risk assessment is not required.
☐ Emissions exceed at least one toxic trigger level. Therefore, a health risk screen analysis was performed. See the interoffice memo from the Toxics Section for details. In accordance with the Risk Management Policy,
☐ the project is acceptable.
☐ The risk is less than one in a million and the chronic hazard index is less than or equal to 1.0.
☐ The risk is greater than one in a million and less than 10 in a million, and owner/operator complies with TBACT. TBACT is .
☐ the project is unacceptable, because:
☐ the cancer risk is greater than 10 in a million
☐ the cancer risk is greater than 1 in a million and less than 10 in a million, but owner/operator does not comply with TBACT.
☐ the chronic hazard index is greater than 1.0.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.
School Notification
☐ This facility is over 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.
☐ This facility is within 1,000 feet of a school, and therefore, triggers the public notification requirements of Regulation 2-1-412. A public notice has been prepared. During the 30-day public comment period, the Air District received comments. Responses to the comments are included in the permit application folder.

New Source Performance Standards (NSPS)
☐ The facility is not subject to Regulation 10 - New Source Performance Standard.
☐ The facility is subject to the following New Source Performance Standard:
{describe in detail the NSPS results}

National Emission Standards for Hazardous Air Pollutants (NESHAP)
☐ The facility is not subject to Regulation 11 – NESHAP.
☐ The facility is subject to the following NESHAP requirements:
{describe in detail the NESHAP compliance results}

5. Conditions

I recommend the following permit conditions:

{insert conditions here}

6. Recommendations:

I recommend an Authority to Construct and/or Permit to Operate be issued to the Applicant for the following:

S- {insert source description, make, model number}

____
By {name of permit evaluator}
{title of permit evaluator} ☺

F. FREQUENTLY ASKED QUESTIONS – Permitting & Other

July 3, 2023

PERMITTING:

Who gives you the authority to issue permits to me?
Do I need a permit?
When do I need a permit?
What is the Accelerated Permit Program?
Do I qualify for an accelerated permit?
What forms do I need to fill out?
How do I fill out this form?
Do I need to send a check with my application?
What form of payment do you accept if not paid online?
Can I pay my invoice online?
Do I pay in advance or wait for an invoice?
How are permit application fees calculated?
Can I pay you in installments?
Where do I send my application?
Can I fax my permit application or make a payment?
Can I send my application electronically?
Can I apply for my permit online?
Who is not eligible for the online permitting system?
How do I use the online permitting system?
How do I know that the Air District received my application?
How long does it take to get the permit?
That long? What can I do to expedite it?
If a piece of equipment or operation does not require a permit, is it still subject to other Air District regulations?
Do I need to keep records for a piece of equipment or operation, which does not require a permit?
I bought a business that had Air District permits. Do I need to submit a permit application?
We just relocated to a new address. Can you transfer our air permit to this new location?
I plan to shutdown equipment. Do I need to notify the Air District?
I have a permitted source that no longer operates. Do I need to surrender my permit?

OTHER:

What is the format of an Air District approved log? Where in the Air District web site can a copy of the log be obtained?
How do I determine whether a solvent mixture (water + solvent) complies with the VOC limit (0.42 lb/gal) of Regulation 8-4 and/or 8-16?
What are the acceptable ways to demonstrate that a school is greater than 1000 from my property?
Do you have a list of recommended source test companies?
What do I do if I have a question that is not listed in this document?

PERMITTING:

Who gives you the authority to issue permits to me?
The California Legislature created the Bay Area Air Quality Management District in 1955. We are authorized and established by Section 40200 (Chapter 4, Part 3 of Division 26) of the Health and Safety Code. The Air District's jurisdiction encompasses all of seven counties - Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa, and portions of two others - southwestern Solano and southern Sonoma.

Do I need a permit?
In general, any equipment or operation that emits pollutants into the atmosphere requires a Permit to Operate from the Air District unless it is excluded from Air District Regulations per Regulation 1 or exempted from Air District permit requirements by a specific section of Regulation 2 Rule 1. Any air pollution control equipment, associated with a source that requires an Air District permit, is also required to have a Permit to Operate from the Air District. Facilities may use the Permit Exemption Guidance to aid in determining whether a source is required to have a permit or is exempt from permit requirements. If a facility is unsure about whether or not a permit is required, it is advisable to submit a permit application package for the operation; and the Air District will make the final determination.

When do I need a permit?
If a permit is required, you should secure an Authority to Construct or Accelerated Permit to Operate before placing, building or modifying equipment to avoid possible violation of Air District regulations and resulting penalties.

What is the Accelerated Permit Program?
The Accelerated Permit Program allows equipment that meets specific elements to operate before receiving a Permit to operate from the Air District. This permit allows you to operate as soon as your application is submitted.

Do I qualify for an accelerated permit?
If you are seeking to operate your equipment under the Accelerated Permit Program, you must complete the Accelerated Permitting section on the Form P101-B. The applicant must check all the necessary boxes the section. There are seven (7) elements that need to be satisfied to for all equipment.

1. Emissions for a single air pollutant must be less than 10 pounds per highest day. Any control equipment associated with the project does not count towards your calculation. The calculation is for uncontrolled emissions.
2. Emissions from toxic compounds must not exceed the levels listed in Table 2-5-1 of Regulation 2, Rule 5.
3. The source must not be a diesel engine.
4. The project must not trigger public notice requirements. This requirement is trigger if the project emits any compound listed in Table 2-5-1 of Regulation 2, Rule 5 and is within 1,000 feet from the nearest K-12 school.
5. For replacement of abatement equipment, the new equipment must have equal or greater abatement efficiency for all pollutants.
6. For alterations of existing sources, the request change does ot result in an increase in emissions for all pollutants.
7. All fees are paid. The fees are located in Air District Regulation 3.

What forms do I need to fill out?
Every application for an authority to construct or a permit to operate must include applicable Air District forms and contain all of the information required for the APCO to make a decision on the application. Each of the source-specific chapters has a listing of the Air District forms and additional information required for each of the sources in the various source categories.

How do I fill out this form?
Use the Data Form Guidance to assist you.

Do I need to send a check with my application?
No, we can bill you for the permit fees that are required. An invoice will be sent, after we received your application and reviewed its contents for completeness. Please note that without the payment of permit fees, your application will not be complete and does not qualify for an "Accelerated Permit" until the fees are received (assuming all data forms and required information are provided).

What form of payment do you accept if not paid online?
Do not send cash. If paying by check, make the check payable to Bay Area Air Quality Management District or BAAQMD. Write the Application and Invoice Numbers on the check, if known. If you received an invoice, please include the payment stub.

Can I pay my invoice online?
Air District invoices can be paid at www.baaqmd.gov/pay using VISA, Mastercard, Discover Card or eCheck. Applicable convenience fees may apply. Paying online is the best way to immediately have your payment applied and to avoid under/overpayment.

Do I pay in advance or wait for an invoice?
If you know the required permit fees, you may pay in advance with your application. Or, we can bill you for the permit fees that are required. An invoice will be sent, after we received your application and reviewed its contents for completeness. Please note that without the payment of permit fees, your application will not be complete and does not qualify for an "Accelerated Permit" until the fees are received (assuming all data forms and required information are provided).

How are permit application fees calculated?
Use this Fee Calculation Guidance to assist you.

Can I pay you in installments?
No.

Where do I send my application?
All new applications should be sent to:
BAAQMD
Engineering Division
375 Beale Street, Suite 600
San Francisco, CA 94105
Re: Permit Application

If you have dealt with a specific person from the Air District in the past, do NOT address correspondence to that person. Personnel or assignments periodically change. This will minimize your application being lost. Once your application is assign to specific Air District staff, send subsequent responses directly to that contact.

Can I fax my permit application or make a payment?
No.

Can I send my application electronically?
Yes. Please send your application to permits@baaqmd.gov. Please DO NOT send both an electronic copy and hard copy by US mail.

Can I apply for my permit online?
Owners or operators of the following types of equipment may be eligible to register new equipment or renw existing permits through the new Online Permitting System:

- Stationary Agricultural Diesel Engines
- Boilers, Steam Generators, and Process Heaters (< 10 MM Btu/hr)
- Charbroilers at Commercial Cooking Operations
- Dry Cleaners (non-halogenated solvents)
- Graphic Arts Operations
- Mobile Refinishing (Coating) Operations

The online permitting system can handle the follow devices/operations alone or in combination with registrations:

- Auto body shops
- Dry cleaning facilities
- Gas dispensing facilities (gas stations)
- Emergency standby engines
- Remediation sites
- Solvent cleaning only facilities

Note that the online permitting system is currently only available to those facilities who only have devices that are part of the online permitting system.

Who is not eligible for the online permitting system?
Here are some common reasons why you may not be eligible:

- You have at least one device/operation that is not supported by the new online permitting system. You will continue to do business as usual until we make additional improvements.
- You have in-progress business with the Air District such as a permit application or a renewal that needs to be completed before we move you to the new system.

Whether you are eligible or not, you can still apply by emailing your permit application to permits@baaqmd.gov. If you are want to know if you are eligible or not, you may email permits@baaqmd.gov to inquire.

How do I use the online permitting system?
First, you must make sure you are eligible to use the online permitting system. Its best to contact the Air District first (email permits@baaqmd.gov) to inquire whether you are eligible or not. Once you have determined that you are eligible, you can follow the instructions on the online permitting system page.

How do I know that the Air District received my application?
If your application was submitted by email, you will receive an automatic message that the Air District received it. If your application was submitted via the Online Permitting System, your application is received once it is submitted.

After the completeness review, your assigned permit evaluator will contact you if your application does not meet the Completeness standard. If you have not received this letter in ten (10) business days, please call the Engineering Division at (415) 749-4990 or email permits@baaqmd.gov.

In addition, after your application is logged into our system, the status of your application can be viewed on our Permit Application Received webpage with the exception of banking, permit exemptions, registration, and Title V. Eligible customers with facilities in the Online Permitting system can access application status by logging into their account.

How long does it take to get the permit?
Typically, the Air District must review and determine whether an application is complete within 15 working days of receipt of the application. The APCO may cancel an application if the applicant fails to furnish the requested information or pay all appropriate fees during the requested time frame. In general, the APCO notifies the applicant in writing of the approval or denial of their application within 35 working days of receipt of a completed application.

However, the deadlines are different for certain special permit types:
Deposit Emission Reduction Credits;
Major Facility Review (Title V);
Prevention of Significant Deterioration (PSD);
Projects within 1000 feet of a school boundary;
Projects that require CEQA environmental review and documentation;
Projects that trigger publication, and public comment requirements of Regulation 2-2-404, 2-4-405, or 2-9-405.

In addition, the deadlines may be extended upon mutual consent of the applicant and the APCO.

That long? What can I do to expedite my permit?
If you qualify you may apply for an Accelerated Permit to Operate. Otherwise, we recommend that you submit your application and respond to our information requests and fee invoice as quickly as possible.

If a piece of equipment or operation does not require a permit, is it still subject to other Air District regulations?
Unless your source is excluded from all Air District requirements, you may be required to follow other requirements. The Air District has many rules and regulations covering a wide range of industries and activities such as painting, cleaning with solvents, using stationary combustion equipment, and creating visible emissions. Being exempt from permit requirements does not exempt you from these other regulations. Each of the source-specific chapters has a listing of applicable regulations.

Do I need to keep records for a piece of equipment or operation, which does not require a permit?
Yes, per Regulation 2-1-502, any person asserting a source to be exempt, upon request by the Air District shall provide substantial credible evidence proving that the source meets all requirements necessary to keep the exemption.

I bought a business that had Air District permits. Do I need to submit a permit application?
If the previous owner had Air District permits, the Air District requires written communication from the previous owner of the change of ownership either by letter or a copy of the agreement to transfer Air District/Environmental permits. The permits must be in good standing (current and valid) to avoid having the new owner re-permit the equipment. If the previous owner let his/her Air District permits expire, then you would need to re-permit the equipment before you operate.

We just relocated to a new address. Can you transfer our air permit to this new location?
No. All permits are site-specific. If you move to a new location, you must reapply for a new permit for that new location.

I plan to shutdown equipment. Do I need to notify the Air District?
If you want the source removed from your permit, you must send the Air District written documentation for that change. Once the source is removed, you would need to re-permit the source if you choose to operate the source again.

I have a permitted source that no longer operates. Do I need to surrender my permit?
No. As long as you continue to comply with all requirements (e.g. keeping of records, permit renewal fees) during non-operation, you may keep your permit. This allows you flexibility to avoid the permit application process should you choose to operate the equipment again. In addition, your permits can be transferred to a subsequent owner, if non-operation was due to selling of your business.

OTHER:

What is the format of an Air District approved log? Where in the Air District web site can a copy of the log be obtained?
An Air District-approved log can be of any format, which meets the recordkeeping requirements of the applicable permit conditions or regulations. If you are unsure whether your log would meet with Air District approval, please submit a copy of it to your Air District Air Quality Inspector for review and approval.

How do I determine whether a solvent mixture (water + solvent) complies with the VOC limit (0.42 lb/gal) of Regulation 8-4 and/or 8-16?
An example calculation is provided below:
Assume the solution is made up of 5% by wt. Isopropanol (IPA). Therefore, 100 lbs of solution (mixture of IPA and DI water) will contain 5 lbs IPA and 95 lbs DI water. Assuming that the volumes stay constant when IPA and DI water are mixed (this is true at standard conditions), the volumes of the above liquids in the final mixture can be derived by dividing by their respective densities:
(5 lbs IPA)/(6.53 lbs IPA/gal IPA) = 0.76 gal IPA; and
(95 lbs H20)/(8.34 lbs H2O/gal H2O) = 11.39 gal H2O
Total solvent mixture = 0.76 + 11.39 = 12.15 gal solution
Therefore, the VOC content of the above mixture is equal to
= (5 lbs IPA)/(12.15 gal solution) = 0.41 lbs VOC/gal

What are the acceptable ways to demonstrate that a school is greater than 1000 from my property?
AB 3205 (H&S Code Section, 42301.6 through 42301.9) addresses sources of hazardous air pollutants near schools. It requires new or modified sources of hazardous air emissions located within 1000 feet of the outer boundary of a school to give public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1000-foot radius.

As a result, any new or modified source located within 1000 feet of the outer boundary of a school and which results in the increase of any substance into the ambient air, which has been identified as a toxic air contaminant, triggers the public notice requirement of Regulation 2-1-412. A school is defined as any public or private school of more than 12 children in kindergarten or any grades 1 to 12, excluding private schools in which education is primarily conducted in private homes. The California Air Resources Board (CARB) or the APCO identifies the toxic air contaminant or a hazardous air contaminant or it is from the list which is required to be prepared pursuant to subdivision (a) of Section 25532 or Section 44321 subsections (a) to (f) inclusive of the Health and Safety Code.

Applicants may use the following web sites to check the facility location and the location of the nearest schools: MapQuest and GreatSchools.net.] Once one school is identified within 1000 feet, the search radius must be enlarged to 0.25 mile (1320 feet) to determine whether there are more schools within this new search radius.

Do you have a list of recommended source test companies?
The Air District does not recommend any specific source test company. However, the CARB has an Independent Contractor Program. The Independent Contractor program was designed to approve private independent testing contractors for sources who may choose to have the contractors conduct compliance testing instead of the Air Resources Board (ARB) for ARB required testing. ARB does not require that testing contractors be approved prior to conducting testing in California. Approval under this program is only required by ARB if the contractor wishes to conduct compliance testing instead of ARB. Please check with the local Air District where the test will be performed to find out about their source test requirements.

What do I do if I have a question that is not listed in this document?
Air District staff is available to help fill out forms and provide technical assistance. Your primary contact for submitted applications is your assigned Air District Engineering contact. For general questions, call the Engineering Division at (415) 749-4990. In addition, the Engineering Division has assigned several technical contacts to help answer your questions for specific subjects and industries.

G. APPPENDIX G – Cold Solvent Cleaning

APPENDIX G

NEW PROTOTYPE ALL-INCLUSIVE SOURCE CATEGORY PERMIT HANDBOOK CHAPTERS

G.1 COLD SOLVENT CLEANING

COLD SOLVENT CLEANING
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COLD SOLVENT CLEANING (August 9, 2021)

I. PROCESS DESCRIPTION

Solvent cleaning (or solvent degreasing) is the physical process of using organic solvents to remove grease, fats, oil, wax, soil, or other materials from various substrates (e.g., metal, glass, plastic, etc.) [1]. Solvent cleaning equipment/operations of interest include cold cleaners (chapter 6.1), vapor solvent and conveyorized cleaners (chapter 6.2), and wipe cleaning operations (chapter 6.3).

A Cold (non-boiling) Cleaner is defined in Regulation 8-16-204 as any solvent cleaner, excluding conveyorized solvent cleaners and vapor solvent cleaners, including, but not limited to, spray sinks, spray booths, spray gun cleaners and batch-loaded dip tanks. South Coast AQMD Rule 1122 defines a batch-loaded cold cleaner as a batch-operated degreaser that is designed to contain liquid solvent, has an air-solvent interface, and is always operated at a temperature below the solvent's boiling point. Spray gun cleaners that are associated with coating sources (i.e., cleaning of coating application equipment) are to be permitted as part of a coating operation (see chapter 5.1).

Cold cleaning processes essentially consist of spraying, brushing, flushing, and immersion. A basic design of cold cleaners includes a spray sink and/or a dip tank. A dip tank can be typically agitated to improve cleaning effectiveness. Cold cleaners may be equipped with recirculating pumps and filters to aid in extending solvent life and decrease solvent waste. After cleaning, the parts are either suspended over the tank to drain or are placed on external drying racks that drains the solvent back into the cold cleaner.

A. Source/Methods

Solvent degreasing is widely used in many industries.

Emissions from cold cleaners occur through: (1) waste solvent evaporation, (2) solvent carryout (evaporation from wet parts), (3) solvent bath evaporation, (4) spray evaporation, and (5) agitation. Per EPA's AP-42 Chapter 4.6 for solvent degreasing, waste solvent evaporation is generally the main source of a cold cleaner's emissions which are categorized as volatile organic compound (VOC) as defined in Regulation 8-16-229.

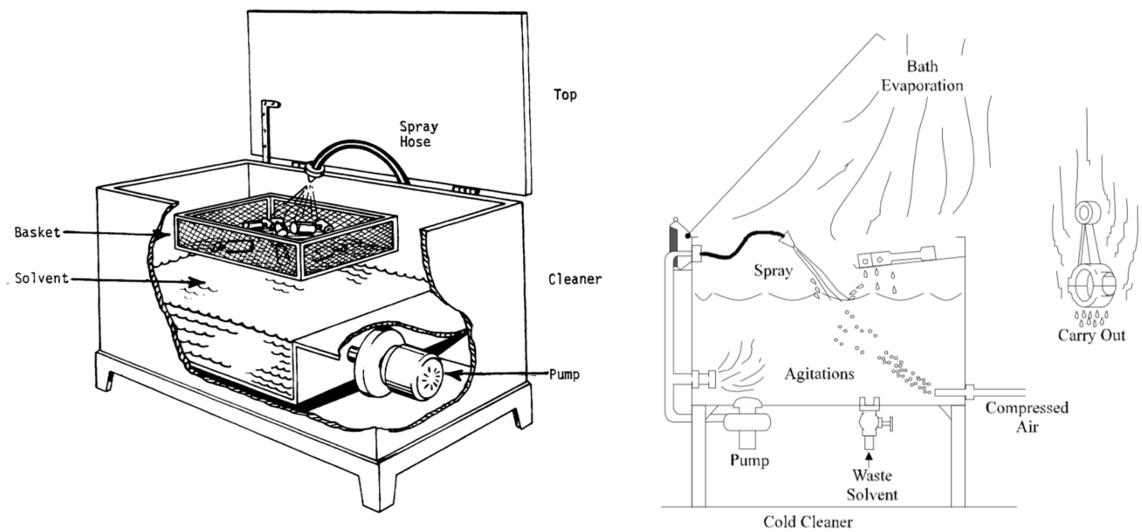


Figure 1: (a) Typical schematic of cold cleaner [2] and (b) its emission points [1]

Additional background information on the source's operation is available from [Chapter 4.6. Solvent Degreasing of EPA's AP-42 (Fifth Edition, Volume 1).]()

B. Materials

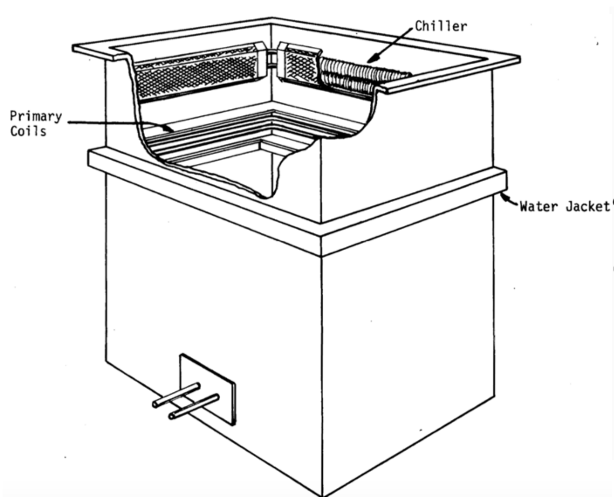
The solvents used in cold cleaners are not heated to boiling. Some common solvents used in cold cleaners are acetone, mineral spirits, Stoddard solvents, and alcohols. Any solvent lost via evaporation is counted towards total emissions and is subject to the Air District's regulations.

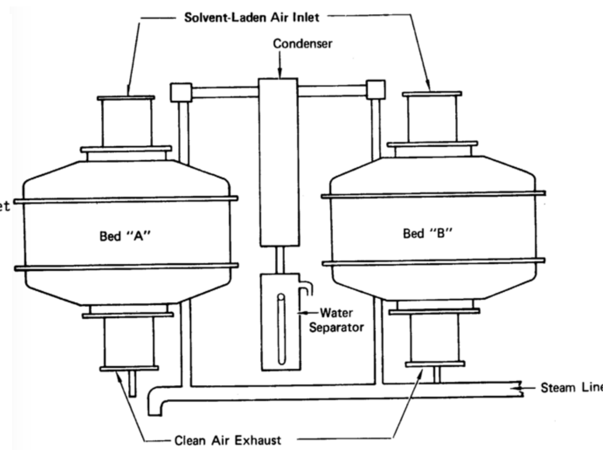
C. Air Pollutant Control Device (Abatement Device)

Some common emissions controls for cold cleaners include:

- Drainage facility
    - A place for draining excess solvent to minimize evaporation.
- Water cover
    - A layer of water on top of solvent bath to reduce evaporation (if the solvent used is insoluble in and heavier than water)
- Increase freeboard height
    - Freeboard height: vertical distance from the top of evaporative area to the top of cold cleaner (Regulation 8-16-211)
- Freeboard chiller
    - Freeboard chiller: condenser mounted in the freeboard area which provides a chilled air blanket above the solvent to reduce emissions (Regulation 8-16-210)
- An apparatus or cover to reduce solvent evaporation when equipment not in use.

- An approved emission control device for reducing emission of VOC is required to meet requirements set forth in Regulation 8-16-201:
    - The device meets required efficiency at all times during normal operation
    - The device has a collection system with a ventilation rate of 15-20 m^3/min per m^2 (49.2-65.6 ft^3/min per ft^2) of solvent cleaner opening
    - The collection system shall be designed and operated in accordance with good engineering practice for maximum collection of emissions.
- Carbon absorber





(a) (b)

Figure 2: cold cleaner abatement devices (a) freeboard chiller and (b) carbon absorber [2]

II. PERMIT REQUIREMENT

Any cold cleaner that does not meet any of the permit exemptions specified in Regulation 2-1-118 requires an Authority to Construct and Permit to Operate.

A. Exemption (Regulation 2-1)

Cold cleaners may be exempt from Air District permitting requirements per the following sections, if applicable. These exemptions, however, will not apply if the source is subject to requirements of Section 2-1-316, 317, or 318 or the emission rate of any regulated air pollutant (except greenhouse gases) from the source is greater than 5 tons per year after abatement (basis: Regulation 2-1-319).

Note: The following table is for general guidance purposes only. Always refer to the current version of the regulations posted on the Air District website.

The following equipment is exempt from requirements of Sections 2-1-301 (Authority to Construct) and 302 (Permit to Operate), provided that the source does not require permitting pursuant to Section 2-1-319		
2-1-118	**Surface preparation and cleaning equipment**.	
	118.4	Cold cleaners using unheated solvent mixture with a VOC content less than or equal to 50 g/l (0.42 lb/gal)
	118.5	Cold cleaners using heated solvent mixture with a VOC content less than 2.5 weight percent and any combustion sources used are exempted under Section 2-1-114
	118.6	Equipment which use unheated solvent and contain less than 1 gallon of solvent or have a liquid surface area of less than $1ft^2$
	118.8	Batch solvent recycling equipment where all of the following apply: (8.1) More than 50 percent by volume of recovered solvent is used on site (8.2) Maximum heat input is less than 1 MMBTU per hour (8.3) Batch capacity is less than 150 gallons
	118.10	Any solvent cleaning or surface preparation source which employs only non-refillable handheld aerosol cans
	118.11	Spray gun cleaning performed in compliance with Regulation 8, provided that the cleaning is associated with a source subjecting to the requirement of Section 2-1-301 and 302
2-1-128	**Miscellaneous equipment**	
	128.19	Any source or operation deemed by the APCO to be equivalent to a source or operation which is expressly exempted by Sections 2-1-113 through 128 ***For internal use only: permit evaluator shall refer to this memo for procedures to report equivalency determination***

B. Registration

Not applicable for cold solvent cleaners at this time.

C. Applicable Regulations (BAAQMD, State, Federal)

Air District Rules

All facilities that use cold cleaners for repair and maintenance operations are subject to Regulation 8-16-303.5, unless exempted per Regulation 8-16-123. These cleaners shall comply with one of the following requirements:

- VOC content of the cleaning solution shall not exceed 50 g/l (0.42 lb/gal)
- Cleaning solution shall be branched, cyclic, or linear completely methylated siloxanes (VMS – volatile methylated siloxanes)
- The portion of the cleaning solution that is not VMS shall not exceed a VOC content of 50 g/l
- Have an approved emission control device with a control efficiency of 90 percent or more on a mass basis

In general, cold cleaners are subject to, **but not limited to**, the applicable standards of Regulation 8-16-303.

Note: The following table is for general guidance purposes only. Always refer to the current version of the regulations posted on the Air District website.

Applicable Requirement	Regulation Title or Description of Requirement
Regulation 8, Rule 16	**Organic Compounds – Solvent Cleaning Operations (10/16/2002)**
8-16-303	Cold Cleaner Requirements
8-16-303.1	General Operating Requirements
8-16-303.1.1	Operate and Maintain in Proper Working Order
8-16-303.1.2	Leak Repair Requirement
8-16-303.1.3	Solvent Storage or Disposal – Evaporation Prevention
8-16-303.1.4	Waste Solvent Disposal
8-16-303.1.4(a)	Covered Containers for Waste Solvent Awaiting Pick-up
8-16-303.1.4(b)	On-site Waste Treatment
8-16-303.1.5	Solvent Evaporation Minimization Devices shall not be Removed
8-16-303.1.6	Solvent Spray Requirements
8-16-303.2	Cold Cleaner Operating Requirements
8-16-303.2.1	Solvent shall be Drained from Cleaned Parts
8-16-303.2.2	No Solvent Agitation by Air
8-16-303.2.3	Solvent Cleaning of Porous or Absorbent Materials is Prohibited
8-16-303.3	Cold Cleaner General Equipment Requirements
8-16-303.3.1	Container
8-16-303.3.2	Solvent Evaporation Reduction for Idle Equipment
8-16-303.3.3	Used Solvent Returned to Container
8-16-303.3.4	Label Stating Operating Requirements
8-16-303.4	Control Device (one of the following, except as provided in 8-16-303.5)
8-16-303.4.1	Freeboard Ratio* > 0.75
8-16-303.4.2	Water cover
8-16-303.4.3	Freeboard Chiller

8-16-303.4.4	Control devices with >90% efficiency on a mass basis
8-16-303.4.5	Enclosed Design
8-16-303.5	Repair and Maintenance Cleaner Requirements
8-16-303.5.1	VOC Content Limitation
8-16-303.5.2	VMS solvent allowance
8-16-303.5.3	VOC Content Limitation plus VMS solvent allowance
8-16.303.5.4	Source complies with 8-16-303.4.4
8-16-500	Monitoring and Records
Regulation 7	**Odorous Substances (3/17/1982)**

**Freeboard Ratio: freeboard height divided by the smaller of the length or width of the solvent cleaner evaporative area (Regulation 8-16-212)*

Exemption and Limited exemption from Regulation 8 Rule 16:

The following cold cleaners are partially exempted from Regulation 8 Rule 16:

- (8-16-112) The requirements of this Rule shall not apply to solvent sinks with less than 10 gallons of capacity or enclosed solvent cleaners at semiconductor manufacturing operations (subject to Rule 8-30).
- (8-16-115) Cold cleaners that contain less than 1 gallon of unheated solvent, including volume in any remote reservoir, or have an evaporative area of less than 1 cubic feet are exempted from Regulation 8-16 except for subsections 8-16.303.1, 303.3.1, and 303.3.2.
- (8-16-118) Cold cleaners using solvent with low volatility, as defined in regulation 8-16-205, are exempted from the requirement for control devices in 8-16-303.4.
- (8-16-123) Section 8-16-303.5 shall not apply to (i) the cleaning of aerospace components, electrical and electronic components, precision optics, medical devices, or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment; or (ii) cleaning associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.
- (8-16-124) The recordkeeping requirements of Section 8-16-501 shall not apply to any cold cleaners that comply with Section 8-16-303.5.1. However, they are subject to Section 8-16-502.

School Notification (Regulation 2-1-412)

The California Health and Safety Code Section 42301.6 through 42301.9 requires new or modified sources of hazardous air emissions located within 1000 feet of outer boundary of a school to give public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1000-foot radius. This regulation applies to any sources that result in an increase in emission, regardless of the amount, of any substance into the ambient air which has been identified by the California Air Resources Board or the Air District as a hazardous air pollutant or toxic air contaminant.

For internal use only: permit evaluator: refer to this document for procedures for School Notification

Offsets

Per Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that has the potential to emit more than 10 tons/yr of POC. The determination of offset requirements is based on the calculation of the cumulative increase emissions of a new or modified source.

Health Risk Assessment (HRA)

Sources that equal or exceed an emission threshold for any of the toxic air contaminants (TACs) as listed in Table 2-5-1 of Regulation 2 Rule 5 will trigger health risk assessment.

Overburdened Communities

Permit applications for projects located within an overburdened community (OBC), as defined in Regulation 2-1-243, are subject to additional permitting requirements including: additional fees (pending citation: Regulation 3-302.7), more stringent cancer risk limitations (Regulation 2-5-302.1), and public notification requirements (Regulation 2-1-412). The Air District is developing an interactive mapping tool that will enable staff, facilities, and the public to easily identify if a project location is within an OBC by entering an address, intersection, or latitude/longitude location in the mapping tool. Shaded areas and color-coded location pins will identify if the location is within an OBC. Links to the OBC mapping tool will be added here as soon as they are available.

Overburdened Community Notification

Any project that includes new or modified sources that are located within an overburdened community and that triggers a health risk assessment for that project is required to undergo public notification pursuant to Regulation 2-1-412. A notification shall be prepared that fully describes the project, proposed emissions, and health risks determined pursuant to Regulation 2, Rule 5. The notification shall be distributed to each address located within 1000 feet of any source within the project. The APCO shall review and consider all comments received during the 30 days after the notice is distributed and shall include a written response to the comments in the permit application file prior to taking final action on the application.

California Environmental Quality Act (CEQA)

Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

New Source Performance Standards (NSPS)

Cold cleaning may be subject to the EPA's New Source Performance Standards. Check this link (***https://www.epa.gov/stationary-sources-air-pollution/new-source-performance-standards***) to determine applicability.

Prevention of Significant Deterioration (PSD)

PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards. Cold solvent cleaning usually does not result in attainment pollutant emissions, so PSD does not typically apply.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP may apply and would impose additional requirements for those cold cleaners using any combination of the following six halogenated solvents at a total concentration of 5 percent or more by weight: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride and chloroform (EPA 40 CFR 63 subpart T).

D. Policies & Procedures (ex: combined sources, fees policy, BACT, NOE, etc..)

Under Regulation 2, Rule 2, any new source which results in an increase of equal to or more than 10 lbs per highest day of any criteria pollutant must adhere to BACT control technologies. BACT for Cold Cleaners is specified in the Air District's BACT/TBACT Workbook.

Excerpt from BAAQMD BACT/TBACT Workbook (revised 3/10/1995)

1. BACT technologically feasible/Cost effective: Compliance with Regulation 8-16 for al solvents, and equipped with cover, freeboard ratio ≥ 1, and either: a) water layer (1 inch); or b) covering while in use
2. Achieved in Practice: Compliance with Regulation 8-16 for all solvents, and equipped with cover and freeboard ratio ≥ 0.75

Public Participation

The Air District provides a 10-day public participation period during the review process for all new or modified permit applications. The permit evaluator shall not issue an Authority to Construct/Permit to Operate for a permit application covered by Regulation 2, Rule 1, unless the application has been designated as complete (completeness designation date) for at least 10 full calendar days. Exceptions to this policy include applications for Certificate of Registration, Certificate of Permit

Exemption, Banking, and Accelerated Permit to Operate. Information on how to make public comments can be found on the BAAQMD website.

III. AIR EMISSION

A. Emission Calculations

Net organic solvents used in cold cleaners are assumed to be 100 percent volatile and emitted into the atmosphere. Any recovered solvents are subtracted from the emissions. Actual emissions are calculated by multiplying the annual net volumetric solvent usage by the density of the organic solvent used. Non-volatile components (e.g., water) of the solvent shall not be included as part of the solvent when calculating VOC emissions.

For determining if BACT requirements are triggered, permit evaluators should calculate the maximum daily emissions to discern if the Regulation 2, Rule 2 BACT trigger level has been exceeded. For determining if an HRA is required, permit evaluators should calculate the maximum hourly and maximum annual emissions to discern if the acute or chronic trigger levels of Regulation 2, Rule 5, Table 2-5-1 are reached.

For determining Offsets required, permit evaluators should calculate the "cumulative increase" emissions. Per Regulation 2-2-208, cumulative increase means "The increase in the potential to emit a pollutant authorized by an authority to construct or permit to operate measured against prior actual or potential emissions, less any contemporaneous onsite emission reduction credits credited to the authority to construct or permit to operate, calculated in accordance with the procedures set forth in Section 2-2-607."

B. Abatement Equipment

EPA's AP-42 Fifth Edition, Volume 1, Chapter 4.6. Solvent Degreasing provides some information on control devices and operating procedures that may reduce emissions for cold cleaners. These are illustrative only. For any application review, the permit evaluator should contact the abatement equipment vendors to determine an appropriate abatement efficiency to use for the emission calculations based on best engineering judgement.

IV. APPLICATION PROCEDURES

A. Information per Regulation 2-1-402

Every application for an authority to construct or a permit to operate shall be submitted to the APCO on the forms specified, and shall contain all of the following information:

- 402.1 Sufficient information for the APCO to determine the emissions from the sources that are the subject of the application, and to quantify emissions from the sources of any emission reduction credits that will be relied upon as part of the application.

- 402.2 Any information requested by the APCO in order to determine the air quality impact from sources that are the subject of the application.
- 402.3 All applicable fees, as described in Regulation 3.
- 402.4 If the application is subject to the New Source Review requirements of Regulation 2, Rule 2, all information required under Section 2-2-401.
- 402.5 CEQA-related information that satisfies the requirements of Section 2-1-426.
- 402.6 A certification stating whether the source triggers the requirements of Section 2-1-412.
- 402.7 A specific designation of any information contained in the application that the applicant asserts is trade secret pursuant to Section 6254.7 of the Government Code. The applicant shall submit two copies of each page containing trade secret information. One copy shall be clearly labeled "Trade Secret," and each trade secret item shall be clearly marked. The second copy shall be clearly labeled "Public Copy," and each trade secret item shall be redacted. The applicant shall include, for each item which it asserts to be a trade secret, a statement signed by a responsible representative of the applicant identifying that portion of Government Code Section 6254.7(d) upon which the assertion is based and a brief statement setting forth the basis for this assertion.
- 402.8 Any other information requested by the APCO as necessary to determine whether the new, modified or altered source will comply with applicable regulatory requirements.

The application must contain sufficient information to enable the APCO to make a decision or a preliminary decision on the application and/or on any exemptions authorized by this Regulation. The APCO may consult with appropriate local and regional agencies to determine whether the application conforms with adopted plans and with local permit requirements..

B. Forms –link to form and example

- Form P101-B (one for facility)
- Form S (one per source)
- Form SC (one per source)
- Material Safety Data Sheet for each solvent used
- Form A if cold cleaner exhausts into add-on abatement device (one per device)
- Form HRA if Health Risk Assessment is triggered (one per source) per Regulation 2, Rule 5 or Regulation 2-1-316

C. Fees – link to Regulation 3 and example

Fees for New and Modified Sources are calculated based on the standards contained in BAAQMD Regulation 3, including, but not limited to:

- 3-302 Fees for New and Modified Sources
  - Filing fee
  - Fee Schedule E (Solvent Evaporating sources)
- 3-303 Back Fees, if applicable
- 3-304 Alteration, if applicable
- 3-305 Cancellation or Withdrawal, if applicable
- 3-306 Change in Conditions, if applicable
- 3-310 Fee for Constructing Without a Permit, if applicable
- 3-318 Public Notice Fee, Schools, if applicable
- 3-329 Fees for New Source Review Health Risk Assessment, if applicable
- 3-330, Fee for Renewing an Authority to Construct, if applicable
- 3-337, Exemption Fees, if applicable
  - Fee Schedule E (Solvent Evaporating Sources)

Discounts are also given to qualified small businesses and green businesses. Definitions for small and green business can be found in Regulation 3-209 and 241 respectively. If a business is identified as both small and green business, only small business discount shall apply:

- 3-302.1 Small Business Discount: 50% discount for filing fee, initial fee, and risk assessment fee
- 3-302.6 Green Business Discount: 10% discount for filing fee, initial fee, and risk assessment fee

For internal use only: permit evaluator should refer to VO for updated policies and regulations regarding application fee

D. Completeness - checklist

- ☐ All required data Forms/worksheets completed
- ☐ All required fees paid
- ☐ A cover letter, if necessary, which includes a background description of the proposed project. If the project involves an assembly line process or other complicated process, diagrams of the process should also be included with the background description.
- ☐ Sufficient information needed to calculate emissions, including toxics, from the proposed source(s).
- ☐ If a Health Risk Assessment is triggered, a completed Form HRA
- ☐ If the proposed source(s) is located within 1,000 feet of a school:
  a. The required public notification fee paid and
  b. Identification of all schools within 0.25 mi. of the source(s).
  c. Satellite map showing the sources and school boundaries.
- ☐ If the permit is not ministerial as set forth in Regulation 2-1-427:
  a. A completed CEQA Appendix H Form and

b. if the Air District is not the lead agency, any one of the following prepared by or under the supervision of the lead agency:

i. A Draft or Final Environmental Impact Report (EIR); or
ii. A contract for the preparation of a draft EIR; or
iii. A Negative Declaration; or
iv. A Notice of Preparation of a draft EIR; or
v. A copy of the Initial Study; or
vi. A commitment in writing indicating lead agency role.

- ☐ For any part of the application that has been claimed as trade secret:
  a. A public copy of application with trade secret information redacted; and
  b. For each section of the application that was claimed trade secret, a statement signed by the applicant identifying the portion of the Government Code Section 6254.7 (d) upon which the assertion is based and a statement setting forth the basis for this assertion.
- ☐ For new facilities and for modifications to existing facilities which will increase emissions more than 100 tons per year of carbon monoxide or 40 tons per year of either precursor organic compounds or nitrogen oxides, an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source which demonstrate that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification.
- ☐ Green Business certification. if applicable
- ☐ Small Business certification, if applicable

Additional information is required if it is an application which triggers Regulation 2-2 (New Source Review) requirements:

- ☐ CEQA-related information required under Section 2-1-416 for a new major facility, and for a modification to a major facility that will increase emissions more than 100 tons per year of carbon monoxide, 40 tons per year of either precursor organic compounds, sulfur dioxide, or nitrogen oxides, or 10 tons per year of PM2.5, an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source that demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification.
- ☐

Additional item(s) may be required to COMPLETE a permit application

- ☐ Information regarding compliance status of proposed source with applicable requirements.

Additional item(s) may be required for the Air District's EVALUATION of a permit application

- ☐ If BACT is triggered per Regulation 2-2-301, information regarding compliance status with applicable BACT.
- ☐ If offsets are triggered per Regulation 2-2-302 and/or 2-2-303, information regarding source of offsets or banking certificate to be used.

V. ENGINEERING EVALUATION EXAMPLE

EVALUATION REPORT

Plant A100 Plant A WayA Town, CA 90000

Application #[insert facility #] - Plant #[insert plant #]

I. BACKGROUND

Plant Ahas applied for a Permit to Operate for the following equipment:

S-318 Solvent Cleaner, Inland Technology, Model IT48WC, 48 Gallon Capacity

Plant A replaced a permitted System One Model 570 cold cleaner (S-305) in June of 2008 and recently discovered that the Air District had not been notified of the change. The facility has been using the same solvent permitted for S-305 and operating S-318 under Permit Condition #20866. As part of this application, S-305 will be removed and the replacement cold cleaner will be permitted as a new source number (S-318).

S-318 is used in the Continuous Annealing Line Maintenance Shop for maintenance and repair activities. As such, S-318 is subject to Regulation 8-16.303.5 and the facility complies with Regulation 8-16-303.5.2 by using branched, cyclic, or linear completely methylated siloxane (VMS), which is a Non-Precursor Organic Compound (NPOC), as the cleaning solution. In addition, S-318 meets the limited exemption criteria per Regulation 8-16-118, "Limited Exemption, Compounds with Low Volatility," and is exempt from Regulation 8-16-303.4.

Plant A submitted a minor revision to the Title V permit for this change under Application #29785 along with this New Source Review (NSR) application. The Statement of Basis is included as part of the New Source Review evaluation.

II. EMISSION CALCULATIONS

Table 1. Annual and Daily NPOC Emissions for S-318

Solvent	Max Annual Throughput (gal/yr)	Density (lb/gal)	VOC Content (lb/gal)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)	Highest Daily Emissions (lb/day)
Methylated Siloxane	40	7.9	7.9	316	0.158	1.74

Basis: - Operating Schedule: 8 hours/day; 7 days/week; 52 weeks/year.
- Organic solvents are assumed to be 100% volatile and emitted into the atmosphere.
- Maximum day 16 hours/day

Condition #20866 covers 10 cold cleaners using methylated siloxanes, each limited to 40 gallons per consecutive 12-month periods for a combined emissions limit of 3,160 lbs NPOC per year (316 lbs/year/cleaner x 10 cleaners). On October 24, 2018, prior to the submittal of this application, the facility and Air District inspector verified the removal of sources S-190, S-195, S-206, S-210, S-215, S-308, S-309, and S-317.

III. CUMULATIVE INCREASE

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Table 2. Cumulative Emissions Increase, Post 4/5/91

Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NPOC	0.000	0.158	0.158

IV. TOXIC SCREENING ANALYSIS

A Health Risk Assessment (HRA) is required when the emissions of toxic air contaminants (TACs) are at or exceed the trigger levels outlined in Regulation 2, Rule 5, Table 2-5-1. There are no TACs listed in Table 2-5-1associated with this source.

V. BEST AVAILABLE CONTROL TECHNOLOGY

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2, or PM_{10}.

At a maximum daily rate of 1.74 lbs of NPOC per day, BACT is not triggered.

VI. OFFSETS

NPOC emissions are not subject to offset requirements; therefore, offsets are not required.

VII. STATEMENT OF COMPLIANCE

Air District Rules
S-318 is subject to and expected to comply with general operating requirements of Regulation 8-16-303 (Cold Cleaner Requirements) including the requirements that the equipment shall be operated and maintained in proper working order, that liquid solvent leaks shall be repaired immediately, that solvent shall not stored or disposed of in a manner that will cause or allow evaporation into the atmosphere, and that waste solvent residues are disposed by the methods allowed in Section 8-16-303 and the cold cleaner meets the operating and general equipment requirements contained in Sections 8-16-303.2 and 303.3 and 303.5 (if the cold cleaner is used for repair and maintenance cleaning); and the recordkeeping requirements of Regulation 8-16-501 (Solvent Records). In addition, S-318 meets the limited exemption criteria per Regulation 8-16-118, "Limited Exemption, Compounds with Low Volatility," and is exempt from Regulation 8-16-303.4. As such, S-18 is subject to and expected to comply with Regulation 8-16-502 (Burden of Proof) to demonstrate eligibility for the exemption.

California Environmental Quality Act (CEQA)
Permit applications may be statutorily and/or categorically exempt from CEQA or subject to CEQA review. Please see the General Evaluation Guidance, which contains a further discussion of CEQA requirements and steps for permit evaluators to document this in Engineering Evaluation reports.

New Source Performance Standards (NSPS)
NSPS is not triggered.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)
This source does not use any halogenated solvents listed in Regulation 8-16-216 (Halogenated Solvent Cleaners); therefore, NESHAP is not triggered.

Prevention of Significant Deterioration (PSD)
PSD is not triggered.

School Notification (Regulation 2-1-412)
This project is over 1,000 feet from the nearest K-12 school, and is therefore not subject to the public notification requirements.

VIII. PERMIT CONDITIONS

Permit Condition #

For S202 - Cold Cleaner
S318, Cold Cleaner, Inland Technology, Model IT48WC, 48 Gal

1. The Owner/Operator of Cold Cleaners S202 and S318 shall not exceed the following usage limit for each cleaner during any consecutive twelve-month period:

   Methylated Siloxane 40 gallons/year/cleaner
   (Basis: Cumulative Increase)

2. The Owner/Operator of sources S202 and S318 may use solvent other than the material specified in Part 1 above, and/or usages in excess of those specified in Part 1 above, provided that the Owner Operator can demonstrate that all of the following are satisfied:
   a. S202 and S318 Cold Cleaners comply with Regulation 8-16-303.5;
   b. The total NPOC combined emissions from S202 and S318 do not exceed 632 pounds in any consecutive twelve-month period; and
   c. The use of these alternate materials does not increase toxic air contaminant (TAC) emissions above any acute and/or chronic TAC health risk assessment trigger level in Table 2-5-1 of Regulation 2, Rule 5. The owner/operator shall maintain records of any TAC component contants of each alternate material used and supporting mass emission calculations demonstrating TAC emissions do not exceed the acute and/or chronic TAC trigger levels in Table 2-5-1 of Regulation 2, Rule 5 by calculating TAC emissions on a pound per hour and pound per year basis, respectively..
   (Basis: Cumulative Increase)

3. To determine compliance with the above conditions, the Owner/Operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including the following information:
   a. Quantities of solvent used at each source on a monthly basis.
   b. If a material other than that specified in Part 1 above is used, NPOC and toxic component contents of each alternate material used; and mass emission calculations to demonstrate compliance with Part 2.b. on a monthly basis and 2.c. on a daily basis
   c. Monthly usage and/or daily emission calculations shall be totaled for each consecutive twelve-month period.

   (Basis: Cumulative Increase)

End of Conditions

IX. RECOMMENDATION

I recommend that the Air District waive the Authority to Construct and issue a Permit to Operate for the following:

S-318 Solvent Cleaner, Inland Technology, Model IT48WC, 48 Gallon Capacity

By:_______________________ Date:_________

VI. APPENDIX

A. Fees Calculation Example:

Applicant: a family-owned metal cleaning service is applying for a permit to operate a new cold cleaner. The applicant estimates a net solvent usage of 100 gallons of 100 percent methylated siloxane annually. The business operates with only 7 employees and has a gross annual income of $400,000, so it qualifies as a Small Business. It is also certified as a green business under the Bay Area Green Business Program. The facility has not constructed nor operated the cold cleaner and is therefore not subject to Regulation 3-310 fees (Fees for Constructing Without a Permit).

Fee calculation*:

Filing Fee (per 3-302) $593

Initial Fee (per 3-302 and Schedule E) $1083

(100 gals) x ($1,892/1,000 gals) = $189**

< minimum fee per source of $942

Risk Assessment Fee $0

Methylated siloxane is not a TAC

Permit to Operate Fee $781

(100 gals) x ($942/1,000 gals)** = $94

< minimum fee per source of $679

total fees before discount $2,457

Small Business Discount .... - (50%)($593+$1083) = $838

Green Business Discount .... $ 0

Only Small Business Discount applies

for a qualified small and green business

Total application fee $1,619

** Fee calculation example is based on fee policies as of July 1, 2022, and Regulation 3 adopted June 15, 2022.*

***Fee calculation is rounded to the nearest dollar*

B. References

[1] United States Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors (AP-42)*, 5th ed., vol.1, Ch. 4.6. Available: https: //www3.epa.gov/ttn/chief/ap42/ch04/final/c4s06.pdf. [Accessed: July. 12, 2019]

[2] OAQPS Guidelines, *Control of Volatile Organic Emissions from Solvent Metal Cleaning.* Available: https://www3.epa.gov/airquality/ctg_act/197711_voc_epa450_2-77-022_solvent_metal_cleaning.pdf. [Accessed: July.12, 2019]

C. Version History

- Version 1 – 4/29/2020
    - Drafted by Chloe Dieu – Air Quality Engineering Intern
    - Reviewed by Mark Gage – Air Quality Engineer
- Version 2 – 12/15/2023
    - Updated by Carol Lee – Supervising Air Quality Engineer