

Engineering Evaluation
1776 Laurel St., San Carlos
1776 Laurel Street, San Carlos, CA 94070
Plant No. 203393
Application No. 694744

Background

On behalf of the Peck Administrative Trust, MG Remediation, Inc. (MG) has applied for an Authority to Construct for the following equipment:

S-1 Sub-Slab Depressurization System
Make: OBAR Blower, Model: GBR76UD
Maximum Outflow: 81 SCFM

The site is located 1776 Laurel Street, San Carlos, CA 94070. This is not located within an Overburdened Community (OBC) as defined in Air District Regulation 2-1.

The equipment will be installed with the objective of mitigating vapor intrusion in the adjacent building, located at 1752-1753 Laurel Street, San Carlos, CA. The site is a former dry-cleaning facility and has contaminated soil.

The project includes a vacuum blower with a maximum flow capacity of 195 SCFM. However, as agreed upon by the applicant, the flow will be limited to 81 SCFM and enforced through the permit conditions below.

The main compound found in the soil was Tetrachloroethylene (PCE), expected emissions were based on laboratory results from samples taken at the site by McCampbell Analytical in August 2023. However, since former dry cleaners often have soil contaminated with trichloroethylene (TCE), vinyl chloride, and vinylidene chloride (1,1-Dichloroethene) in addition to tetrachloroethylene, all these compounds were also included in the Health Risk Assessment (HRA), in accordance with the BAAQMD TAC Emission Factor Guidelines. Further details are provided in the Toxic Risk Screening section of this document.

The applicant has requested in writing to operate under the Air District Regulation 8-47-113: less than one pound per day emissions. Therefore, no abatement would be required as stated in Air District Regulation 8-47-301. The petition will be evaluated in accordance with the requirements in Air District Regulation 8-47.

Procedures are outlined in the conditions found below. The applicant will be required to provide written notification at the start of the operation. The applicant will be required to stay below the acute and chronic trigger levels of Regulation 2-5 and the permit conditions below.

Emission Calculations

Main Emissions: SSD System - VOCs

Initial soil vapor data will be used to estimate precursor organic compound (POC), non-precursor organic compound (NPOC), and toxic air contaminant (TAC) emissions. It is assumed that the equipment can operate 24 hours a day, 365 days a year. The following are assumptions used to estimate emissions.

- Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C; 1 mole occupies 24.15 Liters (or 386.8 ft³/lb-mol)

- Toxic Air Contaminants (TAC) emissions will be based on soil vapor data submitted with this application.
- The organic influent flow rate of 81 SCFM.
- The system will operate unabated with basis on the exemption in Air District Regulation 8-47-113.

Table 1. SSD System Unabated Emissions for S-1						
Pollutant	CAS #	Unabated Emissions				
		Inlet Conc. (ug/m3)	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate (lb/yr)	Annual Emission Rate (ton/yr)
Tetrachloroethylene (PCE)	127-18-4	13000	3.9E-03	9.5E-02	3.5E+01	0.0173
Trichloroethylene (TCE)	79-01-6	12	3.6E-06	8.7E-05	3.2E-02	0.0000

Notes:

1. Influent data for all compounds was obtained from McCampbell Analytical analysis. This data will be used as the pre-abatement concentration.
2. It is assumed that equipment will operate 24 hours a day, 365 days a year.
3. Per Regulation 1-234 and 40 CFR 51.100(s)(1), PCE is considered a Non-Precursor Organic Compound (NPOC).

Table 2 summarizes organic compounds emissions based on the data in Table 1.

Table 2. Organic Emissions Review for S-1					
Pollutant	Effluent Volumetric Concentration (ppmv)	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate (lb/yr)	Annual Emission Rate (ton/yr)
POC	0.02	3.6E-06	8.7E-05	0.03	0.0000
NPOC	19.55	3.9E-03	9.5E-02	34.52	0.0173
Total	19.57	3.9E-03	9.5E-02	34.55	0.0173

The annual emissions rates will be used to set up the limits in the conditions of this application, however the numbers in table 3 will be rounded up as follows: 0.1 lb/yr for POC and 35.6 lb/yr for NPOC.

Cumulative Increase

Table 3. Cumulative Increase			
Pollutant	Current Permitted Emissions, Post 4/5/1991 (ton/yr)	Application New Emissions Increase (ton/yr)	New Cumulative Increase (ton/yr)
POC	0.000	0.0000	0.0000

Toxic Risk Screening

At the given rates in Table 4 and Table 5, the PCE emissions exceed the Chronic Trigger Levels in Regulation 2-5, Table 2-5-1. Consequently, the project was subject to a refined Health Risk Assessment (HRA).

Table 4. Project Acute Emissions Review - Regulation 2-5				
Pollutant	CAS #	Hourly Emission Rate (lb/hr)	Acute Trigger Level (lb/hr)	Exceeds Acute Trigger Level?
Tetrachloroethylene (PCE)	127-18-4	3.9E-03	8.80E+00	No
Trichloroethylene (TCE)	79-01-6	3.6E-06	N/A	N/A
1,1-dichloroethylene	75-35-4	7.3E-07	N/A	N/A
Vinyl Chloride	75-01-4	4.7E-07	8.0E+01	No

Table 5. Project Chronic Emissions Review - Regulation 2-5				
Pollutant	CAS #	Annual Emission Rate (lb/yr)	Chronic Trigger Level (lb/yr)	Exceeds Chronic Trigger Level?
Tetrachloroethylene (PCE)	127-18-4	3.5E+01	1.40E+01	Yes
Trichloroethylene (TCE)	79-01-6	3.2E-02	4.10E+01	No
1,1-dichloroethylene	75-35-4	6.3E-03	2.7E+03	No
Vinyl Chloride	75-01-4	4.1E-03	1.1E+00	No

Results from this HRA indicate that the project cancer risk is estimated at 0.98 in a million, the project chronic hazard index (HI) is estimated at 0.0067, and the project acute HI is estimated at 0.00021. In accordance with the District's Regulation 2-5-301, this source does not require TBACT because the estimated source risk does not exceed a cancer risk of 1.0 in a million, or chronic hazard index of 0.20. Since the estimated project cancer risk does not exceed 10 in a million and hazard indices do not exceed 1.0, this proposed project complies with the District's Regulation 2-5-302 project risk requirements, for projects not located in an Overburdened Community, as defined in Regulation 2-1-243.

Table 6. Health Risk Summary			
Receptor	Cancer Risk (in a million)	Chronic HI	Acute HI
Resident	0.98	0.0020	N/A
Worker	0.28	0.0067	N/A
Student (Redwood High School)	0.024	0.00033	N/A
Point of Maximum Impact (PMI) (1-hour)	N/A	N/A	0.00021

Note:

- Student risk values were calculated because there is a K-12 school within 1,000 feet of the facility.

Offsets

Pursuant to Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits, or is permitted to emit, more than 10 tons per year of precursor organic compounds (POCs) or nitrogen oxides (NO_x). Furthermore, pursuant to Regulation 2-2-303 offsets must be provided for any new or modified source at a major facility with a cumulative increase that exceeds 1.0 ton per year of PM₁₀, PM_{2.5}, or sulfur dioxide (SO₂).

The facility is not expected to have a Potential to Emit (PTE) greater than 10 tons per year of POC. Therefore, the requirements of Regulations 2-2-302 and 2-2-303 do not apply.

Best Available Control Technology (BACT)

In accordance with Regulation 2-2-301, Best Available Control Technology (BACT) is triggered for any new or modified source with a PTE 10 pounds or more per highest day of POC, NPOC, nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxides (SO₂), particulate matter less than 10 micrometer (PM₁₀) and particulate matter less than 2.5 micrometer (PM_{2.5}).

NPOC and POC emissions are expected to be below 10 lb/day for S-1. Therefore, BACT is not required.

California Environmental Quality Act (CEQA)

This project is classified as ministerial under the District Regulation 2-1-311, because the engineering review for this project requires only the application of standard emission factors and established formulas as specified in Chapter 9.2 of the District's Permit Handbook. This project does not trigger BACT or TBACT and is not subject to the health risk assessment requirements of Regulation 2, Rule 5. This review follows objective procedures and applies standard permit conditions; and therefore, the review of this project is not discretionary as defined by CEQA. Since this project is ministerial, it is not subject to CEQA review requirement of Regulation 2-1-310, and no further CEQA analysis is required.

Statement of Compliance

Regulation 2-1-243 Public Notice. Prior to approving an application for an authority to construct or permit to operate, a public notice, fully describing the potential emissions, shall be prepared for the following cases:

- (i) A new or modified source located within 1000 feet of the outer boundary of a K-12 school site and which results in the increase in emissions of any substance into the ambient air which has been identified by the California Air Resources Board or the APCO as a toxic air contaminant or a hazardous air contaminant or which is on the list 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.
- (ii) A new or modified source located within an Overburdened Community as defined in Section 2-1-243 and for which a Health Risk Assessment is required pursuant to Section 2-5-401

This project is not located within an Overburdened Community and does not trigger a Health Risk Assessment, but it is within 1,000 feet from the K-12 school below. Therefore, this project is subject to the Public Notice requirements.

-Redwood High School, 1968 Old County Rd, Redwood City, CA 94063.

Regulation 2-5 New Source Review of Toxics Air Contaminants. The source is expected to exceed the chronic trigger levels in regulation 2-5, Table 1 for PCE, therefore a refined HRA was required, and the operator will be required to keep emissions under the permit condition limits at all times.

Regulation 8-47-301 Emission Control Requirement, Specific Compounds. any soil vapor extraction operation which emits benzene, vinyl chloride, tetrachloroethene, methylene chloride, and/or trichloroethene shall be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight.

However, the facility will operate under the exemption in Regulation 8-47-113, that allows the equipment to operate without an abatement as long as daily emissions are below 1 pound. The facility is expected to comply with this requirement based on the emissions in Table 1 of this document.

Regulation 8-47-501 Recordkeeping. The facility is required to keep the pertinent records per condition below pursuant to Regulation 8-47-501.

Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS) do not apply to this project.

Permit Conditions

Permit Condition #100250 for S-1

1. The influent vapor flow rate shall not exceed 81-SCFM from the blower of S-1.
[Basis: Cumulative Increase, Regulation 2-5].
2. In no event shall tetrachloroethylene emissions to the atmosphere from S-1 exceed 34.6 pounds per 12-month consecutive period.
[Basis: Regulations 8-47-301 and 8-47-302 and Toxics].
3. In no event shall emissions to the atmosphere from S-1 of toxic air contaminants (TAC) other than tetrachloroethylene exceed the trigger levels listed in District Regulation 2-5, Table 2-5-1.
[Basis: Regulations 8-47-301 and 8-47-302 and Toxics].
4. The owner/operator shall not emit from S-1 more than 0.1 pounds of precursor organic compounds (POC) and 34.6 pounds of non-precursor organic compounds (NPOC) per 12-month consecutive period. [Basis: Cumulative Increase]
5. Upon initial start-up, the owner/operator shall take air samples from S-1 for laboratory analysis using EPA Method TO-15. The air samples shall be taken at the following locations:
 - a. At the outlet of the system prior to venting to the atmosphere.
[Basis: Regulation 2-1-403, Regulation 8-47-301].
6. 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-1. 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, 4, and 5 of this condition.
[Basis: Regulation 2-1-403, Regulation 2-5].

7. The owner/operator shall report any noncompliance with these conditions to the Compliance and Enforcement Division 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]

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]

Recommendation

The Air District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1,000 feet of a K-12 school which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public and reviewed, the Air District will make a final determination on the permit.

I recommend that the Air District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct and/or a Permit to Operate for the following equipment:

S-1 Sub-Slab Depressurization System
Make: OBAR Blower, Model: GBR76UD,
Maximum Outflow: 81 SCFM
Permit Condition No. 100250

By Isis Virrueta,
Air Quality Engineer II
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