**Lehigh Southwest Cement Company**
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March 30, 2011

Scott Lutz
Air Quality Engineering Manager - Toxic Evaluation Section
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

**Subject: Health Risk Assessment Report- Permanente Plant**

To: Scott Lutz

In agreement with the Bay Area Air Quality Management District (BAAQMD), Lehigh tasked AMEC Geomatrix, Inc. to complete an AB 2588 Health Risk Assessment (HRA) for its Permanente facility in Cupertino, California (the Facility).

Based on the current 2008 – 2009 plant infrastructure combined with the consideration of the Life Age Sensitivity Factor (LASF), the model predicts a potential future production increase to 951,790 short tons of clinker and 994,020 short tons of cement to be below the notification level. As previously discussed, changes mandated by implemented MACT regulations will further the plant from more stringent notification requirements at it permitted full production capacity.

From our previous submittal, two major changes occurred which impacted our AB2588 reporting with regards to the calculated mercury emissions.

1. The method of estimating mercury emissions from this facility was updated in 2009.

    - The method of estimating mercury emissions from this facility was voluntarily updated in 2009. Prior to 2009, mercury emissions were estimated using source testing, which was the EPA requested method at that time but only represents a snap shot. In 2009, like the majority of other cement plants in the United States, mercury emissions estimates were changed and based on a mass balance approach, which EPA now defines as the more accurate way to calculate mercury emissions from cement plants. This incorporated measuring the mercury in the incoming raw materials and fuels and assuming all the mercury evaporates and is vented through our stacks.

2. The application of reference exposure levels defining new mercury reference exposrus levels that are published by OEHHA.

    - OEHHA reduced the reference exposure level for short-term exposure by a factor of 3 in December 2008. As requested by BAAQMD for the Revised AB2588 Report, the reference exposure level published prior to December 2008 was applied to emissions prior to 2008 (i.e., 2005 production) and the reference exposure level published in December 2008 was applied to all other production years (2008/2009, 2010, 2011 and 2013),

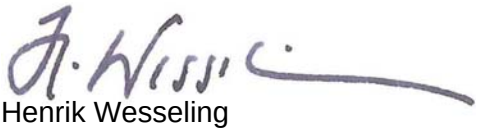
With the more conservative risk criteria and the mass balance approach to calculate mercury emissions, the theoretical area affected by 2008/2009 emissions was extended beyond the area affected by 2005 emissions. The 2010 area is considerably less and our projected 2011 impacted area is almost non-existent.

As discussed previously, we have already initiated phase 1 of our two step approach, which has reduced our mercury emissions by 30%. We have purchased and are expecting shipment of the activated carbon injection system (ACI) the first week of April 2011. After receipt of all permits, the installation and commissioning will start immediately.

I would like to schedule a meeting with the District to discuss this report's results, the anticipated facility changes based on new regulatory requirements, and the both near and long term production plans for the Permanente facility.

If you have any questions regarding this report, please feel free to contact me at 408-996-4271.

Sincerely,



Henrik Wesseling
Plant Manager
Lehigh Southwest Cement Company – Permanente Plant

cc: Brian Bateman, Bay Area Air Quality Management District
Robert Hull, Bay Area Air Quality Management District
Shane Alesi, Heidelberg Technology Center
Tim Matz, Lehigh Hanson
Axel Conrads, Lehigh Southwest Cement Company
Scott A. Renfrew, Lehigh Southwest Cement Company

# REVISED AB 2588 HEALTH RISK ASSESSMENT 2005, AVERAGE 2008/2009, AND 2013 PRODUCTION SCENARIOS

Cupertino Facility
Cupertino, California

*Prepared for:*
**Lehigh Southwest Cement Company**
**Cupertino, California**

*Prepared by:*
**AMEC Geomatrix, Inc.**
**Oakland, California**

March 2011

Project 0111910000.00004

AMEC Geomatrix

March 30, 2011

Project 011191000.00004

Mr. Scott Lutz
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

**Subject:** **REVISED AB 2588 HEALTH RISK ASSESSMENT FOR 2005, AVERAGE 2008/2009, AND 2013 PRODUCTION SCENARIOS**
Lehigh Southwest Cement Company
Cupertino, California

Dear Mr. Lutz:

On behalf of Lehigh Southwest Cement Company, AMEC Geomatrix Inc. (AMEC) is submitting this Revised AB2588 Health Risk Assessment for the Lehigh Cupertino Facility (Permit No. A0017).

Please contact us if you have any questions.

Sincerely yours,
AMEC Geomatrix, Inc.

Caryn Kelly
Senior Toxicologist

Ann Holbrow Verwiel
Senior Toxicologist

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Attachments: Revised AB 2588 Health Risk Assessment for 2005, Average 2008/2009, and 2013 Production Scenarios

cc: Brian Bateman, Bay Area Air Quality Management District (electronic only)
Robert Hull, Bay Area Air Quality Management District (electronic only)
Shane Alesi, Heidelberg Technology Center (electronic only)
Tim Matz, Lehigh Hanson (electronic only)
Axel Conrads, Lehigh Southwest Cement Company (electronic only)
Scott A. Renfrew, Lehigh Southwest Cement Company (3 copies – 1 electronic)

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AMEC Geomatrix

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## APPENDICES

## DEFINITIONS AND ABBREVIATIONS

### DEFINITIONS

Acute health impacts: An adverse non-cancer health effect that occurs over a relatively short period of time (e.g., minutes or hours). The term is used to describe brief exposures and effects which appear promptly after exposure.

Chronic health impacts: An adverse non-cancer health effect that develops and persists (e.g., months or years) over time after long-term exposure (greater than one year) to a substance.

Cancer health impacts: The development of cancer as a result of exposure to carcinogenic substances.

Prioritization Score: A score calculated for each of three health effects endpoints (cancer, chronic and acute) for use by air districts to rank facilities into high, intermediate and low priority categories and determine if a health risk assessment should be performed.

Regulatory Notification Level: The health risk threshold above which public notification would be required by the BAAQMD. The regulatory notification level for BAAQMD is $1.0x10^{-5}$ (one-in-one-hundred thousand) for carcinogenic risk and 1.0 for noncarcinogenic hazard indexes. Higher thresholds ($10^{-4}$ and 10) are used to require emission reduction plans.

Zone of Impact: The geographical area surrounding a facility with a predicted cancer risk estimate at or above $1x10^{-6}$ (one-in-a-million) as predicted by an AB 2588 health risk assessment. The regulatory notification level (see above) is the level at which public notification is required.

## ABBREVIATIONS

| | |
|---|---|
| BAAQMD | Bay Area Air Quality Management District |
| CAPCOA | California Air Pollution Control Officers Association |
| CARB | California Air Resources Board |
| GLC | Ground-Level Concentration |
| HARP | Hotspots Analysis and Reporting Program |
| LASF | Lifetime Age Sensitivity Factor |
| MEIR | Maximum Exposed Individual Resident |
| MEIW | Maximum Exposed Individual Worker |
| OEHHA | Office of Environmental Health Hazard Assessment |
| PMI | Point of Maximum Impact located off site |
| REL | Reference Exposure Limit |
| TAC | Toxic Air Contaminant |
| URV | Unit Risk Value |
| ZOI | Zone of Impact |

# REVISED AB 2588 HEALTH RISK ASSESSMENT
# 2005, AVERAGE 2008/2009, AND 2013 PRODUCTION SCENARIOS

Lehigh Southwest Cement Company
Cupertino Facility

## EXECUTIVE SUMMARY

In 2009 at the request of the Bay Area Air Quality Management District (BAAQMD), AMEC Geomatrix, Inc. (AMEC) conducted an AB 2588 health risk assessment (HRA) for the Permanente Plant in Cupertino, California (the Facility). This Revised AB 2588 HRA considers three main emission scenarios: (1) emissions for production rates in 2005 as reported in the 2008 Comprehensive Emission Inventory (2008 CEIR as amended), (2) emissions for a low production rate based on an average of production rates in 2008 and 2009, and (3) projected emissions for production in 2013 following structural changes at the Facility and compliance with National Emission Standards for Hazardous Air Pollutants (NESHAPs). Three additional emissions scenarios (optimal production, 2010, and 2011 production) also were evaluated for specific endpoints (cancer and acute hazard index). Potential human health risks were evaluated for a maximum exposed individual resident (MEIR), a maximum exposed individual worker (MEIW), and the point of maximum impact (PMI). In this evaluation, the PMI occurs in an open-space area north and east of the Facility where no permanent receptors are present. The requirement for notification is evaluated based on results at actual receptors (MEIR and MEIW), and not based on conditions at the PMI if a receptor is not present at that location.

### Revisions to AB2588 HRA based on Comments from BAAQMD

A previous version of the AB2588 HRA Report was submitted to the BAAQMD on September 14, 2010. BAAQMD provided several comments to the AB2588 HRA via emails on October 22, 2010, December 16, 2010, and February 24, 2011 as follows:

1. Present health risk estimates with two significant figures;
2. Show Facility boundary on figures;
3. Review mercury emissions from the kiln and provide a revised AB2588 HRA protocol explaining revisions to mercury emission estimates;

4. Eliminate conclusions about potential further actions (e.g., whether notification is required), which is the BAAQMD's role.
5. Evaluate emissions prior to July 2009 without using lifetime age sensitivity factors (LASFs), clearly noting whether LASFs are or are not included in a particular calculation;
6. Apply reference exposure levels (RELs) that were revised in December 2008 only to emissions after December 2008;
7. Document that proper age sensitivity factors for children were used for the evaluation of child care facilities and schools;
8. Add a figure showing the location of maximum exposed individual receptors for chronic noncarcinogenic health effects; and
9. Provide additional figures for carcinogenic and acute noncarcinogenic effects that are zoomed in closer to the facility.

In the process of posting Facility boundaries (Item #2), AMEC recognized that the receptor locations provided by BAAQMD were not consistent with the property boundary provided by Lehigh. Based on this review, the receptor grid was modified to exclude receptors within the site boundary and to add receptors in off-site areas where they were not previously present. As a result, receptor numbers in this report are not the same as the receptor numbers in the previous report. In the process of reviewing the receptors, several additional schools were also identified within the zone of impact and have been added as specific receptors in the model, and the locations of the MEIW, MEIR, and PMI were reevaluated.

The revisions to mercury emissions requested by BAAQMD were summarized in a Final Revised Protocol for Revisions to Mercury Emissions and Development of a 2013 Production Scenario (the Mercury Emission Protocol; AMEC, 2011) following comments by the BAAQMD to initial drafts. The Mercury Emission Protocol revised the data used to estimate mercury emissions that were previously submitted to BAAQMD in 2009 (Lehigh, 2009). Historically, mercury emissions were estimated consistently with other metals using the results of source tests and were reported in the 2008 Comprehensive Emission Inventory Report (CEIR) based on source test results and production rates in 2005. In 2009, Lehigh submitted a revision to the mercury emissions based on a mass balance approach for emissions (Lehigh, 2009). The 2009 revision to the mercury emissions was used in the previous version of the AB2588 HRA published in September 2010 (AMEC, 2010c). Since that time, the estimate of mercury emissions has been revised to reflect more recent data on the content of

mercury in the raw materials used in the cement process and higher maximum hourly production rates[1] at the Facility. Mercury emissions also were estimated for 2010 and 2011 to reflect lower mercury emissions from changes in facility operations. Mercury emissions were estimated for 2010 based on implementation of a kiln mill dust collector conveyance system, which began in April 2010 and reduced emissions of mercury by 30 percent. For the 2010 production scenario, the 30 percent reduction was applied to annual 2010 production emissions[2] and maximum hourly emission rates. Emissions of other chemicals were also updated to reflect a small increase in production in 2010 compared to the average of 2008/2009. Mercury emissions were estimated for 2011 based on the addition of activated carbon sorbent to the flue of the kiln to remove mercury. Lehigh began testing the reduction of flue gas mercury in September 2010 and the introduction of the sorbent injection system is expected to reduce mercury emissions by an additional 50 percent over 2010 emissions for a total reduction of 65 percent from 2008/2009 emissions. Emissions of other chemicals for the 2011 scenario were assumed to remain the same as in 2010. The final Mercury Emissions Protocol is presented as Appendix A.

**Results for 2005 Production Rates (2008 CEIR as amended)**

Based on historical operating conditions in 2005 (including revisions to mercury emissions), potential human health risks for cancer and noncancer endpoints were below levels requiring notification for the MEIR and MEIW based on the regulations in place at the time those emissions occurred (i.e., excluding the LASF and using reference exposure levels published prior to December 2008).

[1] Maximum hourly production rates are a function of capacity and not a function of market conditions. Annual production rates reflect market conditions.

[2] Although the kiln mill dust collector conveyance system was only fully operational for about 6 full months in 2010, the emission rates herein are based on 12-month operation of that system.

### Results for 2008/2009 Average Production Rates (Low Production Scenario)

Based on operating conditions at the Facility using an average of 2008/2009 production rates, potential human health risks for cancer and noncancer chronic endpoints at the MEIR and MEIW were below notification thresholds used by BAAQMD ($1.0x10^{-5}$ for carcinogens and 1.0 for noncarcinogens). As shown in Table ES-1, this conclusion regarding cancer risk for average emissions in 2008/2009 includes the lifetime age sensitivity factor (LASF) for carcinogens, which was recently adopted by BAAQMD in January 2010 (BAAQMD, 2010). However, acute hazard indexes at the MEIR (2.1) and MEIW (2.6) exceeded the notification threshold of 1.0. Additional steps have been taken by Lehigh in 2010 and are being taken in 2011 to address exceedance of the notification level (see below). The increase in the acute hazard index from 2005 to 2008/2009 results from the revisions to the toxicity criteria for mercury made in December 2008 by OEHHA. In 2008, OEHHA added an additional factor of 3 to the uncertainty factor, which reduced the reference exposure level for mercury, but did not change the study used as the basis for the assessment.

### Results for 2010 Production Rates Including Kiln Mill Dust Shuttling

We also evaluated potential acute hazard indexes based on the reduction in mercury emissions achieved by kiln mill dust collector conveyance system (Appendix A). Based on operational data in 2010, this process removes approximately 30 percent of the mercury emissions. We evaluated potential acute hazard indexes based on this reduction of mercury emission, but while lower than 2008/2009, the predicted acute hazard indexes exceeded the BAAQMD notification level of 1.0 at the MEIR (1.5) and MEIW (1.9).

### Projected Results for 2011 Including Additional Kiln Mercury Emissions Reduction from Sorbent Injection

We also evaluated potential acute hazard indexes based on the additional reduction in mercury emissions achieved by injecting activated carbon sorbent (Appendix A). Based on testing performed by Lehigh beginning in September 2010, this process removes approximately 50 percent additional mercury emissions from the kiln. We evaluated potential acute hazard indexes based on this projected reduction of mercury for 2011 emissions. As presented in Table ES-1, results indicate that the predicted acute hazard indexes will be below the BAAQMD notification level of 1.0 at the MEIR (0.76) and MEIW (0.94). At 1.6, the predicted acute hazard index at the PMI exceeds

the BAAQMD notification level of 1.0. However, there is no specific off-site receptor at the location of the PMI, which is in open space along the property fence line.

**Results for Optimal Production Scenario**

We conducted an evaluation to address potential future increases in production and the effects on potential cancer risk estimates assuming all other operating conditions remained constant. We identified annual production rates for clinker and cement that would result in predicted cancer risks just below the $1.0x10^{-5}$ notification level (e.g., $9.8x10^{-6}$) at the MEIR including application of the LASF. We applied an adjusted production rate factor to sources associated with production, but not to some wind-driven fugitive sources such as stockpiles. Based on the evaluation, predicted cancer risk at the MEIR is below the notification level when a factor of 0.68 is applied to 2005 production rates. This corresponds to production of 951,790 short tons of clinker and 994,020 short tons of cement. Production rates are anticipated to be at or below this level through 2011.

**Results for 2013 Production Scenario**

We also developed a scenario for projected emissions in 2013 assuming that production rates are at a maximum level (1,600,000 tons of clinker) and that measures to meet NESHAPs requirements (e.g., mercury) and structural changes to the Facility are in place. These proposed changes are documented in the Mercury Emissions Protocol (Appendix A). Under the projected 2013 emission scenario, potential acute and chronic hazard indexes and carcinogenic risk were below notification levels set by BAAQMD at the MEIR and MEIW.

## DETAILED HRA REPORT SUMMARY

The HRA was conducted based on guidance for the California Environmental Protection Agency's AB 2588 "Air Toxics Hot Spots" program (OEHHA, 2003). The HRA was prepared using:

- three primary emission scenarios: emissions reported in the Comprehensive Emission Inventory Report (CEIR) for Lehigh Southwest Cement Company's Cupertino Facility for the 2005 Production year (AMEC, 2009)[3], emissions for

[3] As amended by the Air Quality Modeling Protocol (AMEC, 2010a), Revisions to CEIR for 2008 (AMEC, 2010b), and the Mercury Emissions Protocol (AMEC, 2011)

average production in 2008/2009, and emissions in 2013 following compliance with NESHAPs requirements and structural changes. Three additional scenarios were evaluated for specific endpoints: an optimal future production scenario based on potential carcinogenic risk, a 2010 production scenario following implementation of the kiln mill dust collector conveyance system, and a 2011 production scenario following implementation of a sorbent injection system.

- air dispersion coefficients developed as part of site-specific air dispersion modeling using AERMOD presented herein to predict off-site ground level chemical concentrations; and

- the Hotspots Analysis and Reporting Program (HARP) model developed by the California Air Resources Board to perform the calculations for carcinogenic, chronic noncarcinogenic, and acute noncarcinogenic health effects at the maximum exposed individual resident (MEIR), maximum exposed individual worker (MEIW), and point of maximum impact (PMI). The PMI in this case is in open space near the Facility but does not represent an actual off-site person.

Sixty-nine chemicals regulated under AB 2588 were identified as being emitted from 42 sources at the Facility. General categories of emissions included the kiln, raw materials, combustion byproducts, and stationary sources. The total annual and hourly emissions emitted from the Facility are presented in Table ES-2 for the following emission scenarios: 2005 (reported in 2008 CEIR as amended), average emissions in 2008/2009, and 2010. Emissions of mercury are the only difference between 2010 and 2011 production scenarios, and the 2011 mercury emissions are presented in a footnote to Table ES-2. Emission rates for other scenarios are presented in the main text or Appendix A. Table ES-3 identifies the health effect categories for each of these chemicals (i.e., acute and chronic noncarcinogenic health effects, and carcinogenic health effects) identified by the Office of Environmental Health Hazard Assessment (OEHHA, 2009).

The HARP model incorporates the ground level concentrations predicted by the air dispersion modeling into exposure and risk assessment algorithms. The results from HARP provide the necessary information to generate the zone of impact (ZOI; i.e., the geographical area potentially affected by emissions based on predicted carcinogenic risk of $1x10^{-6}$), to identify the potentially exposed populations, and to quantify potential health risks. The ZOI is different from the BAAQMD regulatory notification level ($1.0x10^{-5}$), the level above which public notification is generally required by BAAQMD.

As recommended by BAAQMD, regulations for evaluating human health risk that came into effect after 2008 were not applied to emissions from 2005 production.

**Chronic Noncarcinogenic Health Hazards**

The highest target organ-specific chronic hazard indexes for the MEIR (receptor #2040) were 0.18 and 0.34, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.092 and 0.18, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The increase in the chronic hazard index from 2005 to 2008/2009 results from changes to the regulations for the evaluation of health risks related to mercury exposure. The organ/system endpoint with the highest hazard indexes was the central nervous system or the respiratory system. The hazard indexes for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

The predicted chronic noncarcinogenic hazard indexes at the PMI (receptor #2037) were 0.21 and 0.41, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The predicted chronic noncarcinogenic hazard indexes are below the BAAQMD regulatory notification level of 1.0. The organ/system endpoint with the highest chronic hazard index was the central nervous system. The chemical contributing most significantly to predicted chronic hazard index is mercury (85 to 97 percent), which occurs naturally in the raw materials used to make cement. The emissions from the kiln contribute most significantly to the chronic hazard index (91 to 100 percent).

## Acute Noncarcinogenic Health Hazards

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) were 0.79 and 2.1, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.98 and 2.6, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The organ/system endpoint with the highest hazard indexes was the central nervous system. The values for the MEIW and MEIR were below the BAAQMD regulatory notification level of 1.0 based on 2005 production and the regulations in place at that time. The values for the MEIW and MEIR were above the BAAQMD regulatory notification level for average emissions in 2008/2009. The increase in the acute hazard index from 2005 to 2008/2009 results from changes to the regulations for the evaluation of health risks related to mercury exposure. In 2008, OEHHA added an additional factor of 3 to the uncertainty factor, which reduced the reference exposure level for mercury, but did not change the study used as the basis for the assessment.

Two additional emission scenarios were evaluated for potential acute noncarcinogenic health effects. An additional emission scenario for 2010 was also evaluated because the Facility began implementing kiln mill dust conveyance system in 2010, which reduces mercury emissions by 30 percent (Appendix A). Using 2010 production emissions, the highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) and MEIW (receptor #5076) were reduced to 1.5 and 1.9, respectively. Both values remain above the BAAQMD regulatory notification level of 1.0. In September 2010, Lehigh began testing the injection of powdered activated carbon sorbent into the kiln flue gas to further reduce mercury emissions. Installation of the system is expected to begin in March 2011, and be completed and operational in May 2011. The implementation of the system is expected to reduce maximum hourly mercury emissions by an additional 50 percent (Appendix A) for a total 65 percent reduction of emissions from 2008/2009. Using the projected 2011 production emissions, the highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) and MEIW (receptor #5076) were reduced to 0.76 and 0.94, respectively. Both values are below the BAAQMD regulatory notification level of 1.0.

The chemical contributing most significantly to predicted acute hazard index is mercury (97 to 99 percent), which occurs naturally in the raw materials used to make

cement. The kiln contributes most significantly to the acute hazard index (98 to 99 percent).

Predicted acute noncarcinogenic hazard index at the PMI (receptor #13156) was 1.6 and 4.4, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest predicted acute hazard index for the PMI (receptor #13156) was reduced to 3.1 based on 2010 production, which included KMDC dust conveyance. The highest predicted acute hazard index for the PMI was further reduced to 1.6 based on 2011 emissions, which included the implementation of the sorbent injection system to reduce mercury. The predicted acute noncarcinogenic hazard index is greater than the BAAQMD regulatory notification level of 1.0 at the PMI for the four emission scenarios. There is no specific off-site receptor at the location of the PMI, which is in open space. The AB 2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility.

**Potential Carcinogenic Risks**

The theoretical carcinogenic risks for the MEIR (receptor #2042) were $8.3x10^{-6}$ and $8.5x10^{-6}$, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production emissions). The predicted risk based on 2005 production does not include the LASF, which was published by OEHHA in 2009 (OEHHA, 2009) and adopted by BAAQMD in January 2010 (BAAQMD, 2010). The predicted risk based on average 2008/2009 production rates includes the LASF. The theoretical carcinogenic risks for the MEIW (receptor #5076) were $1.3x10^{-6}$ and $7.9x10^{-7}$, respectively, based on 2005 production rates (2008 CEIR as amended) and average 2008/2009 production rates (low production emissions). The LASF does not apply to an adult worker. None of the predicted risks for the MEIR and MEIW exceed the BAAQMD regulatory notification level of $1.0x10^{-5}$.

The chemicals contributing most significantly to predicted risk are hexavalent chromium (42 to 58 percent) and benzene (24 to 38 percent). The kiln contributes most significantly to the cancer risk (35 to 57 percent).

Predicted cancer risk at the PMI (receptor #12506) was $1.2x10^{-5}$ for both the 2005 production rates (2008 CEIR as amended) excluding the LASF, and the average 2008/2009 production rates (low production emissions) including the LASF. The predicted cancer risk at the PMI for 2005 production rates (2008 CEIR as amended)

and the average 2008/2009 production rates) is slightly greater than the BAAQMD's $1.0x10^{-5}$ regulatory notification level. The AB 2588 program focuses on long-term exposure for residents and workers, and none are present at the PMI for the Facility.

If production rates for cement and clinker were to increase from the low production rate and reach 68 percent of the production rate used to develop emissions based on 2005 production (2008 CEIR as amended), predicted cancer risk at the MEIR would be $9.8x10^{-6}$, just below the BAAQMD notification level. Using 68 percent of the 2005 production rates, the optimal production rates would be 951,790 short tons of clinker and 994,020 short tons of cement so that predicted cancer risk would remain below the notification levels.

**Sensitive Receptors**

The carcinogenic risk estimated for the sensitive receptors $2.5x10^{-7}$ to $5.7x10^{-7}$ for the 2005 production emissions and $3.2x10^{-7}$ to $1.0x10^{-6}$ for emissions from average production in 2008/2009; both emission estimates are below the BAAQMD regulatory notification level ($1.0x10^{-5}$). Sensitive receptors include schools, day care centers, and hospitals.

**Population Cancer Burden**

The predicted excess cancer burden was 0.14 based on average emissions in 2008/2009 (low production emissions) (Table ES-4). These results are lower than 1, indicating that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions. Therefore, the cancer burden calculations indicate that the community as a whole would not have an increased incidence of cancer from emissions at the higher, historical production rates or more recent low production operations.

**2013 Future Production Scenario**

To evaluate potential future conditions, a future production scenario assuming maximum annual clinker production (1,600,000 tons) and operational revisions designed to comply with NESHAPs requirements and structural changes was also evaluated. A description of the scenario and specific emissions are provided in this report and in Appendix A. This scenario included changes to the kiln emissions stack that required a separate modeling run. The exposure modeling was performed using HARP and included the LASF and RELs published since December 2008. The

projected 2013 production scenario results in predicted hazard indexes and carcinogenic risk at the MEIR and MEIW that are below the BAAQMD regulatory notification level.

The highest predicted target organ-specific chronic hazard indexes for the MEIR (receptor #3700) and MEIW (receptor #10581) were 0.078 and 0.079, respectively. The highest predicted chronic hazard index for the PMI (receptor #12506) was 0.19. These chronic hazard indexes are well below the BAAQMD regulatory notification level of 1.0.

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3700) and MEIW (receptor #5076) were 0.025 and 0.026, respectively. The highest predicted acute hazard index for the PMI (receptor #6363) was 0.043. These values are well below the BAAQMD regulatory notification level of 1.0.

The highest predicted carcinogenic risk for the MEIR (receptor #2042) and MEIW (receptor #10581) were $7.0 \times 10^{-6}$ and $9.3 \times 10^{-7}$, respectively. These values are below the BAAQMD regulatory notification level of $1.0 \times 10^{-5}$. The highest predicted carcinogenic risk for the PMI (receptor #12476) was $1.7 \times 10^{-5}$, which is slightly greater than the BAAQMD regulatory notification level, but at a location where no permanent receptors are located.

# REVISED AB 2588 HEALTH RISK ASSESSMENT
# 2005, AVERAGE 2008/2009, AND 2013 PRODUCTION SCENARIOS

Lehigh Southwest Cement Company
Cupertino Facility

## 1.0 INTRODUCTION

A health risk assessment (HRA) was conducted by AMEC Geomatrix, Inc. (AMEC) for Lehigh Southwest Cement Company (Lehigh), Permanente Plant, in Cupertino, California (the Facility). Three primary emission scenarios are presented in this report. The Bay Area Air Quality Management District (BAAQMD) requested that Lehigh perform an AB 2588 HRA based on emissions reported in the 2008 Comprehensive Emission Inventory Report (CEIR), which was amended in 2009, 2010 and 2011 (Lehigh, 2009; AMEC, 2010a, 2010b, and 2011). The emissions in the 2008 CEIR were based on production rates from 2005, which were among the highest over the previous 5-year period. Considering current economic conditions, specifically decreases in the building/construction materials market demand, production has been reduced considerably since 2005. For this reason, Lehigh is also presenting the results of the AB 2588 HRA based on the lower average production rates from 2008 and 2009. Based on market conditions, the low production rates are likely to be representative of operating conditions through 2011 or until the next HRA update is required in 4 years under AB 2588. A third primary emission scenario was evaluated to estimate projected emissions for 2013 using maximum facility production (1,600,000 million tons of clinker) and assuming that National Emission Standards for Hazardous Air Pollutants (NESHAPs) had been met and structural changes at the facility were made..

Predicted acute and chronic noncancer health effects and carcinogenic risks are below notification levels set by BAAQMD ($1.0x10^{-5}$ for carcinogens and 1.0 for noncarcinogens) at the MEIR and MEIW for emissions based on production in 2005 (as presented in the 2008 CEIR as amended) using the regulatory guidance in place at the time those emissions occurred.

Based on average of production rates in 2008/2009 and revisions to human health evaluation guidance from the Office of Environmental Health Hazard Assessment (OEHHA), potential human health risks for cancer and chronic noncancer endpoints

were below notification levels set by BAAQMD at the MEIR and MEIW. Potential acute hazard indexes based on 2008/2009 emissions of mercury in the raw materials from the kiln exceeded BAAQMD's notification level at the maximum exposed individual resident (MEIR) and maximum exposed individual work (MEIW). Actions taken by the Facility in 2010 reduced mercury emissions from the kiln by 30 percent, but the potential acute hazard indexes at the MEIR (1.5) and MEIW (1.9) remained slightly above BAAQMD's notification level. The Facility is currently obtaining air permits for the installation of a permanent Sorbent Injection System to further reduce mercury emissions in 2011. The addition of this system is expected to reduce mercury emissions from the kiln by an additional 50 percent, reducing the potential acute hazard indexes at the MEIR (0.76) and MEIW (0.94) to below BAAQMD's notification level by mid-year. In addition, as noted in the 2013 production scenario, acute hazard indexes will be well below the BAAQMD notification level after additional NESHAP requirements are met in 2013.

This section provides the following additional information:

- Background on the AB2588 Program
- Objectives of this AB2588 HRA
- Revisions to the AB2588 HRA Based on Comments from BAAQMD
- Facility Description
- Report Outline

## 1.1 BACKGROUND ON AB 2588 PROGRAM

The purpose of the AB 2588 program is to identify and rank facilities based on their estimated emissions of Toxic Air Contaminants (TACs), to evaluate the potential health risks to the surrounding community exposed to these releases, to notify communities if health risks exceed a specified level, and to mitigate emission sources exceeding specified regulatory notification levels. To identify and rank the various facilities, each air pollution control district (APCD) or air quality management district (AQMD) requires operators of these facilities to submit comprehensive emission inventory reports, listing the substances and estimated amounts of chemicals emitted by individual source. The emission inventory reports provide the data necessary to evaluate potential human health risks related to Facility emissions using a prioritization score or a detailed HRA.

### 1.1.1 Prioritization Score

As a first step, the air districts calculate a prioritization score. The prioritization score is a simplified approach for assessing human health risk by categorizing the facilities as high, intermediate, and low priority. The following factors are incorporated into the prioritization score calculation: (1) toxicity of the substances emitted, (2) the quantity of the substance emitted from the Facility, (3) the proximity of a facility to potential receptors, such as schools, hospitals, day care centers, worksites, and residences, and (4) any other factors that may indicate that a facility poses a significant health risk to the surrounding community. The prioritization score calculation is conservative so that potentially high priority facilities are not overlooked. Specifically, the California Air Resources Board (CARB) and the California Air Pollution Control Officers Association (CAPCOA) state that the designation of a facility as high priority does not necessarily mean that it is emitting substances at a level that will significantly impact the surrounding community (CAPCOA, 1990). Only after an HRA is conducted can the possible health hazards resulting from facility emissions be properly evaluated. Based on the results of the prioritization score calculation, certain facilities are designated as high priority and are required to prepare a detailed HRA by the air district. Air districts may also request that an AB 2588 HRA be performed.

As part of the submittal of the 2008 Comprehensive Emission Inventory Report (CEIR), Lehigh calculated a prioritization score using CARB guidelines that provides a ranking of emissions related to potential health risk. Facilities are ranked as low priority with scores less than 1, as an intermediate priority with scores between 1 and 10, and as a high priority with scores greater than 10. The prioritization scores for carcinogenic, chronic, and acute health effects were between 1 and 10 for the Facility, resulting in an intermediate priority ranking.

### 1.1.2 Detailed HRA

Detailed HRAs are typically required by the air districts for facilities with prioritization scores greater than 10 and also for facilities identified at the air district's discretion. Although the Facility had prioritization scores less than 10, BAAQMD requested that Lehigh perform an AB 2588 HRA.

## 1.2 OBJECTIVES OF THE AB 2588 HRA

The specific objectives of this HRA are to: (1) estimate off-site air concentrations of the substances emitted from the Facility based on the 2005 production rates (reported in

the 2008 CEIR as amended) and average 2008/2009 production rates (low production rates), (2) evaluate potential exposures to the surrounding community, and (3) characterize the potential health risks to individuals and the exposed population associated with those levels of exposure. Several additional emission scenarios were also evaluated:

- developing an optimal production rate that results in carcinogenic risk below the notification level,
- evaluating the effects on the acute hazard index resulting from the reduction in mercury emissions following implementation of the kiln mill dust collector conveyance system,
- evaluating the effects on the acute hazard index resulting from the additional reduction in mercury emissions following implementation of a kiln sorbent injection system, and
- developing a projected 2013 emission scenario based on maximum production rates (1,600,000 tons of clinker) and changes to the Facility based on NESHAP requirements and planned structural changes.

This assessment presents the results of this analysis based on refined air dispersion modeling and the guidance provided by OEHHA (OEHHA, 2003) and BAAQMD (2010).

### 1.3 REVISIONS TO THE AB 2588 HRA BASED ON COMMENTS FROM BAAQMD

A previous version of the AB2588 HRA Report was submitted to the BAAQMD on September 14, 2010. BAAQMD provided several comments to the AB2588 HRA via emails on October 22, 2010, December 16, 2010, and February 24, 2011:

1. Present health risk estimates with two significant figures;
2. Show Facility boundary on figures;
3. Review mercury emissions from the kiln and provide a revised AB2588 HRA protocol explaining revisions to mercury emission estimates;
4. Eliminate conclusions about potential further actions (e.g., whether notification is required), which is the BAAQMD's role.
5. Evaluate emissions prior to July 2009 without using lifetime age sensitivity factors (LASFs), clearly noting whether LASFs are or are not included in a particular calculation;

6. Apply reference exposure levels (RELs) that were revised in December 2008 only to emissions after December 2008;
7. Verify that proper age sensitivity factors for children were used for the evaluation of child care facilities and schools;
8. Add a figure showing the location of maximum exposed individual receptors for chronic noncarcinogenic effects; and
9. Provide additional figures for carcinogenic and acute noncarcinogenic effects that are zoomed in closer to the facility.

In the process of posting Facility boundaries (Item #2), AMEC recognized that the receptor locations provided by BAAQMD were not consistent with the property boundary provided by Lehigh. Based on this review, the receptor grid was modified to exclude receptors within the site boundary and to add receptors in off-site areas where they were not previously present. As a result, receptor numbers in this report are not the same as the receptor numbers in the previous report. In the process of reviewing the receptors, several additional schools were also identified within the zone of impact and have been added as specific receptors in the model and the locations of the MEIW, MEIR, and PMI for each of the endpoints considered were reevaluated.

The revisions to mercury emissions requested by BAAQMD were summarized in a Final Revised Protocol for Revisions to Mercury Emissions and Development of a 2013 Production Scenario (the Mercury Emission Protocol; AMEC, 2011) following comments by the BAAQMD to initial drafts. The Mercury Emission Protocol revised the data used to estimate mercury emissions that were previously submitted to BAAQMD in 2009 (Lehigh, 2009). Historically, mercury emissions were estimated using the results of source tests and reported in the 2008 Comprehensive Emission Inventory Report (CEIR) based on source test results and production rates in 2005, which was consistent with other metals. In 2009, Lehigh submitted a revision to the mercury emissions based on a mass balance approach for emissions (Lehigh, 2009). The 2009 revision to the mercury emissions was used in the previous version of the AB2588 HRA published in August 2010 (AMEC, 2010c). Since that time, the estimate of mercury emissions has been revised to reflect more recent mercury content data in the

raw materials used in the cement process and higher maximum hourly production rates[4] at the Facility.

To account for recent reductions in mercury emissions, scenarios for 2010 and 2011 were developed. Mercury emissions were estimated for 2010 based on implementation of kiln mill dust collector conveyance system, which began in April 2010 and reduced emissions of mercury by 30 percent; other chemicals emissions were slightly increased to reflect a small increase in production in 2010 compared with average conditions in 2008/2009. Mercury emissions were estimated for 2011 based on the addition of activated carbon sorbent to remove mercury from flue gas in the kiln. Lehigh began testing the reduction of flue gas mercury in September 2010 and the introduction of the sorbent injection system is estimated to reduce 2010 mercury emissions by an additional 50 percent for a total reduction of 65 percent from 2008/2009 emissions. Emissions of other chemicals projected for 2011 are the same as for 2010. The final Mercury Emissions Protocol is presented as Appendix A.

## 1.4 FACILITY DESCRIPTION

Raw materials are mined and processed for the production of cement at the Facility. The location of the Facility and the general vicinity are shown on Figure 1. The primary operations area and the majority of point sources are shown in Figure 2A. Figure 2B presents an expanded view of the Facility showing the mine area, point sources distant from the main operation area, and fugitive volume sources. The Facility is surrounded in the immediate vicinity by rural undeveloped land. The nearest residence (Maximum Exposed Individual Resident [MEIR]) is located east of the Facility and the nearest commercial/industrial property (Maximum Exposed Individual Worker [MEIW]) is located north of the Facility (Figure 3A).

The processes contributing to the release of AB 2588 reportable chemicals include:

- Cement kiln (1 point source)
- Plant baghouses (24 point sources)
- Plant baghouses (1 volume source from inside a building)

[4] Maximum hourly production rates are function of capacity and not a function of market conditions. Annual production rates reflect market conditions.

- Plant stationary internal combustion engines (2 point sources)
- Plant fugitive emissions (14 volume sources)

There are a total of 27 point sources and 15 volume sources associated with the above processes in the air dispersion model. Source identification and emission estimates used in this report are described in more detail in Section 3.1.

### 1.5 REPORT OUTLINE

The remainder of this document is organized as follows:

Section 2.0: Hazard Identification - This section identifies all the substances evaluated in this HRA for the Facility. The substances evaluated for cancer and noncancer end points are identified.

Section 3.0: Exposure Assessment - This section describes the estimated emissions for the TACs, the air dispersion modeling used to estimate airborne concentrations, the exposure pathways evaluated, and the off-site receptors evaluated.

Section 4.0: Toxicity Assessment - This section presents the toxicity criteria used to evaluate potential acute and chronic noncarcinogenic health effects and carcinogenic risk.

Section 5.0: Risk Characterization - This section presents the results of the risk assessment for the exposure scenarios evaluated. An evaluation of the ZOI, sensitive receptors, and population health risks are presented where appropriate.

Section 6.0 Estimated 2013 Production Scenario – This section presents the results for projected emissions in 2013 based on emission reductions and structural changes to the Facility.

Section 7.0: Conclusions - This section summarizes the results of the risk assessment.

Section 8.0: References - This section presents the references used in this risk assessment.

## 2.0 HAZARD IDENTIFICATION

The regulations that implement the requirements of AB 2588 identify chemicals that may cause potential carcinogenic and/or noncarcinogenic health hazards to the surrounding community. Emissions of 69 TACs were quantified in the 2008 CEIR

prepared for the Facility. The revisions to the 2008 CEIR in 2009 (Lehigh, 2009) and 2010 (AMEC, 2010a and 2010b) and the Mercury Emission Protocol (AMEC, 2011) did not change the number of chemicals, but refined emission estimates for specific sources.

The summary of Facility emissions (annual average and maximum hourly) for all reported TACs is presented in Table 1. Table 1 presents annual average emissions based on:

- Production in 2005 (presented in the 2008 CEIR as amended)
- Average production for 2008/2009 (low production scenario) and
- Production in 2010, including mercury reduction measures.

Projected emissions in 2011 were the same as 2010 with the exception of mercury based on further mercury reduction measures. (Appendix A provides detail regarding the development of the mercury emission estimates).

For the purpose of understanding where these chemicals originate in the cement manufacturing process, each chemical was assigned to a primary emission category. The categories are as follows:

- Kiln - Byproducts of combustion to heat the kiln for manufacturing and other chemicals identified during a source test of the kiln.
- Raw material - A chemical component that occurs naturally in the raw materials used to manufacture cement.
- Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emissions occur during material handling and storage.
- Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators.

Most chemicals originate at the kiln with a smaller subset present naturally in raw materials. Only two chemicals were assigned to the remaining two categories.

## 3.0 EXPOSURE ASSESSMENT

This section of the risk assessment describes environmental transport modeling and exposure parameters used to estimate the potential for human exposure to the

chemical emissions from the Facility. The following sections (1) summarize and describe the source information and emission estimates used in the environmental transport models; (2) describe potentially exposed receptors and exposure pathways; (3) describe the assumptions used in the air dispersion and exposure models; and (4) present the annual average and one-hour maximum concentrations predicted for the TACs at the receptors of interest.

## 3.1 SOURCE IDENTIFICATION/EMISSION ESTIMATES

This section summarizes the sources of emissions at the Facility and the estimated emissions of TACs.

### 3.1.1 Source Identification

Multiple processes emitting TACs were evaluated for the Facility, including:

- One precalciner cement kiln.
- Permitted solid material handling equipment that emits point source and fugitive particulate matter (PM) emissions.
- Permitted stationary and portable internal combustion (IC) engines that use diesel fuel.
- Wind erosion and dust entrainment from roads, storage piles, and other volume sources that emit fugitive PM emissions.
- Miscellaneous smaller sources, specifically fuel dispensing.

Sources were classified into the following two categories: point or volume sources. Twenty-seven of the sources were identified as point sources and associated with a specific release or stack location; 15 fugitive sources were characterized as volume sources.

To simplify the air dispersion modeling and risk assessment, some 2008 CEIR source groups were combined for modeling purposes as follows:

- Dust collector sources with an insignificant contribution to particulate emissions (less than 0.5 percent of PM10 emissions) were modeled as one combined source located in an average location based on the stacks it is comprised of in the main operations area of the Facility (Table 2 and Figure 2A);
- Fugitive sources were assigned to one of eight volume source areas (Table 3). In some cases emissions from fugitive sources occurred in two or

three volume source areas. In these cases the emissions were divided evenly between the source areas with the exception of welding equipment. Emissions for welding equipment were apportioned based on the relative percent use in each of the volume source areas. For modeling purposes, volume sources 4 and 6 were subdivided into four smaller volume sources because the majority of the fugitive emissions were generated in these main operation areas.

The location of each source was specified in Universal Transverse Mercator (UTM) coordinates measured in meters (World Geodetic System 1984 datum) and the elevations were obtained from a site-specific CAD drawing showing current elevations at the Facility. The Facility is located on the slopes of a narrow valley with potentially significant changes in topography from one building to the next. A Facility plot plan showing the location of emissions sources at the Facility is presented in Figure 2A for the point sources near the main operations area and Figure 2B for the point sources distant from the main operations area and all volume sources. Source parameters used in the air dispersion modeling, such as process description, UTM coordinates, source height, exit velocity, and temperature of stack emissions are provided in Table 2 for point sources and Table 3 for volume sources.

### 3.1.2 Emission Estimates

Two primary emission estimates were used in this HRA. The emissions reported by Lehigh in the 2008 CEIR (AMEC, 2009 as revised), which reflected high production operating conditions based on production in 2005, and low production rate emissions based on average production rates in 2008 and 2009. Production rates for 2005 were used for the 2008 CEIR as requested by the BAAQMD to reflect operating conditions that were not affected by equipment problems or market constraints that occurred in 2006, 2007, and 2008. Production at the Facility in 2005 was among the highest production years over the previous ten years. Production rates in 2008/2009 are expected to reflect production through at least 2011.

To develop emission rates for likely on-going low cement production rates for the near future, annual production of clinker and cement from 2008 and 2009 were compared to 2005 annual production. The average of 2008 and 2009 annual production was divided by the 2005 annual production from the CEIR to develop a production ratio to apply to the emission estimates. The ratio of clinker production was 0.55 and the ratio of cement production was 0.58, indicating production has dropped approximately 40 percent since 2005. The higher of the two ratios (0.58) was selected to

conservatively represent lower annual production. This ratio was applied to Facility emissions dependent on cement/clinker production to estimate 2008/2009 emissions for those sources. Specifically, the ratio was applied to all controlled and fugitive dust emissions with the exception of those related specifically to wind erosion (e.g., stockpile emissions and unpaved roads). Assuming Facility vehicles are driven at rates proportional to production, the ratio also was applied to fuel dispensed at the fueling station and dust generated on roads, but not to emergency diesel generators or welders.

For the cement kiln and the finish mill baghouses, TAC source test data was available. For the other sources, PM or TAC emissions were calculated using published emission factors, with assumptions as needed for operating parameters used in the equations. All emission estimates incorporate permit conditions and control measures required by the BAAQMD. Specific information on the control measures can be found in the 2008 CEIR (AMEC, 2009), which is available upon request from BAAQMD.

Tables 4A to 4D summarize annual average emissions used in the HRA as follows:

- Table 4A presents emissions from the kiln based on the 2005 production and average production in 2008/2009;
- Table 4B presents emissions from the non-kiln point sources based on 2005 production;
- Table 4C presents emissions from the non-kiln point sources based average production in 2008/2009; and
- Table 4D presents emissions from volume sources and emergency diesel generators based on 2005 production and average production in 2008/2009.

Maximum hourly emissions were assumed to be the same for 2005 and 2008/2009 with the exception of mercury emissions from the kiln as described in Appendix A. Maximum hourly emissions are presented in Tables 5A to 5C as follows:

- Table 5A presents emissions from the kiln for 2005 production and average production in 2008/2009;
- Table 5B presents emissions from the non-kiln point sources for 2005 production and average production in 2008/2009; and
- Table 5C presents emissions from the volume sources and emergency diesel generators for 2005 production and average production in 2008/2009.

## 3.2 DESCRIPTION OF POTENTIALLY EXPOSED RECEPTORS

According to OEHHA guidance, risk assessments that utilize refined air dispersion modeling must provide a detailed analysis of the potentially exposed population to the air emissions from the Facility. This analysis includes identification of the point of maximum impact and maximum exposed individuals in residential and commercial/industrial areas, identification of sensitive receptors within the ZOI, and evaluation of potential population effects within the ZOI using census information. Table 6 presents the model identifiers and UTM coordinates for all key receptors, including sensitive receptors.

### 3.2.1 Identification of Residential and Occupational MEIs

The location of maximum potential hazard indexes or carcinogenic risk is referred to as the point of maximum impact (PMI). Designation of the PMI as a residential, commercial/industrial, or other type of receptor is evaluated based on the land use at that location. Residential or commercial/industrial land use nearest to the Facility was identified to locate maximum exposed individuals for chronic and acute noncarcinogenic, and carcinogenic effects for the residential population (MEIR) and worker population (MEIW). At this Facility, the nearest residential receptors are approximately 1500 meters east of the Facility operations near the property boundary. The nearest occupational receptors are approximately 1500 meters north of the Facility operations near the property boundary. The PMI, which is closer to the Facility, was neither a residential or commercial/industrial receptor. Receptors also were placed on various grid spacing (30 to 500 meters) covering an area approximately 14 kilometers from east to west and 16 kilometers from north to south. A 30-meter grid spacing was used in the residential area nearest the Facility (Figure 3B). These grid receptors were used to define the ZOI.

### 3.2.2 Sensitive Receptors

In accordance with CAPCOA guidance, potential risks at locations of sensitive receptors within the ZOI such as schools, hospitals, and daycare centers must be identified. On-line maps (http://www.mapquest.com) and the Community Care Licensing Division of the California Department of Health Services website were used to identify sensitive receptors. Based on modeling results, 29 sensitive receptors were identified within the ZOI (discussed further in Section 5.2.1). The location of the sensitive receptors identified is shown on Figure 3A. Additional sensitive receptors

outside the ZOI were also identified prior to defining the ZOI and these receptors are also shown on Figure 3A, but are not evaluated in the HRA.

### 3.2.3 Census Tract

In addition to sensitive receptor information, AB 2588 HRAs must provide estimates of the number of individuals within the ZOI. Census data provide resident populations within geographic areas defined by census tracts. Based on modeling, the ZOI for the Facility included or intersected 21 census tracts (discussed further in Section 5.2.1). The residential population was obtained from the Year 2000 Census database for the applicable census tracts. The populations in census tracts overlapped by the ZOI but not entirely within the ZOI were conservatively included in the cancer burden calculation. Thus, the total population exposed is likely to be overestimated.

## 3.3 Environmental Transport and Exposure Modeling

The HARP model (version 1.4c) developed by CARB (CARB, 2010) was specifically designed for conducting AB 2588 HRAs and was used to estimate the health risks associated with Facility emissions. Two data sources are uploaded to the HARP model to estimate predicted off-site concentrations: air dispersion modeling results and chemical emission rates (discussed in Section 3.1.2).

Air dispersion modeling was used to estimate off-site air concentrations of chemicals associated with Facility emissions. Air dispersion modeling was conducted in accordance with the *Air Quality Modeling Protocol,* which was approved by BAAQMD with comments in an email from Mr. Scott Lutz dated June 21, 2010. AMEC's response email from Mr. Steve Ochs was transmitted to BAAQMD on June 24, 2010, and the protocol and responses are incorporated herein.

The HARP model uses the output from the air dispersion model and emission rates to predict potential chemical exposure and health risks to the surrounding community. The assumptions used in the air dispersion model and HARP are discussed in more detail below.

### 3.3.1 Air Dispersion Model

This section presents the dispersion modeling approach. Discussion includes the model selected, meteorological data, and modeling parameters.

#### *3.3.1.1 Model Selection*

The Lakes MPI version of AERMOD (version 09292, dated 10/19/2009) was used to predict ambient concentrations resulting from the Facility's emissions sources as approved by BAAQMD. AERMOD is the recommended sequential model in U.S. EPA's Guideline on Air Quality Models (40 CFR 51, Appendix W), and Lakes has recompiled the program utilizing the MCIP2 multithreading libraries to enable AERMOD to take advantage of modern multicore processors. The following regulatory default options were used in AERMOD:

- elevated terrain algorithms requiring input of terrain height data for receptors and emission sources,
- stack tip downwash (building downwash automatically overrides),
- calms processing routines, and
- buoyancy-induced dispersion.

#### *3.3.1.2 BPIP Analysis*

If a stack is sufficiently close to a large building, the plume can be entrained in the building's wake. Wind in the wake of the building cause the plume's rise to be diminished, which results in increased ground level ambient concentrations near the building. Lehigh utilized a survey team to measure building heights and silo heights near any stacks. The height data was used in the U.S. EPA's Building Profile Input Program for PRIME (BPIPPRM, version 04274; U.S. EPA, 2004), which computed formula GEP stack heights and generated wind direction specific building profiles for sequential modeling.

#### *3.3.1.3 Urban Land Use Assessment*

Dispersion coefficients for air quality modeling were selected based on the land use classification technique suggested by Auer (Auer, 1978), which is the preferred method of the U.S. EPA. The classification determination involves assessing land use by Auer's categories within a 3-kilometer radius of the proposed site. Urban dispersion coefficients should be selected if greater than 50 percent of the area consists of urban land use types; otherwise, rural coefficients apply.

U.S. EPA's AERSURFACE tool (version 08009; U.S. EPA, 2008) was used to summarize the land use within a 3-kilometer radius of the Facility. AERSURFACE was

developed by U.S. EPA to identify surface roughness length within a defined radius from a specified point. In this case, the latitude and longitude coordinates of the on-site meteorological station were input to AERSURFACE along with a 3 kilometer radius. USGS 1992 National Land Cover Data (NLCD) were acquired for the northern portion of the state of California and used as input to AERSURFACE. The area within 3-kilometers of the Facility is predominately rural with residential and commercial land use comprising 31 percent of the total area within a 3 km radius of the onsite meteorological station. Therefore, rural dispersion coefficients were used in the air quality modeling.

#### *3.3.1.4 Receptors*

AMEC revised the fine receptor grid generated by BAAQMD for their preliminary modeling and expanded the grid as mentioned in Section 3.2.1. The BAAQMD UTM NAD27 receptor grid was converted to UTM NAD83 using the USGS Corpscon program. Because the modeling used the same base meteorological data provided by BAAQMD, the maximum impact areas did not shift spatially in a significant way. Additionally, the BAAQMD receptor grid area captured the maximum residential impact areas from the previous HRA modeling analysis performed in 1994 (Radian, 1994).

In the process of posting Facility boundaries as requested by BAAQMD, AMEC recognized that the receptor locations provided by BAAQMD did not quite align with the property boundary subsequently provided by Lehigh. As a result, the receptor grid provided by BAAQMD has been modified to exclude receptors within the site boundary and add receptors in off-site areas where they were not previously present. In the process of reviewing the receptors, several additional schools were also identified within the zone of impact and have been added as specific receptors in the model.

In order to define the zone of impact (ZOI), receptor grids with spacing of 200 meters on the west boundary, 200 by 300 meters on the south boundary and 500 meters east and north boundary were added to the BAAQMD grid receptors, around the Facility and extending out from the northern and eastern fine receptor grid. Receptors were also added at the 2000 census tract centroids and at daycare, schools, and hospitals within the ZOI. Figure 3A presents the receptor network for specific residential, worker, and sensitive receptors and Figure 3B presents the grid receptors used for the modeling analysis.

Receptor elevations were assigned by using U.S. EPA's AERMAP (version 09040; U.S. EPA, 2009a) software tool, which is designed to extract elevations from USGS Digital Elevation Model (DEM) files, USGS National Elevation Dataset (NED) files, and Shuttle Radar Topography Mapping (SRTM) files. AERMAP is the terrain preprocessor for AERMOD and uses the following procedure to assign elevations to a receptor:

- For each receptor, the program searches through the terrain input files to determine the two profiles (longitudes or eastings) that straddle this receptor.
- For each of these two profiles, the program then searches through the nodes in the terrain input files to determine which two rows (latitudes or northings) straddle the receptor.
- The program then calculates the coordinates of these four points and reads the elevations for these four points.
- A 2-dimensional distance-weighted interpolation is used to determine the elevation at the receptor location based on the elevations at the four nodes determined above.

NED data with a resolution of $^1/_3$ arc-second (roughly 10 meters) were used as inputs to AERMAP. The NED data were obtained from the USGS Seamless Data Server and extends beyond the modeling domain area. This domain is sufficient to properly account for terrain that would factor into the critical hill height calculations.

#### *3.3.1.5 Meteorological data*

U.S. EPA's AERMET tool (version 09040; U.S. EPA, 2009) was used to process meteorological data for use with AERMOD. AERMET merges National Weather Service (NWS) surface observations and on-site meteorological data with NWS upper air observations and performs calculations of meteorological parameters required by AERMOD. In addition to the meteorological observations, AERMET further requires the inclusion of land use surface characteristics that are calculated by U.S. EPA's AERSURFACE tool.

The meteorological data used in the sequential modeling consists of on-site hourly surface observations collected by Lehigh from a 10-meter tower located near the southwestern property boundary. As outlined in the modeling protocol, the meteorological data used in the modeling was collected in 2006, with the raw on-site data provided by Lehigh. A wind rose for the data is provided in Appendix B. The

annual wind rose demonstrates that wind direction frequency is generally aligned with the orientation of the nearby mountain ridges and valleys.

The meteorological instruments were installed at an elevation of 10 meters above ground level (AGL). The tower was equipped with the following instrumentation:

- Wind speed, wind direction, standard deviation of horizontal wind, and ambient temperature at 10 meters.
- Relative humidity was also measured at the tower, however, AERMET is not able to use the on-site relative humidity data. Rather, AERMET uses the surface station relative humidity values. Given the proximity of the surface station these values should be well within the error of the model.

Concurrent surface observations collected by NOAA at the San Jose Airport were used to provide relative humidity, station pressure, and cloud cover data. BAAQMD provided the data in AERMET-ready format.

Concurrent upper air radiosonde data were provided by BAAQMD for the Oakland NWS site (WBAN 23230). The data obtained were in FSL format. The Oakland site is located at latitude 37.75 and longitude -122.22 with an elevation of 6 meters (19.68 feet) according to the RAOB NOAA website and the FSL file header.

Both the surface station and upper air station locations are shown in Figure 1.

U.S. EPA's AERSURFACE tool was used to calculate the surface roughness length, albedo, and Bowen ratio inputs required by AERMET. AERSURFACE was developed by U.S. EPA to identify these parameters within a defined radius from a specified point. In this case, the latitude and longitude of the on-site meteorological tower were input to AERSURFACE along with a 1 kilometer radius per U.S. EPA guidance. USGS National Land Cover Data (NLCD) were acquired for the northern section of California and used as input to AERSURFACE. The parameters were calculated for six compass sectors broken down as follows:

- Sector 1:  50° to 130°
- Sector 2: 130° to 230°
- Sector 3: 230° to 273°
- Sector 4: 273° to 312°
- Sector 5: 312° to 347°
- Sector 6: 347° to 50°

The sectors are the same as those provide by BAAQMD, with one added sector in the southern portion to better define the surface characteristics near the residential areas toward the south of the Facility. The surface characteristics were also broken down by month. Seasonal categories were assigned as follows per BAAQMD guidance:

- Late autumn after frost and harvest, or winter with no snow: January, November and December;
- Winter with continuous snow on the ground: No months;
- Transitional spring (partial green coverage, short annuals): February and March;
- Midsummer with lush vegetation: April, May, June and July; and
- Autumn with unharvested cropland: August, September and October.

Average surface moisture was assumed. AERSURFACE input and output files are provided on CDROM per the nomenclature described in Appendix C.

The Lehigh on-site data, San Jose surface data, Oakland upper air data, and AERSURFACE land use data were processed with the AERMET meteorological processor. AERMET input and output files are provided on CDROM per the nomenclature described in Appendix C.

Based on the above approach, the data completeness is 97.85 percent with 188 missing hours. The data meets the U.S. EPA completeness criteria of 90 percent.

#### *3.3.1.6 Source Parameters*

Source input parameters are provided in Tables 2 and 3 for point and volume sources, respectively. Lehigh surveyed some of the stacks to validate stack height, stack diameter, and stack orientation (horizontal or vertical).

Twenty-five of a total 68 dust collector sources in the 2008 CEIR were considered significant sources in the air dispersion modeling and modeled as individual sources. Significant sources were defined as sources emitting greater than 0.5 percent of total PM10 emissions; these significant sources collectively account for 93 percent of total PM10 emissions from dust collector sources. To simplify the modeling effort without materially changing the results, AMEC modeled the remaining sources (less than 0.5 percent contribution to the total PM10 emission) as a single combined stack (Table 2, Source 999-DC). In addition to the combined source (999-DC), 24 dust collector sources were modeled as point sources. Two additional point sources were used to

represent the emergency generators (Source S501 and S502). One dust collector source (7PD7) was modeled as a volume source because the stack released into a building. Figure 2A shows the modeled point sources in the main plant area and nearby buildings. Figure 2B shows the locations of Source 7PD7.

A number of point sources at the Facility have a horizontal stack orientation. These point sources were set up in AERMOD in accordance with U.S. EPA guidance (Model Clearinghouse Memo 93-II-09). The U.S. EPA guidance sets the stack's exit velocity to 0.001 meters per second to account for suppression of vertical momentum for the plume and uses an effective stack diameter that maintains the actual flow rate of the plume.

Fugitive emissions were aggregated into 14 volume sources located throughout the Facility (eight sources areas with two subdivided into four subareas). This approach simplifies the modeling by reducing the number of sources to model. A summary of the fugitive emissions and modeled sources are provided in Table 3 and the proposed fugitive volume source layout is on Figure 2B.

All emission rates in AERMOD were set to one gram per second and period (annual) and 1-hour plot files were created for each source for use in the HARP analysis.

Modeling input and output files are provided on the enclosed compact disk (Appendix C).

### 3.3.2 HARP On-Ramp Model

Because the air dispersion modeling was performed outside of HARP, software available from CARB [HARP On-Ramp (version 1)] was used to prepare HARP-ready input files. The first file is a "source-receptor" file that contains a list of all of the sources and receptors and their corresponding coordinate locations. The second file contains the dispersion factors (X/Q) for each receptor that correlates the air concentration at each receptor (micrograms per cubic meter; $\mu g/m^3$) per the unit emission rate (1 gram per second [g/s]) from each source. The third file contains the annual average and max hourly emission rates for each chemical from every source. The source-receptor file was generated from source information as described in Section 3.3.1.6 and the receptor grid as described in Section 3.3.1.4. The HARP model predicts the ground-level concentration (GLC) using AERMOD output to estimate exposure and corresponding health risks for all receptors.

For the year to second unit conversion in the annual emissions, HARP On-Ramp uses 8760 seconds per year, essentially assuming all processes emit constantly for the entire year and were modeled correspondingly.

### 3.3.3 HARP Exposure and Risk Model

HARP incorporates the algorithms and exposure assumptions provided in OEHHA's guidance (2003) for estimating exposures for the AB 2588 program. HARP incorporates the dispersion coefficients predicted by AERMOD and emission rates to predict ground-level concentrations for each receptor. HARP then uses the ground-level concentrations, environmental fate assumptions, exposure parameters, and dose calculation algorithms recommended by OEHHA to estimate potential health effects for all receptors. Exposure assumptions specific to the Facility are presented in Table 7. Standard default assumptions for other parameters are provided in the modeling output (Appendices D through G).

The HARP exposure algorithms are run differently for gaseous chemicals where exposure occurs solely via inhalation (inhalation only chemicals) and particulate chemicals that may accumulate in soil over time (multi-pathway chemicals). For inhalation-only chemicals (39 chemicals), there is only one exposure pathway (inhalation), and this exposure pathway is evaluated assuming reasonable maximum exposure. The key exposure parameter for this exposure pathway is the inhalation rate. There are two options for the inhalation rate for residential exposure: the Derived OEHHA Method inhalation rate (393 liters per kilogram per day [L/kg-day]; 27.5 $m^3$/day for a 70 kilogram adult) and the Derived Adjusted Inhalation rate (302 L/kg-day; 21 $m^3$/day for a 70-kilogram adult). In this evaluation, the Derived adjusted inhalation rate was used consistent with BAAQMD guidance (BAAQMD, 2010).

For multipathway chemicals (30 chemicals), exposure pathways, such as ingestion of soil, dermal contact with soil, and ingestion of homegrown produce, are evaluated because the chemicals can accumulate in soil over time. For these chemicals, a reasonable maximum exposure is estimated for the two most significant exposure pathways and an average exposure is estimated for the other pathways. The rationale for this approach is that it is unlikely that an individual would be exposed at the maximum level for all exposure pathways simultaneously. If inhalation is not one of the two most significant exposure pathways, an average inhalation rate of 271 L/kg-day (19 $m^3$/day for a 70-kilogram adult) is used to estimate exposure for residential receptors (rather than upper bound inhalation rate discussed in the previous

paragraph). Other default parameters for multipathway chemicals include a 0.02 meter per second (m/s) deposition rate and a 0.052 fraction of ingested produce presumed to be homegrown, which were used to evaluate exposure via these non-inhalation pathways (OEHHA, 2003).

Worker exposure is evaluated using a single inhalation rate (149 L/kg-day or 10.4 $m^3$/day) for both inhalation-only and multipathway chemicals. Worker exposure also considers exposure frequency and duration that is different than for residents based on a work schedule of 8 hours per day for 5 days per week for 49 weeks for 40 years.

As required by BAAQMD guidance (BAAQMD, 2010), a 9-year child exposure period was used for sensitive receptors (e.g., schools and day care centers) as provided in the OEHHA guidance. The student exposure scenario assumes that exposure occurs via inhalation, dermal absorption, and soil ingestion. The breathing rate is based on a 95$^{th}$ percentile breathing rate (581 L/kg-day for a 15 kilogram child or 8.7 $m^3$/day). Conservatively, this receptor is assumed to be present for 350 days per year.

### 3.4 AIR DISPERSION MODELING RESULTS

The MEIR for chronic noncarcinogenic effects was identified as receptor #2040, for acute noncarcinogenic effects was identified as receptor #3701, and for carcinogenic effects was identified as receptor #2042. The MEIW for chronic and acute noncarcinogenic effects and carcinogenic effects was identified as receptor #5076. Predicted annual average air concentrations at the MEIW and MEIR, sensitive receptor, and census tract locations are presented in Table 8A for 2005 production and Table 8B for average production in 2008/2009. Table 8C presents predicted annual average air concentrations at the same receptors for emissions in 2010, including kiln mill dust shuttling. Similarly, maximum hourly air concentrations at these receptors are presented in Tables 9A, 9B, and 9C for 2005 production, average production in 2008/2009, and 2010 production, including kiln mill dust shuttling. Since only mercury emissions changed in the 2011 modeling, separate air concentration tables were not provided. Mercury annual average and maximum hourly air concentrations predicted from 2011 emissions were noted in Tables 8C and 9C, respectively.

HARP modeling input and output for 2005 production (reported in 2008 CEIR) is presented in Appendix D, output for average production in 2008/2009 is presented in Appendix E, output for 2010 production including kiln mill dust shuttling is presented in

Appendix F, and output for 2011 emissions which reflect the sorbent injection system is presented in Appendix G.

## 4.0 TOXICITY ASSESSMENT

This section describes the toxicity criteria for chemicals evaluated in this updated AB 2588 HRA. The potential health effects associated with each AB 2588 chemical are summarized in Table 10. Of the 69 chemicals evaluated in the HRA, 22 are considered to pose potential acute noncarcinogenic hazards, 52 chemicals are considered to pose potential chronic noncarcinogenic health effects, and 52 are considered to be carcinogenic under AB 2588.

### 4.1 NONCARCINOGENS

For chronic and acute noncarcinogenic effects, observable biological effects occur only after a threshold dose is reached. To establish health criteria, this threshold dose usually is estimated from the no-observed adverse effect level (NOAEL) or the lowest-observed adverse effect level (LOAEL) determined in studies of chronic exposure in animals by applying a series of uncertainty (safety) factors. For chemicals identified for evaluation in AB 2588, OEHHA and CARB provide “reference exposure levels” (RELs) that represent levels of exposure below which adverse effects are not expected to occur with a substantial margin of safety. These RELs typically include uncertainty factors ranging from 10 to 1,000 to account for limitations in the quality or quantity of available data used to develop the RELs. RELs were published for inhalation exposure based on an acceptable air concentration (micrograms per cubic meter; $\mu g/m^3$) and for chronic, non-inhalation exposure based on an acceptable oral dose (milligrams per kilogram per day; mg/kg-day).

For the purpose of evaluating cumulative effects of chemical exposure, OEHHA has categorized end points for adverse health effects for acute and chronic exposure. Only effects of chemicals on the same end point are considered additive. Potential end points for acute and chronic toxicological effects have been classified into thirteen categories in the OEHHA guidelines: alimentary (gastrointestinal and liver), bone, cardiovascular, developmental, endocrine system, eyes, hematologic, immune system, kidney, central nervous system, reproductive, respiratory, and skin. The RELs for potential chronic and acute health effects and respective toxicological end points for the chemicals emitted from the Facility are presented in Table 11. As noted in the

table, the REL for mercury via non-inhalation exposure was eliminated based on information from OEHHA provided by BAAQMD.

In December 2008, RELs for six chemicals (acetaldehyde, acrolein, arsenic, formaldehyde, manganese, and mercury) were revised by OEHHA. To be consistent with regulations in effect at the time the emissions occurred, the RELs published prior to December 2008 for these chemicals were applied to 2005 production emissions. To implement this change in toxicity criteria, the HARP health database dated July 21, 2008 was used in the 2005 emissions modeling. The specific RELs applicable prior to December 2008 are noted on Table 11. For all other emission scenarios, the current RELs published by OEHHA have been used.

## 4.2 CARCINOGENS

Regulatory guidance assumes that chemicals classified as carcinogens should be treated as if they have no threshold (U.S. EPA, 1989). This approach means that only a zero dose is assumed to result in zero risk (i.e., for all doses, some risk is assumed to be present, increasing linearly with increasing dose). Various mathematical models are used to estimate theoretically plausible responses at these low doses. For chemicals identified for evaluation in AB 2588, the OEHHA guidelines present unit risk values (URVs) that conservatively quantify (i.e., purposely over-predict) the likelihood of a carcinogenic response in an individual receiving a given dose of a chemical. URVs were published for inhalation exposure as the inverse of a concentration in air $(\mu g/m^3)^{-1}$ (OEHHA/ARB, 2009). For chronic, non-inhalation exposure, oral potency factors (OPFs) were published as the inverse of grams of chemical intake per kilogram of body weight per day $(mg/kg/day)^{-1}$ (OEHHA/ARB, 2009). Unlike noncarcinogenic effects, carcinogenic effects are considered additive for all chemicals. The URVs and OPFs for chemicals emitted from the Facility are presented in Table 11.

In 2009, as part of the Technical Support Document for Cancer Potency Factors (TSD) used in the Air Toxics program, OEHHA published age sensitivity factors (OEHHA, 2009) to address potential increased susceptibility to cancer when exposed to certain chemicals as a child or adolescent. Early-in-life susceptibility to some carcinogens has been recognized by the scientific community but the data does not support applying a constant factor to all carcinogens. However, the California legislature directed OEHHA to develop a methodology to address the issue. OEHHA's recommendation is to apply sensitivity factors based on age equally to all carcinogens: A 10-fold increase from the third trimester of pregnancy to 2 years of age and a 3-fold increase from 2 to 16 years

of age. When these age sensitivity factors are considered over a 70-year lifetime, the average lifetime age sensitivity factor (LASF) is 1.7. For school children above the age of 2 years, the default age sensitivity factor applied is 3 (BAAMQD, 2010). An age-specific sensitivity factor was calculated for children in child care that are potentially exposed before the age of two. More detail is described in Section 5.2.3 regarding sensitive receptors. These factors were applied to health risks calculated in the HRA outside of the HARP model because the HARP model has not yet been updated to address this change.

## 5.0 RISK CHARACTERIZATION

This final step of the risk assessment integrates the exposure estimates developed for the chemical emissions (Section 3.0) and the health effects data from which toxicity criteria are established (Section 4.0). The risk characterization section addresses both noncarcinogenic and carcinogenic health effects based on inhalation and non-inhalation exposure. Definition of the ZOI and identification of the PMI were based on a detailed receptor grid and fence line receptors. The MEIR and MEIW were located in residential and business areas. The estimates of health risk are compared to AB2588 notification levels published by the BAAQMD.

### 5.1 NONCARCINOGENIC HEALTH EFFECTS

Potential chronic and acute noncarcinogenic health effects associated with exposure to chemical emissions from the Facility have been evaluated using the HARP model. For acute inhalation exposure, the HARP model divides the predicted maximum hourly concentration (Tables 9A to 9C) by the appropriate acute REL provided by OEHHA (Table 11). Non-inhalation pathways are not applicable to acute exposures under AB 2588 (OEHHA, 2003). For chronic inhalation exposures, the predicted annual average air concentration for each chemical is divided by the chronic inhalation REL. For chronic non-inhalation exposure, the predicted oral dose is divided by the chronic, oral REL as appropriate. The total hazard quotient reported for a chemical with inhalation and non-inhalation effects is the sum of the individual hazard quotients for inhalation and non-inhalation exposure.

The chronic and acute hazard quotients for inhalation exposure can be described by the equation below:

$$Hazard\ Quotient_{inh} = \frac{GLC_{inh}}{REL_{inh}}$$

Where:

Hazard Quotient$_{inh}$ = Chemical-specific hazard quotient for inhalation exposure pathways

GLC = Ground-level air concentration at a receptor location (µg/m$^3$)

REL$_{inh}$ = Inhalation reference exposure level (µg/m$^3$)

Example Calculation: Chronic Hazard Quotient for Inhalation Exposure to mercury at PMI (receptor #2037) 2005 production emissions (Target organ: central nervous system)

$$Hazard\ Quotient_{inh} = \frac{GLC_{mercury}}{REL_{mercury}}$$

Where:

Hazard Quotient$_{inh}$ = Hazard quotient for mercury for inhalation exposure pathways

GLC$_{mercury}$ = Ground-level air concentration of mercury at receptor #2037 (0.0186 µg/m$^3$; Table 8A)

REL$_{mercury}$ = Inhalation reference exposure level for mercury (0.09 and 0.03 µg/m$^3$ for pre- and post-2008, respectively; Table 11).

$$Hazard\ Quotient_{inh} = \frac{0.0186\ ug/m^3}{0.09\ ug/m^3}$$

$$= 0.21$$

Therefore, the chronic hazard quotient predicted from inhalation exposure to mercury based on 2005 production emissions at the PMI is 0.21 (Table 12) for effects on the central nervous system.

Chronic and acute noncarcinogenic health effects were also evaluated in terms of their assumed potential additive effect on target organs or systems (e.g., central nervous system). For acute and chronic exposures, up to thirteen target organs or systems were evaluated using the HARP model (described in Section 4.1). The chemicals that may affect the same target organ or system were evaluated by summing the individual hazard quotients to calculate a target organ-specific hazard index (HI). The following sections present the results of the chronic and acute noncarcinogenic evaluations.

Chronic and acute hazard indexes less than or equal to 1.0 are considered to be without public health impact with a substantial margin of safety, because exposure at or below the REL is not expected to pose significant adverse health hazards. Hazard indexes greater than 1.0 do not necessarily mean that adverse health effects would be expected. Rather, on a chemical-specific basis, as the hazard index increases above 1 to 10 or higher, the level of regulatory concern and need for control increases.

### 5.1.1 Chronic Noncarcinogenic Results

Chemical emissions from the Facility are not expected to pose significant chronic noncarcinogenic health effects under both primary emission scenarios evaluated. Results for chronic noncarcinogenic health effects are presented on Table 12 by chemical and on Table 13 by source. Because chronic hazard indexes were less than 0.5 at all off-site receptors, a figure with an isopleth is not necessary, but a figure indicating the location of the maximum exposed receptors (MEIR, MEIW, and PMI) is presented as Figure 4.

The highest target organ-specific chronic hazard indexes for the MEIR (receptor #2040) were 0.18 and 0.34, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.092 and 0.18, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The organ/system endpoint with the highest hazard indexes was the central nervous system with the exception of the MEIW based on 2005 production emissions. The organ/system endpoint with the highest chronic hazard index for the MEIW in 2005 was the respiratory system and hydrochloric acid contributed most significantly at 73 percent. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

Predicted chronic noncarcinogenic hazard index at the PMI (receptor #2037) was 0.21 and 0.41, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The organ/system endpoint with the highest chronic hazard index was the central nervous system. The predicted chronic noncarcinogenic hazard indexes are below the BAAQMD regulatory notification level of 1.0. The chemical contributing most significantly to predicted chronic hazard index is mercury (85 to 97 percent), which occurs naturally in the raw

materials used to make cement. The emissions from the kiln contribute most significantly to the chronic hazard index (91 to 100 percent).

### 5.1.2 Acute Noncarcinogenic Results

The only difference in maximum emission rates for 2005 production emissions and 2008/2009 emissions were mercury emissions because mercury emissions were based on a mass balance calculation and production restrictions based on energy use were put in place after 2005 (Appendix A). Results for acute noncarcinogenic health effects are presented on Table 14 by chemical and on Table 15 by source. The geographical area exceeding an acute hazard index of 0.5 is shown on Figure 5. Figure 5A focuses on the geographical area exceeding an acute hazard index of 1.0 in more detail close to the Facility.

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) were 0.79 and 2.1, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.98 and 2.6, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The increase in the acute hazard index from 2005 to 2008/2009 results from changes to the regulations for the evaluation of health risks related to mercury exposure. In 2008, OEHHA added an additional factor of 3 to the uncertainty factor, which reduced the reference exposure level for mercury, but did not change the study used as the basis for the assessment. The organ/system endpoint with the highest hazard indexes was the developmental endpoint. The values for the MEIW and MEIR were below the BAAQMD regulatory notification level of 1.0 based on 2005 production and the regulations in place at that time. The values for the MEIW and MEIR were above the BAAQMD regulatory notification level for average emissions in 2008/2009.

An additional emission scenario for 2010 was evaluated because the Facility began implementing kiln mill dust conveyance system in 2010, which reduces mercury emissions by 30 percent (Appendix A). Using 2010 production emissions (Tables A-2 to A-7 in Attachment A of Appendix A), the highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) and MEIW (receptor #5076) were reduced to 1.5 and 1.9, respectively. Both values remain above the BAAQMD regulatory notification level of 1.0. The HARP modeling files for the 2010 production scenario are presented in Appendix F. An additional emission scenario for 2011 was

also evaluated because the Facility has begun implementing a carbon sorbent injection system that is expected to be fully operational by May 2011, which reduces mercury emissions by approximately 50 percent (Appendix A). Using 2011 reduced mercury emissions, the highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) and MEIW (receptor #5076) were reduced to 0.76 and 0.94, respectively. Both values are below the BAAQMD regulatory notification level of 1.0. The HARP modeling files for the 2011 production scenario are presented in Appendix G.

Predicted acute noncarcinogenic hazard index at the PMI (receptor #13156) was 1.6 and 4.4, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest predicted acute hazard index for the PMI (receptor #13156) was reduced to 3.1 based on 2010 production, which included KMDC dust conveyance. Including the carbon sorbent injection system, the highest predicted acute hazard index for the PMI (receptor #13156) was further reduced to 1.6 based on 2011 mercury reduction. For all scenarios, the predicted acute noncarcinogenic hazard index is greater than the BAAQMD regulatory notification level of 1.0 at the PMI. The chemical contributing most significantly to predicted risk is mercury (96 to 99 percent), which occurs naturally in the raw materials used to make cement. The kiln contributes most significantly to the acute hazard index (98 to 99 percent). There is no specific off-site receptor at the location of the PMI, which is in open space at the Facility fence line. The AB 2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility.

## 5.2 CARCINOGENIC HEALTH EFFECTS

In accordance with the OEHHA guidance, cancer risk estimates based on the theoretical upper-bound excess cancer risk should be evaluated for the maximum exposed individuals, and a peak cancer receptor, if different. The guidelines also require cancer risk to be evaluated for sensitive receptors and populations within the ZOI.

For inhalation exposures, the theoretical upper-bound excess cancer risk is estimated assuming that an individual is exposed continuously to the annual average air concentrations over a 70-year lifetime. Once these annual average air concentrations and a corresponding dose (amount of chemical inhaled averaged over a theoretical

lifetime) are estimated for each of the receptors of interest, then the cancer risk is calculated for the carcinogenic TACs using the following equation:

$$Cancer\ Risk_{inh} = Dose_{inh} \times CPF_{inh} \times LASF$$

Where:

| | | |
|---|---|---|
| Cancer $Risk_{inh}$ | = | Theoretical upper bound lifetime cancer risk |
| $CPF_{Inh}$ | = | Cancer Potency Factor for inhalation $(mg/kg\text{-}d)^{-1}$ |
| $Dose_{inh}$ | = | Dose through inhalation (mg/kg-d) |
| LASF | = | Lifetime age sensitivity factor (unitless) |

$$Dose_{inh} = GLC \times DBR \times AF \times EF \times ED \times 10^{-6}/AT$$

Where:

| | | |
|---|---|---|
| GLC | = | Ground-level concentration ($\mu g/m^3$) |
| DBR | = | Daily Breathing Rate (L/kg-day) |
| AF | = | Inhalation Absorption Factor (unitless) |
| EF | = | Exposure Frequency (days/yr) |
| ED | = | Exposure Duration (years) |
| $10^{-6}$ | = | two conversion factors (mg/ug and $m^3/L$) |
| AT | = | Averaging Time for carcinogens (25,550 days) |

Under the Derived Adjusted Method, HARP calculates the inhalation risk using a 80$^{th}$ percentile breathing rate estimate if inhalation is the only pathway evaluated or one of the two dominant (risk-driving) pathways evaluated for a particular chemical. In the example provided, inhalation was not one of the dominant exposure pathways for arsenic for the receptor presented. Therefore, an average breathing rate (versus a high-end value) was used to estimate the dose.

Example Calculation: Dose and Corresponding Cancer Risk for Inhalation Exposure to Arsenic at MEIR (receptor #2042) 2008/2009 Production Emissions

$$Dose_{inh} = GLC \times DBR \times AF \times EF \times ED \times 10^{-6}/AT$$

Where:

| | | |
|---|---|---|
| GLC | = | Ground-level concentration ($1.64 \times 10^{-5}$ µg/m$^3$; Table 8A) |
| DBR | = | Daily Breathing Rate (302 L/kg-day; Table 7) |
| AF | = | Inhalation Absorption Factor (1; unitless) |
| EF | = | Exposure Frequency (350 days/yr) |
| ED | = | Exposure Duration (70 years) |
| $10^{-6}$ | = | two conversion factors (mg/ug and m$^3$/L) |
| AT | = | Averaging Time for carcinogens (25,550 days) |

Therefore:

$$\text{Dose}_{\text{inh}} = 1.64 \times 10^{-5} \times 302 \times 350 \text{ x } 70 \times 10^{-6}/25{,}550$$
$$= 4.75 \text{ x}10^{-9} \text{ mg/kg-d}$$

The corresponding cancer risk is estimated as follows:

$$Cancer\ Risk_{inh} = Dose_{inh} \times CPF_{arsenic} \times LASF$$

Where:

| | | |
|---|---|---|
| Cancer Risk$_{inh}$ | = | Theoretical upper bound lifetime cancer risk associated with inhalation exposure to arsenic |
| Dose$_{Inh}$ | = | Dose of arsenic at receptor MEIR (receptor #2042) ($4.75 \times 10^{-9}$ mg/kg-d) |
| CPF$_{arsenic}$ | = | Inhalation cancer potency factor for arsenic [12 (mg/kg-d)$^{-1}$; Table 11] |
| LASF | = | Lifetime age sensitivity factor (1.7) (Note: not applicable to 2005 emissions) |

Therefore:

$$\text{Cancer Risk}_{\text{inh}} = 4.75 \text{ x}10^{-9} (mg/kg-d) \times 12 \ (mg/kg - \text{d}))^{-1} \times 1.7)$$
$$= 9.69\text{x}10^{-8}$$

For non-inhalation exposures, the theoretical upper-bound excess cancer risk is also estimated assuming that an individual is exposed continuously to the chemicals over a 70-year lifetime. Once the lifetime oral dose from non-inhalation pathways is estimated, then the cancer risk is calculated for the carcinogenic TACs using the following equation:

$$Cancer\ Risk_{non-inh} = Dose_{oral} \times OPF \times LASF$$

Where:

Cancer $Risk_{non\text{-}inh}$ = Theoretical upper bound lifetime cancer risk associated with non-inhalation exposure

$Dose_{Oral}$ = Oral Dose (mg/kg/day)

OPF = Oral Potency Factor $(mg/kg/day)^{-1}$

LASF = Lifetime Age Sensitivity Factor (unitless)

Example Calculation: Cancer Risk for Non-Inhalation Exposure to Arsenic at MEIR (receptor #2042) 2008/2009 Production Emissions

$$Cancer\ Risk_{non-inh} = Dose_{oral-arsenic} \times OPF_{arsenic} \times LASF$$

Where:

Cancer $Risk_{non\text{-}inh}$ = Theoretical upper bound lifetime cancer risk associated with non-inhalation exposure to arsenic

$Dose_{Oral\text{-}arsenic}$ = Oral dose of arsenic at MEIR (receptor #2042) ($1.43x10^{-7}$ mg/kg/day; the sum of dermal contact, ingestion of soil, and ingestion of vegetables pathways; Appendix E)

$OPF_{arsenic}$ = Oral potency factor for arsenic [$1.5\ (mg/kg/day)^{-1}$; Table 11]

LASF = Lifetime age sensitivity factor (1.7)

Therefore:

$$Cancer\ Risk_{non-inh} = 1.43x10^{-7} \frac{mg}{kg-d} \times 1.5 \frac{kg-d}{mg} \times 1.7$$

$$= 3.67x10^{-7}$$

The total cancer risk for arsenic exposure is the sum of inhalation and non-inhalation exposures:

$$Cancer\ Risk_{arsenic} = Cancer\ Risk_{non-inh} + Cancer\ Risk_{inh}$$

$$= 3.67x10^{-7} + 9.69x10^{-8}$$

$$=4.6x10^{-7}$$

Therefore, the total cancer risk from exposure to arsenic at the MEIR (receptor #2042) based on 2008/2009 production emissions is $4.6x10^{-7}$ (Table 16).

### 5.2.1 Identification of the Zone Of Impact

The ZOI, as defined by CAPCOA, is the area within which there is a theoretical increased cancer risk of one-in-one million or greater based on a continuous, 70-year lifetime exposure to carcinogenic air emissions from the Facility. The ZOI is not the same as the regulatory notification level ($1.0x10^{-5}$) above which public notification is required by BAAQMD. The results from the HARP model for the receptor grid provides the information necessary to identify the ZOI by generating the isopleths (i.e., a geographical presentation of areas of equal risk) for the one-in-one million theoretical excess cancer risks. The isopleths for emissions for 2005 production and average production in 2008/2009 are based on predicted cancer risks at the receptors and interpolation of the data between these receptors. As shown on Figure 3A, the isopleths are very similar in size. The fact that the ZOI extends beyond the Facility boundaries (Figure 3A) does not imply that the regulatory notification level is exceeded throughout this area. In fact, the area exceeding the regulatory notification level is does not extend significantly beyond the property boundary (Figure 6). More definition closer to the property boundary is provided in Figure 6A.

The modeling results indicated that the ZOI based on average emissions in 2008/2009 extends approximately 5 kilometers east, approximately 5 kilometers north, and approximately 5 kilometers south. The ZOI does not extend west of the Facility. The predicted carcinogenic risks for all ZOI receptors are presented in Appendix D for 2005 production emissions and Appendix E for emissions from average production in 2008/2009.

### 5.2.2 Estimated Theoretical Cancer Risks at Maximum Exposure Locations

Results for carcinogenic risk are presented on Table 16 by chemical and on Table 17 by source. The zone of impact for average production in 2008/2009 and carcinogenic risk above the BAAQMD regulatory notification level for all emission scenarios are shown on Figure 5.

The theoretical carcinogenic risks for the MEIR (receptor #2042) were $8.3x10^{-6}$ and $8.5x10^{-6}$, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production emissions). The predicted risk based on 2005 production does not include the LASF, which was published by

OEHHA in 2009 (OEHHA, 2009) and adopted by BAAQMD in January 2010 (BAAQMD, 2010). The predicted risk based on average 2008/2009 production rates includes the LASF. The theoretical carcinogenic risks for the MEIW (receptor #5076) were $1.3x10^{-6}$ and $7.9x10^{-7}$, respectively, based on 2005 production rates (2008 CEIR as amended) and average 2008/2009 production rates (low production emissions). The LASF does not apply to an adult worker. None of the predicted risks for the MEIR and MEIW exceed the BAAQMD regulatory notification level of $1.0x10^{-5}$.

Predicted cancer risk at the PMI (receptor #12506) was $1.2x10^{-5}$ for both the 2005 production rates (2008 CEIR as amended) excluding the LASF, and the average 2008/2009 production rates (low production emissions) including the LASF. The predicted cancer risk at the PMI for 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates) is slightly greater than the BAAQMD's $1.0x10^{-5}$ regulatory notification level. The AB 2588 program focuses on long-term exposure for residents and workers, and none are present at the PMI for the Facility.

The chemicals contributing most significantly to predicted risk are hexavalent chromium (42 to 58 percent) and benzene (24 to 38 percent). The kiln contributes most significantly to the cancer risk (35 to 57 percent).

To identify an annual production rate for clinker and cement that results in predicted cancer risks just below the $1.0x10^{-5}$ notification level at the MEIR (e.g., $9.8x10^{-6}$), AMEC tested various adjustments to emission rates using the HARP model to identify a factor that when applied to 2005 production rates (2008 CEIR emissions) would result in a predicted risk below the notification level. Similar to the development of the low production emission rates, the factor was only applied to sources associated with production and not to some wind-driven fugitive sources such as stockpiles. Based on the evaluation, the optimal production rate for clinker and cement is 68 percent of the 2005 production rates used in the 2008 CEIR. This corresponds to 951,790 short tons of clinker and 994,020 short tons of cement. The annual average emission rates for all sources associated with this production are presented in Table 18, and the summary by individual source is provided in Tables 19A to 19C. Tables 20 and 21 summarize the predicted cancer risk for the PMI ($1.4x10^{-5}$), MEIR ($9.8x10^{-6}$) and MEIW ($9.1x10^{-7}$) by chemical and by source, respectively. Appendix H presents the HARP input and output files for the optimal production rate evaluation.

### 5.2.3 Sensitive Receptors

Carcinogenic risks at the sensitive receptors within the ZOI for average emissions in 2008/2009 are presented in Table 22. Sensitive receptors include schools and day care centers. The predicted risks using 2005 production emissions ranged from $2.5x10^{-7}$ to $5.7x10^{-7}$ and do not include an age sensitivity factor (ASF). The predicted risks using average emissions in 2008/2009 ranged from $3.2x10^{-7}$ to $1.0x10^{-6}$ and include an age-specific sensitivity factor. Consistent with BAAQMD guidance (2010), the default ASF of 3 was used for preschool and school receptors over age 2. For the two child care facilities that served children less than 2 years, the weighted ASF was calculated based on the specific child ages accepted at the facility (Table 22). These predicted risks are below $1x10^{-5}$, the level above which notification is required under BAAQMD guidelines.

### 5.2.4 Population Cancer Burden

Consistent with AB 2588 guidance, cancer burden was estimated within the ZOI for the Facility for average emissions in 2008/2009. Cancer burden is estimated by multiplying the population within the ZOI times the representative cancer risk for that population (# in one million exposures or $\#x10^{-6}$) to estimate potential for increased cancer rates. Cancer burden estimates less than 1 indicate that no additional cases of cancer related to the exposure would be observed. If a small number of persons are exposed, the probability is that no member of the community will contract cancer related to the exposure. Census tracts and census data are used for the population estimates and potential cancer risk at the census tract centroid (geographical center) is multiplied by that population. Grid receptor locations were chosen to represent the census tract centroids, and are approximately in the center of the tract or were chosen near more densely populated areas if the census tract was not uniformly populated (Figure 3A).

The cancer burden for a census block is calculated in Table 23 as the product of the predicted cancer risk and the population as follows:

$$\text{Census Block Cancer Burden} = \text{Population} \times \text{Predicted Risk at Census Block Location}$$

The total population cancer burden is the sum of the cancer burden across all census block locations within the ZOI. There are 21 census tracts relevant to the ZOI for the Facility with a residential population of 97,897. Using this population and the cancer risk predicted at the centroid for the census tract, the cancer burden estimated for the

ZOI of the Facility was 0.14 based on average emissions in 2008/2009. Values less than one indicate that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions.

## 6.0 ESTIMATED 2013 PRODUCTION SCENARIO

As outlined in Appendix A, a 2013 emission scenario was developed reflecting expected conditions in 2013 once planned Facility changes are completed. The projected 2013 scenario assumes that maximum annual clinker production of 1,600,000 tons is achieved. NESHAPs requirements will result in changes to emission rates of mercury and hydrochloric acid, which are relevant to the AB2588 HRA. Changes to meet NESHAPs requirements will be made by 2013. The emission rates by source are presented in Tables 24A to 24C for annual average emissions and 25A to 25C for maximum hourly emissions. In addition, the kiln at the Facility will be reconfigured to emit from a single 300 foot stack rather than the 32 rooftop stacks currently in place. The previous and projected 2013 source parameters for the kiln stack(s) are as follows:

| Parameter | 2005 and 2008/2009 Kiln Parameters (1 of 30 individual stacks)* | Projected 2013 Scenario Kiln Parameters |
|---|---|---|
| Base elevation (meters) | 199.03 | 199.03 |
| Release Height (meters) | 18.29 | 91.44 |
| Exit Temp (degrees Fahrenheit) | 320 | 320 |
| Stack Diameter (feet) | 2.198 | 19 |
| Exit Velocity (meters/second) | 16.063 | 9.406 |
| Flow Rate (cubic feet/minute) | 12000 | 525000 |

* There are a total of 32 roof-top stacks on the kiln but only 30 are in operation at any given time.

The AERMOD modeling input and output files for the 2013 scenario are provided as Appendix I. Appendix J presents the HARP input and output files for the 2013 production scenario.

### 6.1 CHRONIC NON-CARCINOGENIC RESULTS

The highest predicted target organ-specific chronic hazard indexes for the MEIR (receptor #3700) and MEIW (receptor #10581) were 0.078 and 0.079, respectively. The highest predicted chronic hazard index for the PMI (receptor #12506) was 0.19. The chronic hazard indexes are well below the BAAQMD regulatory notification level of 1.0. The chronic noncarcinogenic hazard indexes are presented in Table 26 by chemical and Table 27 by source.

### 6.2 ACUTE NONCARCINOGENIC RESULTS

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #2041) and MEIW (receptor #5076) were 0.025 and 0.026, respectively. The highest predicted acute hazard index for the PMI (receptor #6363) was 0.043. The hazard indexes are well below the BAAQMD regulatory notification level of 1.0. The acute noncarcinogenic hazard indexes are presented in Table 28 by chemical and Table 29 by source.

### 6.3 CARCINOGENIC HEALTH EFFECT

The highest predicted carcinogenic risk for the MEIR (receptor #2042) and MEIW (receptor #5076) were $7.0 \times 10^{-6}$ and $9.3 \times 10^{-7}$, respectively. These values are well below the BAAQMD regulatory notification level of $1.0 \times 10^{-5}$. The highest predicted carcinogenic risk for the PMI (receptor #12476) was $1.7 \times 10^{-5}$, which is slightly greater than the BAAQMD regulatory notification level, but at a location where no permanent receptors are located. The predicted carcinogenic risks are presented in Table 30 by chemical and Table 31 by source.

## 7.0 CONCLUSIONS

Three primary scenarios were evaluated: Emissions based on 2005 production rates (reported in 2008 CEIR as amended), emissions based on an average of 2008/2009 production rates (low production conditions), and projected emissions for 2013 assuming maximum clinker production and following changes at the facility. Three

additional emissions scenarios (optimal production, 2010 production, and 2011 mercury reduction emissions) were evaluated for specific endpoints (cancer and acute hazard index, respectively). Based on the information provided for this HRA, the following conclusions can be made regarding the chemical emissions from the Facility.

**Chronic Noncarcinogenic Health Hazards**

The highest target organ-specific chronic hazard indexes for the MEIR (receptor #2040) were 0.18 and 0.34, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.092 and 0.18, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The increase in chronic hazard index was based on a change in the regulations for evaluating potential health risk for mercury. The organ/system endpoint with the highest hazard indexes was the central nervous system. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

Predicted chronic noncarcinogenic hazard index at the PMI (receptor #2037) was 0.21 and 0.41, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The organ/system endpoint with the highest chronic hazard index was the central nervous system. The predicted chronic noncarcinogenic hazard indexes are below the BAAQMD regulatory notification level of 1.0. The chemical contributing most significantly to predicted chronic hazard index is mercury (85 to 97 percent), which occurs naturally in the raw materials used to make cement. The emissions from the kiln contribute most significantly to the chronic hazard index (91 to 100 percent).

**Acute Noncarcinogenic Health Hazards**

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) were 0.79 and 2.1, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest target organ-specific chronic hazard indexes for the MEIW (receptor #5076) were 0.98 and 2.6, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The organ/system endpoint with the highest hazard indexes was the developmental endpoint. The values for the MEIW and MEIR were below the

BAAQMD regulatory notification level of 1.0 based on 2005 production and the regulations in place at that time. The acute hazard indexes for the MEIW and MEIR were above the BAAQMD regulatory notification level for average emissions in 2008/2009. The increase in the acute hazard index from 2005 to 2008/2009 results from changes to the regulations for the evaluation of health risks related to mercury health effects. In 2008, OEHHA added an additional factor of 3 to the uncertainty factor, which reduced the reference exposure level for mercury, but did not change the study used as the basis for the assessment.

The chemical contributing most significantly to predicted risk is mercury (96 to 99 percent), which occurs naturally in the raw materials used to make cement. The kiln contributes most significantly to the chronic hazard index (98 to 99 percent).

An additional emission scenario for 2010 was also evaluated because the Facility began implementing kiln mill dust collector conveyance system in 2010, which reduces mercury emissions by 30 percent (Appendix A). Using 2010 production emissions, the highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3701) and MEIW (receptor #5076) were reduced to 1.5 and 1.9, respectively. Both values remain above the BAAQMD regulatory notification level of 1.0 but are much lower than 2008/2009 production. An additional emission scenario for 2011 was evaluated for potential acute hazard indexes because a permanent sorbent injection system is expected to be fully operational by May 2011 (Appendix A). As a result of the sorbent injection system, the predicted acute hazard indexes for 2011 production will be below the BAAQMD notification level of 1.0 at the MEIR (0.76) and MEIW (0.94).

Predicted acute noncarcinogenic hazard index at the PMI (receptor #13156) was 1.6 and 4.4, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production scenario). The highest predicted acute hazard index for the PMI (receptor #13156) was reduced to 3.1 based on 2010 production, which included KMDC dust conveyance. Including the implementation of the carbon sorbent injection, the predicted acute hazard index for the PMI (receptor #13156) was reduced to 1.6 for 2011. The predicted acute noncarcinogenic hazard index is greater than the BAAQMD regulatory notification level of 1.0 at the PMI for all production scenarios. There is no specific off-site receptor at the location of the PMI, which is in open space along the property fence line.

The AB 2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility.

**Potential Carcinogenic Risks**

The theoretical carcinogenic risks for the MEIR (receptor #2042) were $8.3x10^{-6}$ and $8.5x10^{-6}$, respectively, based on 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates (low production emissions). The predicted risk based on 2005 production does not include the LASF, which was published by OEHHA in 2009 (OEHHA, 2009) and adopted by BAAQMD in January 2010 (BAAQMD, 2010). The predicted risk based on average 2008/2009 production rates includes the LASF. The theoretical carcinogenic risks for the MEIW (receptor #5076) were $1.3x10^{-6}$ and $7.9x10^{-7}$, respectively, based on 2005 production rates (2008 CEIR as amended) and average 2008/2009 production rates (low production emissions). The LASF does not apply to an adult worker. None of the predicted risks for the MEIR and MEIW exceed the BAAQMD regulatory notification level of $1.0x10^{-5}$.

Predicted cancer risk at the PMI (receptor #12506) was $1.2x10^{-5}$ based on both 2005 production rates (2008 CEIR as amended) excluding the LASF, and the average 2008/2009 production rates (low production emissions) including the LASF. The predicted cancer risk at the PMI for 2005 production rates (2008 CEIR as amended) and the average 2008/2009 production rates) is slightly greater than the BAAQMD's $1.0x10^{-5}$ regulatory notification level. The AB 2588 program focuses on long-term exposure for residents and workers, and none are present at the PMI for the Facility.

The chemicals contributing most significantly to predicted risk are hexavalent chromium (42 to 58 percent) and benzene (24 to 38 percent). The kiln contributes most significantly to the cancer risk (35 to 58 percent). If production rates for cement and clinker were to increase from the low production estimate and reach 68 percent of the production rate used to develop emissions based on 2005 production (2008 CEIR as amended), predicted cancer risk at the MEIR would be $9.8x10^{-6}$, just below the BAAQMD notification level. Using 68 percent of the 2005 production rates, the optimal production rates would be 951,790 short tons of clinker and 994,020 short tons of cement so that predicted cancer risk would remain below the notification level. The 2008 CEIR emission estimates were based on 2005 production rates that were among the highest over the last 5-year period.

**Sensitive Receptors**

The carcinogenic risk estimated for the sensitive receptors $2.5x10^{-7}$ to $5.7x10^{-7}$ for the 2005 production emissions and $3.2x10^{-7}$ to $1.0x10^{-6}$ for emissions from average production in 2008/2009; both emission estimates are below the BAAQMD regulatory notification level ($1.0x10^{-5}$). Sensitive receptors include schools, day care centers, and hospitals.

**Population Cancer Burden**

The predicted excess cancer burden was 0.14 based on average production in 2008/2009. These results are lower than 1, indicating that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions. Therefore, the cancer burden calculations indicate that the community as a whole would not have an increased incidence of cancer from emissions at the higher, historical production rates or low production operations.

**2013 Future Production Scenario**

To evaluate potential future conditions, a future production scenario assuming maximum clinker production (1,600,000 tons) and operational revisions designed to comply with NESHAPs requirements and structural changes was also evaluated. A description of the scenario and specific emissions are provided in Section 6.0 of this report and in Appendix A. This 2013 production scenario included changes to the kiln emissions stack that required a separate modeling run. All parameters in the modeling run remained the same except those outlined in Section 6.0. The exposure modeling was performed using HARP, including the LASF and RELs published since December 2008. The projected 2013 production scenario results in predicted hazard indexes and carcinogenic risk at the MEIR and MEIW that are below the BAAQMD regulatory notification level.

The highest predicted target organ-specific chronic hazard indexes for the MEIR (receptor #2041) and MEIW (receptor #10581) were 0.078 and 0.079, respectively. The highest predicted chronic hazard index for the PMI (receptor #12506) was 0.19. These values are well below the BAAQMD regulatory notification level of 1.0.

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptor #3700) and MEIW (receptor #5076) were 0.025 and 0.026, respectively. The highest predicted acute hazard index for the PMI (receptor #6363) was 0.043. These values are well below the BAAQMD regulatory notification level of 1.0.

The highest predicted carcinogenic risk for the MEIR (receptor #2042) and MEIW (receptor #5076) were $7.0x10^{-6}$ and $9.3x10^{-7}$, respectively. These values are well below the BAAQMD regulatory notification level of $1.0x10^{-5}$. The highest predicted carcinogenic risk for the PMI (receptor #12476) was $1.7x10^{-5}$, which is slightly greater than the BAAQMD regulatory notification level, but at a location where no permanent receptors are located.

The conclusions presented in this report are professional opinions based solely upon the data described in this report. They are intended exclusively for the purpose outlined herein and the site location and project indicated.

## 8.0 REFERENCES


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# TABLES

**TABLE ES-1**

**SUMMARY OF PREDICTED OFF-SITE HUMAN HEALTH RISKS**
Lehigh Southwest Cement Company
Cupertino Facility

| Description | Cancer Risk without LASF[2] | Cancer Risk including LASF[2] | | Chronic Noncancer Hazard Index | | | Acute Noncancer Hazard Index | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2005 Production (2008 CEIR) | Average 2008/2009 Production (Current Low Production) | 2013 Production | 2005 Production (2008 CEIR)[3] | Average 2008/2009 Production (Current Low Production) | 2013 Production | 2005 Production (2008 CEIR)[3] | Average 2008/2009 Production (Current Low Production) | 2010 Production | 2011 Production | 2013 Production |
| Regulatory Notification Level [1] | 1.0E-05 | 1.0E-05 | 1.0E-05 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| **Maximum Exposed Individual Resident (MEIR)** | 8.3E-06 | 8.5E-06 | 7.0E-06 | 0.18 | 0.34 | 0.078 | 0.79 | 2.1 | 1.5 | 0.76 | 0.025 |
| Does total exceed regulatory notification level? | No | No | No | No | No | No | No | Yes | Yes | No | No |
| **Maximum Exposed Individual Worker (MEIW)** | 1.3E-06 | 7.9E-07 | 9.3E-07 | 0.092 | 0.18 | 0.079 | 0.98 | 2.6 | 1.9 | 0.94 | 0.026 |
| Does total exceed regulatory notification level? | No | No | No | No | No | No | No | Yes | Yes | No | No |
| **Point of Maximum Impact (PMI)[4]** | 1.2E-05 | 1.2E-05 | 1.7E-05 | 0.21 | 0.41 | 0.19 | 1.6 | 4.4 | 3.1 | 1.6 | 0.043 |
| Does total exceed regulatory notification level? | Yes | Yes | Yes | No | No | No | Yes | Yes | Yes | Yes | No |

Notes

1. Regulatory notification level is the threshold above which public notification would be required by BAAQMD.
2. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime and was published by OEHHA in June 2009.
3. Toxicity criteria (reference exposure levels (RELs)) for acute/chronic health effects for some chemicals for were revised by OEHHA in December 2008. Toxicity criteria applicable in 2005 were used to evaluate 2005 production emissions.
4. Notification would not be required at the PMI because a permanent receptor is not present at this location.

Abbreviations

LASF = Lifetime age sensitivity factor

**TABLE ES-2**

**SUMMARY OF FACILITY EMISSION RATES**
Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) | | | Maximum Hourly (lb/hr) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] |
| 75070 | Acetaldehyde | 1.16E+03 | 6.71E+02 | 7.03E+02 | 1.68E-01 | 1.68E-01 | 1.68E-01 |
| 107028 | Acrolein | 4.49E+01 | 2.61E+01 | 2.73E+01 | 6.51E-03 | 6.51E-03 | 6.51E-03 |
| 7440382 | Arsenic | 2.30E+00 | 1.37E+00 | 1.43E+00 | 4.83E-04 | 4.83E-04 | 4.83E-04 |
| 56553 | Benz[a]anthracene | 1.31E-02 | 7.60E-03 | 7.96E-03 | 1.90E-06 | 1.90E-06 | 1.90E-06 |
| 71432 | Benzene | 9.65E+03 | 5.60E+03 | 5.86E+03 | 1.40E+00 | 1.40E+00 | 1.40E+00 |
| 50328 | Benzo[a]pyrene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 205992 | Benzo[b]fluoranthene | 1.87E-03 | 1.08E-03 | 1.14E-03 | 2.71E-07 | 2.71E-07 | 2.71E-07 |
| 207089 | Benzo[k]fluoranthene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 100447 | Benzyl chloride | 1.01E+02 | 5.87E+01 | 6.14E+01 | 1.47E-02 | 1.47E-02 | 1.47E-02 |
| 7440417 | Beryllium | 7.35E-01 | 4.44E-01 | 4.63E-01 | 1.47E-04 | 1.47E-04 | 1.47E-04 |
| 106990 | 1,3-Butadiene | 9.18E+01 | 5.33E+01 | 5.58E+01 | 1.33E-02 | 1.33E-02 | 1.33E-02 |
| 7440439 | Cadmium | 1.04E+00 | 6.28E-01 | 6.54E-01 | 2.22E-04 | 2.22E-04 | 2.22E-04 |
| 56235 | Carbon tetrachloride | 6.16E+01 | 3.57E+01 | 3.74E+01 | 8.94E-03 | 8.94E-03 | 8.94E-03 |
| 108907 | Chlorobenzene | 5.54E+02 | 3.21E+02 | 3.37E+02 | 8.04E-02 | 8.04E-02 | 8.04E-02 |
| 67663 | Chloroform | 2.87E+01 | 1.66E+01 | 1.74E+01 | 4.16E-03 | 4.16E-03 | 4.16E-03 |
| 18540299 | Chromium VI | 2.19E+00 | 1.29E+00 | 1.35E+00 | 3.97E-04 | 3.97E-04 | 3.97E-04 |
| 218019 | Chrysene | 3.86E-02 | 2.24E-02 | 2.35E-02 | 5.60E-06 | 5.60E-06 | 5.60E-06 |
| 7440508 | Copper | 1.51E+01 | 9.25E+00 | 9.64E+00 | 3.44E-03 | 3.44E-03 | 3.44E-03 |
| 1175 | Crystalline silica | 1.04E+03 | 7.27E+02 | 7.48E+02 | 3.28E-01 | 3.28E-01 | 3.28E-01 |
| 53703 | Dibenz[a,h]anthracene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 106467 | p-Dichlorobenzene | 5.89E+01 | 3.42E+01 | 3.58E+01 | 8.54E-03 | 8.54E-03 | 8.54E-03 |
| 75343 | 1,1-Dichloroethane | 1.98E+01 | 1.15E+01 | 1.20E+01 | 2.87E-03 | 2.87E-03 | 2.87E-03 |
| 78875 | 1,2-Dichloropropane | 2.71E+01 | 1.57E+01 | 1.65E+01 | 3.94E-03 | 3.94E-03 | 3.94E-03 |
| 542756 | 1,3-Dichloropropene | 1.11E+02 | 6.45E+01 | 6.75E+01 | 1.61E-02 | 1.61E-02 | 1.61E-02 |
| 9901 | Diesel PM | 2.47E+01 | 2.47E+01 | 2.47E+01 | 9.73E-01 | 9.73E-01 | 9.73E-01 |
| 75003 | Ethyl chloride | 3.87E+01 | 2.25E+01 | 2.35E+01 | 5.62E-03 | 5.62E-03 | 5.62E-03 |
| 100414 | Ethylbenzene | 9.59E+02 | 5.56E+02 | 5.83E+02 | 1.39E-01 | 1.39E-01 | 1.39E-01 |
| 106934 | Ethylene dibromide | 6.02E+01 | 3.49E+01 | 3.66E+01 | 8.73E-03 | 8.73E-03 | 8.73E-03 |
| 107062 | Ethylene dichloride | 2.38E+01 | 1.38E+01 | 1.44E+01 | 3.45E-03 | 3.45E-03 | 3.45E-03 |
| 50000 | Formaldehyde | 6.31E+01 | 3.66E+01 | 3.83E+01 | 9.15E-03 | 9.15E-03 | 9.15E-03 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 9.63E-06 | 5.58E-06 | 5.85E-06 | 1.40E-09 | 1.40E-09 | 1.40E-09 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 4.67E-06 | 2.71E-06 | 2.84E-06 | 6.77E-10 | 6.77E-10 | 6.77E-10 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.20E-06 | 6.98E-07 | 7.31E-07 | 1.75E-10 | 1.75E-10 | 1.75E-10 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 2.69E-06 | 1.56E-06 | 1.63E-06 | 3.90E-10 | 3.90E-10 | 3.90E-10 |

**TABLE ES-2**

**SUMMARY OF FACILITY EMISSION RATES**
Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) | | | Maximum Hourly (lb/hr) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] |
| 57653857 | 1,2,3,6,7,8-HxCDD | 2.65E-06 | 1.54E-06 | 1.61E-06 | 3.85E-10 | 3.85E-10 | 3.85E-10 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 2.75E-06 | 1.59E-06 | 1.67E-06 | 3.98E-10 | 3.98E-10 | 3.98E-10 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 4.07E-06 | 2.36E-06 | 2.47E-06 | 5.90E-10 | 5.90E-10 | 5.90E-10 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 3.81E-06 | 2.21E-06 | 2.31E-06 | 5.52E-10 | 5.52E-10 | 5.52E-10 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.28E-06 | 7.44E-07 | 7.79E-07 | 1.86E-10 | 1.86E-10 | 1.86E-10 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 2.34E-06 | 1.36E-06 | 1.42E-06 | 3.40E-10 | 3.40E-10 | 3.40E-10 |
| 7647010 | Hydrochloric acid | 1.07E+05 | 6.22E+04 | 6.51E+04 | 1.55E+01 | 1.55E+01 | 1.55E+01 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 2.19E-04 | 1.27E-04 | 1.33E-04 | 3.17E-08 | 3.17E-08 | 3.17E-08 |
| 7439921 | Lead | 1.94E+00 | 1.16E+00 | 1.21E+00 | 3.84E-04 | 3.84E-04 | 3.84E-04 |
| 7439965 | Manganese | 3.99E+00 | 2.32E+00 | 2.42E+00 | 5.79E-04 | 5.79E-04 | 5.79E-04 |
| 7439976 | Mercury | 1.28E+03 | 7.45E+02 | 5.46E+02 | 2.00E-01 | 1.84E-01 | 1.29E-01 |
| 74839 | Methyl bromide | 6.25E+02 | 3.63E+02 | 3.80E+02 | 9.07E-02 | 9.07E-02 | 9.07E-02 |
| 71556 | Methyl chloroform (1,1,1-trichlorethane) | 3.21E+01 | 1.86E+01 | 1.95E+01 | 4.65E-03 | 4.65E-03 | 4.65E-03 |
| 75092 | Methylene chloride | 1.29E+02 | 7.48E+01 | 7.84E+01 | 1.87E-02 | 1.87E-02 | 1.87E-02 |
| 91203 | Naphthalene | 1.39E+02 | 8.04E+01 | 8.42E+01 | 2.01E-02 | 2.01E-02 | 2.01E-02 |
| 7440020 | Nickel | 5.19E+01 | 3.10E+01 | 3.24E+01 | 1.04E-02 | 1.04E-02 | 1.04E-02 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.02E-05 | 1.17E-05 | 1.22E-05 | 2.92E-09 | 2.92E-09 | 2.92E-09 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 4.61E-06 | 2.67E-06 | 2.80E-06 | 6.69E-10 | 6.69E-10 | 6.69E-10 |
| 40321764 | 1,2,3,7,8-PeCDD | 2.37E-06 | 1.38E-06 | 1.44E-06 | 3.44E-10 | 3.44E-10 | 3.44E-10 |
| 57117416 | 1,2,3,7,8-PeCDF | 1.83E-05 | 1.06E-05 | 1.11E-05 | 2.66E-09 | 2.66E-09 | 2.66E-09 |
| 57117314 | 2,3,4,7,8-PeCDF | 2.74E-05 | 1.59E-05 | 1.67E-05 | 3.98E-09 | 3.98E-09 | 3.98E-09 |
| 127184 | Perchloroethylene | 5.31E+01 | 3.08E+01 | 3.23E+01 | 7.70E-03 | 7.70E-03 | 7.70E-03 |
| 7782492 | Selenium | 5.38E+00 | 3.17E+00 | 3.32E+00 | 8.99E-04 | 8.99E-04 | 8.99E-04 |
| 100425 | Styrene | 2.43E+02 | 1.41E+02 | 1.47E+02 | 3.52E-02 | 3.52E-02 | 3.52E-02 |
| 1746016 | 2,3,7,8-TCDD | 2.33E-06 | 1.35E-06 | 1.41E-06 | 3.38E-10 | 3.38E-10 | 3.38E-10 |
| 51207319 | 2,3,7,8-TCDF | 1.15E-04 | 6.69E-05 | 7.00E-05 | 1.67E-08 | 1.67E-08 | 1.67E-08 |
| 79345 | 1,1,2,2-Tetrachloroethane | 4.03E+01 | 2.34E+01 | 2.45E+01 | 5.85E-03 | 5.85E-03 | 5.85E-03 |

**TABLE ES-2**

**SUMMARY OF FACILITY EMISSION RATES**
Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) | | | Maximum Hourly (lb/hr) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] |
| 108883 | Toluene | 8.65E+03 | 5.01E+03 | 5.25E+03 | 1.25E+00 | 1.25E+00 | 1.25E+00 |
| 79005 | 1,1,2-Trichloroethane | 5.34E+01 | 3.10E+01 | 3.24E+01 | 7.75E-03 | 7.75E-03 | 7.75E-03 |
| 79016 | Trichloroethylene | 4.21E+01 | 2.44E+01 | 2.56E+01 | 6.10E-03 | 6.10E-03 | 6.10E-03 |
| 1314621 | Vanadium | 1.47E+02 | 8.69E+01 | 9.08E+01 | 2.91E-02 | 2.91E-02 | 2.91E-02 |
| 75014 | Vinyl chloride | 1.42E+02 | 8.22E+01 | 8.61E+01 | 2.06E-02 | 2.06E-02 | 2.06E-02 |
| 75354 | Vinylidene chloride | 3.89E+01 | 2.25E+01 | 2.36E+01 | 5.64E-03 | 5.64E-03 | 5.64E-03 |
| 95476 | o-Xylene | 1.36E+03 | 7.89E+02 | 8.26E+02 | 1.97E-01 | 1.97E-01 | 1.97E-01 |
| 1330207 | Xylenes (mixed) | 6.94E+03 | 4.03E+03 | 4.22E+03 | 1.01E+00 | 1.01E+00 | 1.01E+00 |

Note
1. Emissions for 2011 Production are the same as 2010 with the exception of mercury; annual average and maximum hourly mercury emissions are 261 lb/yr and 0.064 lb/hr, respectively.

Abbreviations
lb/yr = pounds per year
lb/hr = pounds per hour

**TABLE ES-3**

**HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 75070 | Acetaldehyde | Kiln | • | • | •[3] |
| 107028 | Acrolein | Kiln | | • | • |
| 7440382 | Arsenic | Raw material | • | • | • |
| 56553 | Benz[a]anthracene | Kiln | • | | |
| 71432 | Benzene | Kiln | • | • | • |
| 50328 | Benzo[a]pyrene | Kiln | • | | |
| 205992 | Benzo[b]fluoranthene | Kiln | • | | |
| 207089 | Benzo[k]fluoranthene | Kiln | • | | |
| 100447 | Benzyl chloride | Kiln | • | | • |
| 7440417 | Beryllium | Raw material | • | • | |
| 106990 | 1,3-Butadiene | Kiln | • | • | |
| 7440439 | Cadmium | Raw material | • | • | |
| 56235 | Carbon tetrachloride | Kiln | • | • | • |
| 108907 | Chlorobenzene | Kiln | | • | |
| 67663 | Chloroform | Kiln | • | • | • |
| 18540299 | Chromium VI | Byproduct of manufacturing | • | • | |
| 218019 | Chrysene | Kiln | • | | |
| 7440508 | Copper | Raw material | | | • |
| 1175 | Crystalline silica | Raw material | | • | |
| 53703 | Dibenz[a,h]anthracene | Kiln | • | | |
| 106467 | p-Dichlorobenzene | Kiln | • | • | |
| 75343 | 1,1-Dichloroethane | Kiln | • | | |
| 78875 | 1,2-Dichloropropane | Kiln | • | | |
| 542756 | 1,3-Dichloropropene | Kiln | • | | |
| 9901 | Diesel PM | Stationary sources | • | • | |
| 75003 | Ethyl chloride | Kiln | | • | |
| 100414 | Ethylbenzene | Kiln | • | • | |
| 106934 | Ethylene dibromide | Kiln | • | • | |
| 107062 | Ethylene dichloride | Kiln | • | • | |
| 50000 | Formaldehyde | Kiln | • | • | • |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | Kiln | • | • | |

**TABLE ES-3**

**HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 67562394 | 1,2,3,4,6,7,8-HpCDF | Kiln | • | • | |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | Kiln | • | • | |
| 39227286 | 1,2,3,4,7,8-HxCDD | Kiln | • | • | |
| 57653857 | 1,2,3,6,7,8-HxCDD | Kiln | • | • | |
| 19408743 | 1,2,3,7,8,9-HxCDD | Kiln | • | • | |
| 70648269 | 1,2,3,4,7,8-HxCDF | Kiln | • | • | |
| 57117449 | 1,2,3,6,7,8-HxCDF | Kiln | • | • | |
| 72918219 | 1,2,3,7,8,9-HxCDF | Kiln | • | • | |
| 60851345 | 2,3,4,6,7,8-HxCDF | Kiln | • | • | |
| 7647010 | Hydrochloric acid | Kiln | | • | • |
| 193395 | Indeno[1,2,3-c,d]pyrene | Kiln | • | | |
| 7439921 | Lead | Raw material | • | | |
| 7439965 | Manganese | Raw material | | • | |
| 7439976 | Mercury | Raw material | | • | • |
| 74839 | Methyl bromide | Kiln | | • | • |
| 71556 | Methyl chloroform | Kiln | | • | • |
| 75092 | Methylene chloride | Kiln | • | • | • |
| 91203 | Naphthalene | Kiln | • | • | |
| 7440020 | Nickel | Raw material | • | • | • |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | Kiln | • | • | |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | Kiln | • | • | |
| 40321764 | 1,2,3,7,8-PeCDD | Kiln | • | • | |
| 57117416 | 1,2,3,7,8-PeCDF | Kiln | • | • | |
| 57117314 | 2,3,4,7,8-PeCDF | Kiln | • | • | |
| 127184 | Perchloroethylene | Kiln | • | • | • |
| 7782492 | Selenium | Raw material | | • | |
| 100425 | Styrene | Kiln | | • | • |
| 1746016 | 2,3,7,8-TCDD | Kiln | • | • | |
| 51207319 | 2,3,7,8-TCDF | Kiln | • | • | |
| 79345 | 1,1,2,2-Tetrachloroethane | Kiln | • | | |
| 108883 | Toluene | Kiln | | • | • |

## TABLE ES-3

## HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 79005 | 1,1,2-Trichloroethane | Kiln | • | | |
| 79016 | Trichloroethylene | Kiln | • | • | |
| 1314621 | Vanadium | Raw material | | | • |
| 75014 | Vinyl chloride | Kiln | • | | • |
| 75354 | Vinylidene chloride | Kiln | | • | |
| 95476 | o-Xylene | Kiln | | • | • |
| 1330207 | Xylenes (mixed) | Kiln | | • | • |

Notes

1. Categories designated by the Office of Environmental Health Hazard Assessment (OEHHA) for each chemical.
2. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.

   Kiln - A byproduct of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emissions occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welding equipment.
3. Acetaldehyde was not evaluated for acute effects in 2005. The toxicity criteria (reference exposure levels (RELs)) for acute health effects was added by OEHHA in December 2008.

Abbreviations

HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran
TCDD = Tetrachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran

**TABLE ES-4**

**ESTIMATE OF EXCESS CANCER BURDEN**
**FOR CENSUS TRACTS IN ZONE OF IMPACT[1]**
Lehigh Southwest Cement Company
Cupertino Facility

| Description | Model ID #[2] | 2008/2009 Production | | |
|---|---|---|---|---|
| | | Residential Cancer Risk[3] | Resident Population | Residential Cancer Burden[4] |
| Census Tract 507600 | 10595 | 8.7E-07 | 5773 | 5.0E-03 |
| Census Tract 507701 | 10591 | 1.3E-06 | 3670 | 4.8E-03 |
| Census Tract 507702 | 10593 | 2.1E-06 | 6252 | 1.3E-02 |
| Census Tract 507703 | 10590 | 3.1E-06 | 6959 | 2.2E-02 |
| Census Tract 507805 | 10589 | 1.2E-06 | 4525 | 5.6E-03 |
| Census Tract 507806 | 10638 | 9.1E-07 | 5396 | 4.9E-03 |
| Census Tract 507807 | 10592 | 1.3E-06 | 3041 | 3.9E-03 |
| Census Tract 507808 | 10594 | 1.5E-06 | 5238 | 8.0E-03 |
| Census Tract 507905 | 10632 | 1.1E-06 | 5448 | 6.1E-03 |
| Census Tract 507906 | 10633 | 9.8E-07 | 4437 | 4.3E-03 |
| Census Tract 508301 | 10609 | 1.3E-06 | 4298 | 5.5E-03 |
| Census Tract 508401 | 10615 | 8.8E-07 | 6352 | 5.6E-03 |
| Census Tract 509901 | 10900 | 1.1E-06 | 2030 | 2.2E-03 |
| Census Tract 509902 | 10903 | 9.5E-07 | 4686 | 4.5E-03 |
| Census Tract 510001 | 10614 | 1.3E-06 | 5973 | 7.8E-03 |
| Census Tract 510002 | 10608 | 1.6E-06 | 3550 | 5.7E-03 |
| Census Tract 510100 | 10588 | 2.2E-06 | 2947 | 6.5E-03 |
| Census Tract 510200 | 10618 | 8.6E-07 | 4207 | 3.6E-03 |
| Census Tract 511701 | 10617 | 6.7E-07 | 3719 | 2.5E-03 |
| Census Tract 511702 | 10587 | 1.6E-06 | 2637 | 4.1E-03 |
| Census Tract 511703 | 10586 | 1.7E-06 | 6759 | 1.1E-02 |
| **Total** | | | 97897 | 1.4E-01 |

Notes

1. The boundaries of some census tracts extend beyond zone of impact, making cancer burden estimate conservative.
2. Receptor identifier in the HARP model.
3. A Lifetime Age Sensitivity Factor (LASF) of 1.7 was applied to residential cancer risk from each census tract centroid.
4. A cancer burden less than one indicates that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions.

**TABLE 1**

**ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) | | | Maximum Hourly (lb/hr) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] |
| 75070 | Acetaldehyde | 1.16E+03 | 6.71E+02 | 7.03E+02 | 1.68E-01 | 1.68E-01 | 1.68E-01 |
| 107028 | Acrolein | 4.49E+01 | 2.61E+01 | 2.73E+01 | 6.51E-03 | 6.51E-03 | 6.51E-03 |
| 7440382 | Arsenic | 2.30E+00 | 1.37E+00 | 1.43E+00 | 4.83E-04 | 4.83E-04 | 4.83E-04 |
| 56553 | Benz[a]anthracene | 1.31E-02 | 7.60E-03 | 7.96E-03 | 1.90E-06 | 1.90E-06 | 1.90E-06 |
| 71432 | Benzene | 9.65E+03 | 5.60E+03 | 5.86E+03 | 1.40E+00 | 1.40E+00 | 1.40E+00 |
| 50328 | Benzo[a]pyrene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 205992 | Benzo[b]fluoranthene | 1.87E-03 | 1.08E-03 | 1.14E-03 | 2.71E-07 | 2.71E-07 | 2.71E-07 |
| 207089 | Benzo[k]fluoranthene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 100447 | Benzyl chloride | 1.01E+02 | 5.87E+01 | 6.14E+01 | 1.47E-02 | 1.47E-02 | 1.47E-02 |
| 7440417 | Beryllium | 7.35E-01 | 4.44E-01 | 4.63E-01 | 1.47E-04 | 1.47E-04 | 1.47E-04 |
| 106990 | 1,3-Butadiene | 9.18E+01 | 5.33E+01 | 5.58E+01 | 1.33E-02 | 1.33E-02 | 1.33E-02 |
| 7440439 | Cadmium | 1.04E+00 | 6.28E-01 | 6.54E-01 | 2.22E-04 | 2.22E-04 | 2.22E-04 |
| 56235 | Carbon tetrachloride | 6.16E+01 | 3.57E+01 | 3.74E+01 | 8.94E-03 | 8.94E-03 | 8.94E-03 |
| 108907 | Chlorobenzene | 5.54E+02 | 3.21E+02 | 3.37E+02 | 8.04E-02 | 8.04E-02 | 8.04E-02 |
| 67663 | Chloroform | 2.87E+01 | 1.66E+01 | 1.74E+01 | 4.16E-03 | 4.16E-03 | 4.16E-03 |
| 18540299 | Chromium VI | 2.19E+00 | 1.29E+00 | 1.35E+00 | 3.97E-04 | 3.97E-04 | 3.97E-04 |
| 218019 | Chrysene | 3.86E-02 | 2.24E-02 | 2.35E-02 | 5.60E-06 | 5.60E-06 | 5.60E-06 |
| 7440508 | Copper | 1.51E+01 | 9.25E+00 | 9.64E+00 | 3.44E-03 | 3.44E-03 | 3.44E-03 |
| 1175 | Crystalline silica | 1.04E+03 | 7.27E+02 | 7.48E+02 | 3.28E-01 | 3.28E-01 | 3.28E-01 |
| 53703 | Dibenz[a,h]anthracene | 2.95E-04 | 1.71E-04 | 1.79E-04 | 4.27E-08 | 4.27E-08 | 4.27E-08 |
| 106467 | p-Dichlorobenzene | 5.89E+01 | 3.42E+01 | 3.58E+01 | 8.54E-03 | 8.54E-03 | 8.54E-03 |
| 75343 | 1,1-Dichloroethane | 1.98E+01 | 1.15E+01 | 1.20E+01 | 2.87E-03 | 2.87E-03 | 2.87E-03 |
| 78875 | 1,2-Dichloropropane | 2.71E+01 | 1.57E+01 | 1.65E+01 | 3.94E-03 | 3.94E-03 | 3.94E-03 |
| 542756 | 1,3-Dichloropropene | 1.11E+02 | 6.45E+01 | 6.75E+01 | 1.61E-02 | 1.61E-02 | 1.61E-02 |
| 9901 | Diesel PM | 2.47E+01 | 2.47E+01 | 2.47E+01 | 9.73E-01 | 9.73E-01 | 9.73E-01 |
| 75003 | Ethyl chloride | 3.87E+01 | 2.25E+01 | 2.35E+01 | 5.62E-03 | 5.62E-03 | 5.62E-03 |
| 100414 | Ethylbenzene | 9.59E+02 | 5.56E+02 | 5.83E+02 | 1.39E-01 | 1.39E-01 | 1.39E-01 |
| 106934 | Ethylene dibromide | 6.02E+01 | 3.49E+01 | 3.66E+01 | 8.73E-03 | 8.73E-03 | 8.73E-03 |
| 107062 | Ethylene dichloride | 2.38E+01 | 1.38E+01 | 1.44E+01 | 3.45E-03 | 3.45E-03 | 3.45E-03 |
| 50000 | Formaldehyde | 6.31E+01 | 3.66E+01 | 3.83E+01 | 9.15E-03 | 9.15E-03 | 9.15E-03 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 9.63E-06 | 5.58E-06 | 5.85E-06 | 1.40E-09 | 1.40E-09 | 1.40E-09 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 4.67E-06 | 2.71E-06 | 2.84E-06 | 6.77E-10 | 6.77E-10 | 6.77E-10 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.20E-06 | 6.98E-07 | 7.31E-07 | 1.75E-10 | 1.75E-10 | 1.75E-10 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 2.69E-06 | 1.56E-06 | 1.63E-06 | 3.90E-10 | 3.90E-10 | 3.90E-10 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 2.65E-06 | 1.54E-06 | 1.61E-06 | 3.85E-10 | 3.85E-10 | 3.85E-10 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 2.75E-06 | 1.59E-06 | 1.67E-06 | 3.98E-10 | 3.98E-10 | 3.98E-10 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 4.07E-06 | 2.36E-06 | 2.47E-06 | 5.90E-10 | 5.90E-10 | 5.90E-10 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 3.81E-06 | 2.21E-06 | 2.31E-06 | 5.52E-10 | 5.52E-10 | 5.52E-10 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.28E-06 | 7.44E-07 | 7.79E-07 | 1.86E-10 | 1.86E-10 | 1.86E-10 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 2.34E-06 | 1.36E-06 | 1.42E-06 | 3.40E-10 | 3.40E-10 | 3.40E-10 |
| 7647010 | Hydrochloric acid | 1.07E+05 | 6.22E+04 | 6.51E+04 | 1.55E+01 | 1.55E+01 | 1.55E+01 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 2.19E-04 | 1.27E-04 | 1.33E-04 | 3.17E-08 | 3.17E-08 | 3.17E-08 |
| 7439921 | Lead | 1.94E+00 | 1.16E+00 | 1.21E+00 | 3.84E-04 | 3.84E-04 | 3.84E-04 |
| 7439965 | Manganese | 3.99E+00 | 2.32E+00 | 2.42E+00 | 5.79E-04 | 5.79E-04 | 5.79E-04 |

**TABLE 1**

**ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) | | | Maximum Hourly (lb/hr) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] | 2005 Production | Average Production in 2008/2009 | 2010 Production [1] |
| 7439976 | Mercury | 1.28E+03 | 7.45E+02 | 5.46E+02 | 2.00E-01 | 1.84E-01 | 1.29E-01 |
| 74839 | Methyl bromide | 6.25E+02 | 3.63E+02 | 3.80E+02 | 9.07E-02 | 9.07E-02 | 9.07E-02 |
| 71556 | Methyl chloroform (1,1,1-trichlorethane) | 3.21E+01 | 1.86E+01 | 1.95E+01 | 4.65E-03 | 4.65E-03 | 4.65E-03 |
| 75092 | Methylene chloride | 1.29E+02 | 7.48E+01 | 7.84E+01 | 1.87E-02 | 1.87E-02 | 1.87E-02 |
| 91203 | Naphthalene | 1.39E+02 | 8.04E+01 | 8.42E+01 | 2.01E-02 | 2.01E-02 | 2.01E-02 |
| 7440020 | Nickel | 5.19E+01 | 3.10E+01 | 3.24E+01 | 1.04E-02 | 1.04E-02 | 1.04E-02 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.02E-05 | 1.17E-05 | 1.22E-05 | 2.92E-09 | 2.92E-09 | 2.92E-09 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 4.61E-06 | 2.67E-06 | 2.80E-06 | 6.69E-10 | 6.69E-10 | 6.69E-10 |
| 40321764 | 1,2,3,7,8-PeCDD | 2.37E-06 | 1.38E-06 | 1.44E-06 | 3.44E-10 | 3.44E-10 | 3.44E-10 |
| 57117416 | 1,2,3,7,8-PeCDF | 1.83E-05 | 1.06E-05 | 1.11E-05 | 2.66E-09 | 2.66E-09 | 2.66E-09 |
| 57117314 | 2,3,4,7,8-PeCDF | 2.74E-05 | 1.59E-05 | 1.67E-05 | 3.98E-09 | 3.98E-09 | 3.98E-09 |
| 127184 | Perchloroethylene | 5.31E+01 | 3.08E+01 | 3.23E+01 | 7.70E-03 | 7.70E-03 | 7.70E-03 |
| 7782492 | Selenium | 5.38E+00 | 3.17E+00 | 3.32E+00 | 8.99E-04 | 8.99E-04 | 8.99E-04 |
| 100425 | Styrene | 2.43E+02 | 1.41E+02 | 1.47E+02 | 3.52E-02 | 3.52E-02 | 3.52E-02 |
| 1746016 | 2,3,7,8-TCDD | 2.33E-06 | 1.35E-06 | 1.41E-06 | 3.38E-10 | 3.38E-10 | 3.38E-10 |
| 51207319 | 2,3,7,8-TCDF | 1.15E-04 | 6.69E-05 | 7.00E-05 | 1.67E-08 | 1.67E-08 | 1.67E-08 |
| 79345 | 1,1,2,2-Tetrachloroethane | 4.03E+01 | 2.34E+01 | 2.45E+01 | 5.85E-03 | 5.85E-03 | 5.85E-03 |
| 108883 | Toluene | 8.65E+03 | 5.01E+03 | 5.25E+03 | 1.25E+00 | 1.25E+00 | 1.25E+00 |
| 79005 | 1,1,2-Trichloroethane | 5.34E+01 | 3.10E+01 | 3.24E+01 | 7.75E-03 | 7.75E-03 | 7.75E-03 |
| 79016 | Trichloroethylene | 4.21E+01 | 2.44E+01 | 2.56E+01 | 6.10E-03 | 6.10E-03 | 6.10E-03 |
| 1314621 | Vanadium | 1.47E+02 | 8.69E+01 | 9.08E+01 | 2.91E-02 | 2.91E-02 | 2.91E-02 |
| 75014 | Vinyl chloride | 1.42E+02 | 8.22E+01 | 8.61E+01 | 2.06E-02 | 2.06E-02 | 2.06E-02 |
| 75354 | Vinylidene chloride | 3.89E+01 | 2.25E+01 | 2.36E+01 | 5.64E-03 | 5.64E-03 | 5.64E-03 |
| 95476 | o-Xylene | 1.36E+03 | 7.89E+02 | 8.26E+02 | 1.97E-01 | 1.97E-01 | 1.97E-01 |
| 1330207 | Xylenes (mixed) | 6.94E+03 | 4.03E+03 | 4.22E+03 | 1.01E+00 | 1.01E+00 | 1.01E+00 |

Note

1. Emissions for 2011 Production are the same as 2010 with the exception of mercury; annual average and maximum hourly mercury emissions are 261 lb/yr and 0.064 lb/hr, respectively.

Abbreviations

lb/yr = pounds per year

lb/hr = pounds per hour

**TABLE 2**

**POINT SOURCE INPUT PARAMETERS [1]**
Lehigh Southwest Cement Company
Cupertino Facility

| Baghouse BAAQMD Permit # | DC ID | Model ID | Source | Material | Operating Schedule [2] | | | UTM NAD83 Coordinates | | Stack ID | Stack Height [2] (ft) | Stack Height [2] (m) | Stack Orientation [3] (V/H) | Stack Shape (Round / Rect) | Stack Dimensions | | Stack Diameter [4] | | Temp [2] | | Stack Flow [2] | Exit Velocity [5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | weeks/ year | days/ week | hours/ day | X (meters) | Y (meters) | | | | | | (in) | (in) | (ft) | (m) | (°F) | (K) | (acfm) | (m/s) |
| A-114 | 1-DC-4 | 1D4 | Additive Bin Transfer Facilities Area 1 | Additive | 52 | 7 | 24 | 580519.84 | 4130340.0 | P114 | 75 | 22.9 | H | Rect | 16 | 18 | 1.6 | 0.49 | Ambient[6] | | 8,000 | 20.32 |
| A-121 | 2-DC-1 | 2D1 | Tertiary Scalping Screen/ Tertiary Crusher | 56% High Grade 44% Mid Grade | 52 | 7 | 16 | 580100.0 | 4130360 | P121 | 98 | 29.9 | H | Rect | 25 | 22 | 2.2 | 0.67 | Ambient[6] | | 16,500 | 21.95 |
| A-131 | 3-DC-1 | 3D1 | Rock Sampling System Area 3 | 56% High Grade 44% Mid Grade | 52 | 7 | 16 | 580463.6 | 4130288.8 | P131 | 75 | 22.9 | H | Rect | 16.5 | 14 | 1.4 | 0.44 | Ambient[6] | | 6,000 | 19.00 |
| A-134 | 3-DC-4 | 3D4 | Preblend Storage Bin | 5% Additive 95% All Grade Limestone | 52 | 7 | 24 | 580526.71 | 4130340.81 | P134 | 98 | 29.9 | H | Rect | 16 | 18 | 1.6 | 0.49 | Ambient[6] | | 8,000 | 20.32 |
| A-135 | 3-DC-5 | 3D5 | High-grade Storage Bins | High Grade Limestone | 52 | 7 | 24 | 580527.83 | 4130344.70 | P135 | 98 | 29.9 | H | Rect | 16 | 18 | 1.6 | 0.49 | Ambient[6] | | 8,000 | 20.32 |
| A-141 | 4-DC-7/22 | Kiln | Raw Mill/Kiln [7] | 5% Additive 53% High Grade | 52 | 7 | 24 | 580559.2 | 4130330.4 | P141 | 60 | 18.3 | V | Rect | 25 | 22 | 2.2 | 0.67 | 320 | 433.2 | 12,000 | 15.96 |
| A-142 | 4-DC-23/38 | | | | | | | | | P142 | | | | | | | | | | | | |
| A-143 | 4-DC-3 | 4D3 | Raw Mill 1 Separator System | 5% Additive 53% High Grade 42% Mid Grade | 52 | 7 | 24 | 580576.59 | 4130371.43 | P143 | 80 | 24.4 | H | Rect | 25 | 22 | 2.2 | 0.67 | 210 | 372.0 | 10,000 | 13.30 |
| A-144 | 4-DC-4 | 4D4 | Raw Mill 2 Separator System | 5% Additive 53% High Grade 42% Mid Grade | 52 | 7 | 24 | 580565.99 | 4130352.64 | P144 | 80 | 24.4 | H | Rect | 25 | 22 | 2.2 | 0.67 | 210 | 372.0 | 10,000 | 13.30 |
| A-151 | 5-DC-1 | 5D1 | Homogenizer | 5% Additive 53% High Grade 42% Mid Grade | 52 | 7 | 24 | 580580.90 | 4130398.80 | P151 | 135 | 41.1 | H | Rect | 22 | 20 | 2.0 | 0.60 | 180 | 355.4 | 20,000 | 33.25 |
| A-152 | 5-DC-2 | 5D2 | Homogenizer | 5% Additive 53% High Grade 42% Mid Grade | 52 | 7 | 24 | 580592.91 | 4130382.67 | P152 | 135 | 41.1 | H | Rect | 28 | 25 | 2.5 | 0.76 | 180 | 355.4 | 20,000 | 20.90 |
| A-153 | 5-DC-3 | 5D3 | Kiln Feed System | 5% Additive 53% High Grade 42% Mid Grade | 52 | 7 | 24 | 580567.70 | 4130405.68 | P153 | 195 | 59.4 | H | Rect | 28 | 25 | 2.5 | 0.76 | 180 | 355.4 | 18,000 | 18.81 |
| A-161 | 5-DC-11/20 | 5D11_20 | Clinker Cooler | Clinker | 52 | 7 | 24 | 580600.00 | 4130480.00 | P161 | 75 | 22.9 | H | Rect | 25 | 22 | 2.2 | 0.67 | 425 | 491.5 | 135,000 | 179.6 |
| A-164 | 5-DC-23 | 5D23 | Clinker Silo B | Clinker | 52 | 7 | 24 | 580578.70 | 4130502.97 | P164 | 80 | 24.4 | H | Rect | 20 | 23 | 2.0 | 0.61 | 120 | 322.0 | 10,000 | 15.90 |
| A-165 | 5-DC-27 | 5D27 | Clinker Transfer System | Clinker | 52 | 7 | 24 | 580545.00 | 4130450.00 | P165 | 80 | 24.4 | H | Rect | 11 | 13 | 1.1 | 0.34 | 120 | 322.0 | 4,000 | 20.46 |
| | 5-DC-28 | 5D28 | | | | | | 580365.00 | 4130490.00 | | | 24.4 | H | Round | -- | -- | 1.1 | 0.33 | | | | 22.04 |
| A-171 | 5-DC-5 | 5D5 | Kiln/Kiln Coal System | Coke | 52 | 7 | 24 | 580581.17 | 4130366.90 | P171 | 60 | 18.3 | H | Round | -- | -- | 2.5 | 0.76 | 140 | 333.2 | 24,000 | 24.84 |
| A-172 | 5-DC-6 | 5D6 | Kiln/Precalciner Coal Mill | Coke | 52 | 7 | 24 | 580604.44 | 4130354.86 | P172 | 60 | 18.3 | H | Round | -- | -- | 2.5 | 0.76 | 140 | 333.2 | 24,000 | 24.84 |
| A-13 | 6-DC-1 | 6D1 | Roll Press Clinker Surge Bin and Feeder | Clinker | 52 | 7 | 24 | 580237.77 | 4130623.27 | P14 | 10 | 3.0 | H | Rect | 13 | 14.5 | 1.3 | 0.39 | 80 | 299.8 | 5,000 | 19.40 |
| A-210 | 6-DC-17 | 6D17 | Finish Mill 6-GM-1 | Cement | 52 | 7 | 21 | 580265.00 | 4130620.00 | P210 | 17 | 5.2 | H | Round | -- | -- | 2.5 | 0.76 | 230 | 383.2 | 20,000 | 20.70 |
| A-211 | 6-DC-12/18 | 6D12 | Separator 6-SE-2 | Cement | 52 | 7 | 21 | 580295.54 | 4130619.71 | P211 | 8 | 2.4 | H (45 deg) | Rect | 39 | 39 | 3.7 | 1.12 | 168 | 348.7 | 80,000 | 38.48 |
| A-218 | 6-DC-19 | 6D19 | 6-GM-1 Air Separator | Cement | 52 | 7 | 21 | 580299.17 | 4130640.77 | P218 | 15 | 4.6 | H | Rect | 65 | 73 | 6.5 | 1.97 | 200 | 366.5 | 150,000 | 23.12 |
| A-220 | 6-DC-8 | 6D8 | 6-GM-2 Mill and Peripherals | Cement | 52 | 7 | 21 | 580247.4 | 4130599.7 | -- | 107 | 32.6 | H | Rect | 28.5 | 24 | 2.5 | 0.75 | 220 | 377.6 | 17,000 | 18.18 |
| A-230 | 6-DC-2 | 6D2 | Roller Press and Peripherals | Cement | 52 | 7 | 21 | 580236.6 | 4130621.2 | P230 | 34 | 10.4 | H | Rect | 21 | 25 | 2.2 | 0.66 | 150 | 338.7 | 15,000 | 20.90 |
| A-384 | 8-DC-31 | 8D31 | Rock Plant 2 Conveyors/Rock Plant 2 Screens - 16 & 17 | Low Grade Limestone | 50 | 5 | 8 | 580404.9 | 4129863.4 | P184 | 25 | 7.6 | V | Round | -- | -- | 2.5 | 0.76 | Ambient[6] | | 17,000 | 17.59 |
| S501 | -- | S501 | Emergency Diesel Generator | Diesel fuel | 20 hours/yr | | | 580323.8 | 4130432.7 | P443 | 12 | 3.7 | H | Round | -- | -- | 1.1 | 0.34 | 120 | 322.0 | 5350 | 28.60 |
| S502 | -- | S502 | Emergency Diesel Generator | Diesel fuel | 20 hours/yr | | | 580497.3 | 4130398.5 | P444 | 3 | 0.9 | H | Round | -- | -- | 1 | 0.30 | 180 | 355.4 | 15000 | 97.02 |
| -- | 999-DC | 999D | Pseudo Stack for Remaining Dust Collector Emissions [8] | -- | -- | -- | -- | 580446.50 | 4130451.60 | -- | 58 | 17.6 | H | -- | -- | -- | -- | 0.35 | 100 | 310.9 | 4270 | 7.80 |

**TABLE 2**

**POINT SOURCE INPUT PARAMETERS [1]**
Lehigh Southwest Cement Company
Cupertino Facility

Notes

1. Input parameters were provided by the facility; AMEC has not measured any source parameters.
2. Information obtained from Hanson Permanente Cement Inspection Report #562, March 10, 2005. Document received after CEIR prepared.
3. Vertical (V) or horizontal (H) orientation of the stack.
4. Provided by facility personnel; if stack is rectangular, equivalent diameter is calculated from stack dimensions as follows: Diameter (ft) = 2 x (Stack dimensions (in x in) / 144 in/ft / pi)$^{1/2}$
5. If stack orientation is horizontal, stack is modeled with a 0.001 meter per second (m/s) velocity. Other stack velocities calculated as follows: Stack flow (acfm or $ft^3$/min) x 0.02832 $ft^3/m^3$ / stack area ($m^2$) / 60 sec/min; the model assumes all point source stacks are round, therefore, the stack area was calculated as follows: Stack area ($m^2$) = pi (3.14) x (stack diameter (m) / 2)$^2$
6. Sources operate at ambient temperature which varies seasonally. A value of 0 K was entered into the model for these sources.
7. The kiln emission source is comprised of 32 equivalent stacks, 30 of which operate at any one time.
8. Dust collector sources with an insignificant contribution to particulate (dust) emissions were not modeled individually (per the HRA Protocol, AMEC, 2010). Instead, related emissions were combined and modeled from a single representative stack with average parameters in a central facility location.

Abbreviations

DC = Dust collector
UTM NAD 83 = Universal Transverse Mercator; North American Datum 1983
-- = not applicable
Rect = Rectangular
ft = feet
in = inches

**TABLE 3**

**FUGITIVE VOLUME SOURCE INPUT PARAMETERS**

Lehigh Southwest Cement Company

Cupertino Facility

| Modeled Volume Source Group[1] | Source[2] | CEIR Table | Material | Operating Schedule | | | UTM NAD83 Coordinates[3] | | Dimensions (meters) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | weeks/ year | days/ week | hours/ day | X (meters) | Y (meters) | side length | initial lateral dimension | release height |
| 1 / 2 | Material Handling | 12A | Primary crushed limestone (medium grade) | 52 | 7 | 10 | 578187.53 | 4130775.88 | 640.48 | 148.95 | 7 |
| 1 / 2 | Blasting | 12A | | 52 | 7 | 10 | | | | | |
| 1 / 2 | Bulldozing | 12A | | 52 | 7 | 10 | 578895.69 | 4130829.41 | 674.83 | 156.94 | |
| 1 / 2 | Grading | 12A | | 52 | 7 | 10 | | | | | |
| 1 / 2 | Dust Entrainment - Unpaved Roads | 12B | Unpaved road dust in mine (sample 015) | 52 | 7 | 10 | | | | | |
| 1 / 2 | Wind Erosion - Unpaved Roads | 12B | Unpaved road dust in mine (sample 015) | 52 | 7 | 24 | | | | | |
| 1 / 2 | Wind Erosion - Mine Area | 12C | Primary crushed limestone (medium grade) | 52 | 7 | 24 | | | | | |
| 3 | Crushing and screening process fugitives | 7B | 27% High Grade 25% All Grade 48% Low Grade | 52 | 7 | 24 | 579745.28 | 4130737.49 | 670.78 | 156 | 7 |
| 4 (4A-4D)[4] | Cement facility process fugitives | 7A | Various | 52 | 7 | 24 | 580319.09 | 4130874.87 | 199.1 | 46.3 | 7 |
| | Natural Gypsum Stockpile (located in a covered bldg) | 11 | Natural Gypsum | 52 | 7 | 24 | | | 230.0 | 53.5 | |
| | | | | | | | | | 230.0 | 53.5 | |
| | Pozzolan Stockpile (located in a covered bldg) | 11 | Pozzolan | 52 | 7 | 24 | | | 230.0 | 53.5 | |
| 5 | Rock plant process fugitives | 7C | Low grade | 52 | 7 | 24 | 579904.89 | 4130218.23 | 359.64 | 83.64 | 7 |
| 5 | Primary Crushed Limestone Stockpile (High Grade) | 11 | Primary crushed limestone (high grade) | 52 | 7 | 24 | | | | | |
| 5 | Primary Crushed Limestone Stockpile (Medium Grade) | 11 | Primary crushed limestone (medium grade) | 52 | 7 | 24 | | | | | |
| 6 (6A-6D)[4] | Dust entrainment from unpaved roads | 10 | Unpaved road dust | 52 | 7 | 10 | 580395.86 | 4130333.39 | 306.0 | 71.16 | 7 |
| | Dust entrainment from paved roads | 10 | Paved road dust | 52 | 7 | 10 | | | 306.0 | 71.16 | |
| | Wind erosion from unpaved roads | 10 | Unpaved road dust | 52 | 7 | 24 | | | 306.0 | 71.16 | |
| | Bauxite Stockpile | 11 | Bauxite | 52 | 7 | 24 | | | 306.0 | 71.16 | |
| | Iron Ore Stockpile | 11 | Iron Ore | 52 | 7 | 24 | | | | | |
| | Coal Stockpile | 11 | Coal | 52 | 7 | 24 | | | | | |
| | Coke Stockpile | 11 | Coke | 52 | 7 | 24 | | | | | |
| | Clinker Stockpile | 11 | Clinker | 52 | 7 | 24 | | | | | |
| | Gasoline dispensing | 8 | -- | 2,500 hours/year | | | | | | | |
| 6 / 7[5] | Diesel dispensing | 8 | -- | 2,500 hours/year | | | 580441.3 | 412849.5 | 371.69 | 86.46 | 7 |

**TABLE 3**

**FUGITIVE VOLUME SOURCE INPUT PARAMETERS**

Lehigh Southwest Cement Company

Cupertino Facility

| Modeled Volume Source Group[1] | Source[2] | CEIR Table | Material | Operating Schedule | | | UTM NAD83 Coordinates[3] | | Dimensions (meters) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | weeks/ year | days/ week | hours/ day | X (meters) | Y (meters) | side length | initial lateral dimension | release height |
| 5 / 6 / 7 | Gasoline welding stationary IC engines | 9B | -- | 100 hours/year | | | multiple | | | | 7 |
| 5 / 6 / 7 | Diesel welding stationary IC engines | 9B | -- | 202 hours/year | | | multiple | | | | 7 |
| 5 / 7 / 8 | Quarry Overburden Stockpile | 11 | Quarry overburden (low grade) | 52 | 7 | 24 | multiple | | | | 7 |
| 8 | Slag Stockpile | 11 | Slag | 52 | 7 | 24 | 580731.26 | 4130822.35 | 351.56 | 81.76 | 7 |
| 8 | Low Grade Limestone Stockpile (Non-Process) | B | Primary crushed limestone (medium grade) | 52 | 7 | 24 | | | | | |
| 7PD7 | East Silo Top Cement Distribution Tower (A-435; 7-PDC-7) | 6A | Cement | 52 | 7 | 24 | 580498.7 | 4130590.8 | 4.00 | 0.93 | 32 |

Notes

1. Emissions for sources which overlap multiple areas are shared equally between volume sources with the exception of the welding equipment (Group 5: 25%; Group 6: 60%; Group 7: 15%).
2. Stockpile emissions include that from wind erosion and material handling.
3. The coordinates provided correspond to the center of the volume source.
4. Source 4 and 6 were divided into four volume sources A through D.
5. Values for volume source 7 are presented.

Source Group Descriptions

| | |
|---|---|
| 1 | Mine Operations |
| 2 | Mine Operations |
| 3 | Rock Crushing Operations |
| 4 | Cement Processing |
| 5 | Rock Plant |
| 6 | Plant Operations |
| 7 | Quarry Operations |
| 8 | Non-Process Storage |

Abbreviations

UTM NAD 83 = Universal Transverse Mercator; North American Datum 1983

-- = not applicable

## TABLE 4A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN -2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2005 Production | Average 2008/2009 Production |
|---|---|---|---|
| 75070 | Acetaldehyde | 1.16E+03 | 6.71E+02 |
| 107028 | Acrolein | 4.49E+01 | 2.61E+01 |
| 7440382 | Arsenic | 7.60E-01 | 4.41E-01 |
| 56553 | Benz[a]anthracene | 1.31E-02 | 7.60E-03 |
| 71432 | Benzene | 9.65E+03 | 5.60E+03 |
| 50328 | Benzo[a]pyrene | 2.95E-04 | 1.71E-04 |
| 205992 | Benzo[b]fluoranthene | 1.87E-03 | 1.08E-03 |
| 207089 | Benzo[k]fluoranthene | 2.95E-04 | 1.71E-04 |
| 100447 | Benzyl chloride | 1.01E+02 | 5.87E+01 |
| 7440417 | Beryllium | 3.80E-01 | 2.21E-01 |
| 106990 | 1,3-Butadiene | 9.18E+01 | 5.33E+01 |
| 7440439 | Cadmium | 3.80E-01 | 2.21E-01 |
| 56235 | Carbon tetrachloride | 6.16E+01 | 3.57E+01 |
| 108907 | Chlorobenzene | 5.54E+02 | 3.21E+02 |
| 67663 | Chloroform | 2.87E+01 | 1.66E+01 |
| 18540299 | Chromium VI | 3.36E-01 | 1.95E-01 |
| 218019 | Chrysene | 3.86E-02 | 2.24E-02 |
| 7440508 | Copper | 4.24E+00 | 2.46E+00 |
| 1175 | Crystalline silica | 0.00E+00 | 0.00E+00 |
| 53703 | Dibenz[a,h]anthracene | 2.95E-04 | 1.71E-04 |
| 106467 | p-Dichlorobenzene | 5.89E+01 | 3.42E+01 |
| 75343 | 1,1-Dichloroethane | 1.98E+01 | 1.15E+01 |
| 78875 | 1,2-Dichloropropane | 2.71E+01 | 1.57E+01 |
| 542756 | 1,3-Dichloropropene | 1.11E+02 | 6.45E+01 |
| 9901 | Diesel PM | 0.00E+00 | 0.00E+00 |
| 75003 | Ethyl chloride | 3.87E+01 | 2.25E+01 |
| 100414 | Ethylbenzene | 9.59E+02 | 5.56E+02 |
| 106934 | Ethylene dibromide | 6.02E+01 | 3.49E+01 |

## TABLE 4A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN -2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2005 Production | Average 2008/2009 Production |
|---|---|---|---|
| 107062 | Ethylene dichloride | 2.38E+01 | 1.38E+01 |
| 50000 | Formaldehyde | 6.31E+01 | 3.66E+01 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 9.63E-06 | 5.58E-06 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 4.67E-06 | 2.71E-06 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.20E-06 | 6.98E-07 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 2.69E-06 | 1.56E-06 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 2.65E-06 | 1.54E-06 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 2.75E-06 | 1.59E-06 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 4.07E-06 | 2.36E-06 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 3.81E-06 | 2.21E-06 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.28E-06 | 7.44E-07 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 2.34E-06 | 1.36E-06 |
| 7647010 | Hydrochloric acid | 1.07E+05 | 6.22E+04 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 2.19E-04 | 1.27E-04 |
| 7439921 | Lead | 8.86E-01 | 5.14E-01 |
| 7439965 | Manganese | 3.99E+00 | 2.32E+00 |
| 7439976 | Mercury | 1.28E+03 | 7.45E+02 |
| 74839 | Methyl bromide | 6.25E+02 | 3.63E+02 |
| 71556 | Methyl chloroform | 3.21E+01 | 1.86E+01 |
| 75092 | Methylene chloride | 1.29E+02 | 7.48E+01 |
| 91203 | Naphthalene | 1.39E+02 | 8.04E+01 |
| 7440020 | Nickel | 6.53E+00 | 3.78E+00 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.02E-05 | 1.17E-05 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 4.61E-06 | 2.67E-06 |
| 40321764 | 1,2,3,7,8-PeCDD | 2.37E-06 | 1.38E-06 |
| 57117416 | 1,2,3,7,8-PeCDF | 1.83E-05 | 1.06E-05 |
| 57117314 | 2,3,4,7,8-PeCDF | 2.74E-05 | 1.59E-05 |
| 127184 | Perchloroethylene | 5.31E+01 | 3.08E+01 |

## TABLE 4A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN -2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2005 Production | Average 2008/2009 Production |
|---|---|---|---|
| 7782492 | Selenium | 4.25E+00 | 2.47E+00 |
| 100425 | Styrene | 2.43E+02 | 1.41E+02 |
| 1746016 | 2,3,7,8-TCDD | 2.33E-06 | 1.35E-06 |
| 51207319 | 2,3,7,8-TCDF | 1.15E-04 | 6.69E-05 |
| 79345 | 1,1,2,2-Tetrachloroethane | 4.03E+01 | 2.34E+01 |
| 108883 | Toluene | 8.65E+03 | 5.01E+03 |
| 79005 | 1,1,2-Trichloroethane | 5.34E+01 | 3.10E+01 |
| 79016 | Trichloroethylene | 4.21E+01 | 2.44E+01 |
| 1314621 | Vanadium | 3.80E+00 | 2.21E+00 |
| 75014 | Vinyl chloride | 1.42E+02 | 8.22E+01 |
| 75354 | Vinylidene chloride | 3.89E+01 | 2.25E+01 |
| 95476 | o-Xylene | 1.36E+03 | 7.89E+02 |
| 1330207 | Xylenes (mixed) | 6.94E+03 | 4.03E+03 |

**TABLE 4B**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR 2005 PRODUCTION - DUST COLLECTORS**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| | | Emission Source Group | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical** | **1D4** | **2D1** | **3D1** | **3D4** | **3D5** | **4D3** | **4D4** | **5D1** | **5D2** | **5D3** | **5D5** | **5D6** | **5D11_20** | **5D23** | **5D27** | **5D28** | **6D17** | **6D19** | **6D2** | **6D1218** | **6D1** | **6D8** | **7PD7** | **8D31** | **999DC** |
| 7440382 | Arsenic | 6.33E-02 | 3.62E-02 | 1.67E-02 | 1.81E-02 | 1.73E-02 | 2.31E-02 | 2.36E-02 | 3.00E-02 | 3.00E-02 | 5.41E-02 | 2.82E-02 | 2.79E-02 | 1.58E-01 | 2.74E-02 | 7.20E-03 | 7.20E-03 | 3.05E-02 | 3.43E-02 | 3.07E-02 | 1.89E-02 | 3.25E-02 | 2.01E-02 | 1.52E-02 | 6.05E-03 | 1.77E-01 |
| 7440417 | Beryllium | 6.78E-03 | 5.89E-03 | 2.72E-03 | 2.87E-03 | 2.77E-03 | 3.58E-03 | 3.66E-03 | 4.66E-03 | 4.66E-03 | 8.38E-03 | 1.69E-02 | 1.67E-02 | 2.55E-02 | 4.43E-03 | 1.16E-03 | 1.16E-03 | 5.22E-03 | 5.88E-03 | 5.26E-03 | 3.24E-03 | 5.26E-03 | 3.44E-03 | 2.61E-03 | 3.63E-03 | 2.83E-02 |
| 7440439 | Cadmium | 1.13E-02 | 1.48E-02 | 6.84E-03 | 9.79E-03 | 4.61E-03 | 8.74E-03 | 8.92E-03 | 1.14E-02 | 1.14E-02 | 2.04E-02 | 2.82E-02 | 2.79E-02 | 4.25E-02 | 7.39E-03 | 1.94E-03 | 1.94E-03 | 8.71E-03 | 9.80E-03 | 8.77E-03 | 5.40E-03 | 8.77E-03 | 5.74E-03 | 4.35E-03 | 6.05E-03 | 5.06E-02 |
| 7440473 | Chromium (total) | 1.25E-01 | 2.73E-01 | 1.26E-01 | 1.58E-01 | 1.01E-01 | 1.57E-01 | 1.60E-01 | 2.03E-01 | 2.03E-01 | 3.66E-01 | 2.05E-01 | 2.02E-01 | 2.65E+00 | 4.60E-01 | 1.21E-01 | 1.21E-01 | 4.51E-01 | 5.07E-01 | 4.54E-01 | 2.80E-01 | 5.46E-01 | 2.97E-01 | 2.26E-01 | 1.16E-01 | 1.97E+00 |
| 18540299 | Chromium VI | 4.52E-04 | 3.50E-03 | 1.62E-03 | 3.09E-03 | 3.69E-04 | 1.96E-03 | 2.00E-03 | 2.54E-03 | 2.54E-03 | 4.58E-03 | 2.26E-03 | 2.23E-03 | 4.08E-01 | 7.09E-02 | 1.86E-02 | 1.86E-02 | 1.20E-01 | 1.35E-01 | 1.21E-01 | 7.45E-02 | 8.42E-02 | 7.91E-02 | 6.01E-02 | 4.84E-04 | 3.89E-01 |
| 7440508 | Copper | 2.76E-01 | 2.70E-01 | 1.25E-01 | 1.32E-01 | 1.26E-01 | 1.63E-01 | 1.66E-01 | 2.11E-01 | 2.11E-01 | 3.81E-01 | 1.44E-01 | 1.43E-01 | 6.57E-01 | 1.14E-01 | 3.00E-02 | 3.00E-02 | 1.55E-01 | 1.74E-01 | 1.56E-01 | 9.61E-02 | 1.36E-01 | 1.02E-01 | 7.75E-02 | 6.77E-02 | 9.23E-01 |
| 1175 | Crystalline silica | 1.47E+00 | 9.49E+00 | 4.38E+00 | 5.42E+00 | 3.46E+00 | 5.30E+00 | 5.41E+00 | 6.89E+00 | 6.89E+00 | 1.24E+01 | 2.30E-01 | 2.27E-01 | 3.47E-01 | 6.03E-02 | 1.58E-02 | 1.58E-02 | 4.26E-01 | 4.80E-01 | 4.30E-01 | 2.64E-01 | 7.16E-02 | 2.81E-01 | 2.13E-01 | 1.80E+01 | 1.56E+01 |
| 7439921 | Lead | 3.07E-02 | 1.41E-02 | 6.52E-03 | 9.89E-03 | 4.61E-03 | 9.34E-03 | 9.53E-03 | 1.21E-02 | 1.21E-02 | 2.18E-02 | 2.82E-02 | 2.79E-02 | 1.19E-01 | 2.07E-02 | 5.44E-03 | 5.44E-03 | 2.16E-02 | 2.43E-02 | 2.18E-02 | 1.34E-02 | 2.46E-02 | 1.42E-02 | 1.08E-02 | 6.29E-03 | 1.11E-01 |
| 7439976 | Mercury | 1.94E-03 | 2.46E-03 | 1.14E-03 | 2.02E-03 | 4.43E-04 | 1.46E-03 | 1.49E-03 | 1.89E-03 | 1.89E-03 | 3.41E-03 | 8.80E-02 | 8.69E-02 | 3.40E-04 | 5.91E-05 | 1.55E-05 | 1.55E-05 | 6.97E-05 | 7.84E-05 | 7.02E-05 | 4.32E-05 | 7.02E-05 | 4.59E-05 | 3.48E-05 | 9.67E-04 | 3.72E-03 |
| 7440020 | Nickel | 1.94E+00 | 3.37E-01 | 1.56E-01 | 2.62E-01 | 1.29E-01 | 2.84E-01 | 2.89E-01 | 3.68E-01 | 3.68E-01 | 6.63E-01 | 8.57E+00 | 8.47E+00 | 2.55E+00 | 4.43E-01 | 1.16E-01 | 1.16E-01 | 7.49E-01 | 8.42E-01 | 7.55E-01 | 4.64E-01 | 5.26E-01 | 4.93E-01 | 3.74E-01 | 1.11E-01 | 4.61E+00 |
| 7782492 | Selenium | 2.26E-02 | 1.96E-02 | 9.06E-03 | 9.56E-03 | 9.23E-03 | 1.19E-02 | 1.22E-02 | 1.55E-02 | 1.55E-02 | 2.79E-02 | 5.64E-02 | 5.57E-02 | 8.50E-02 | 1.48E-02 | 3.88E-03 | 3.88E-03 | 1.74E-02 | 1.96E-02 | 1.75E-02 | 1.08E-02 | 1.75E-02 | 1.15E-02 | 8.71E-03 | 1.21E-02 | 9.38E-02 |
| 1314621 | Vanadium | 5.87E+00 | 1.59E+00 | 7.33E-01 | 8.59E-01 | 8.12E-01 | 1.17E+00 | 1.19E+00 | 1.52E+00 | 1.52E+00 | 2.74E+00 | 2.48E+01 | 2.45E+01 | 1.38E+01 | 2.40E+00 | 6.32E-01 | 6.32E-01 | 2.51E+00 | 2.82E+00 | 2.53E+00 | 1.55E+00 | 2.85E+00 | 1.65E+00 | 1.25E+00 | 9.19E-02 | 1.51E+01 |

**TABLE 4C**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR AVERAGE PRODUCTION FOR 2008/2009 - DUST COLLECTORS**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| | | Emission Source Group | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical** | **1D4** | **2D1** | **3D1** | **3D4** | **3D5** | **4D3** | **4D4** | **5D1** | **5D2** | **5D3** | **5D5** | **5D6** | **5D11_20** | **5D23** | **5D27** | **5D28** | **6D17** | **6D19** | **6D2** | **6D1218** | **6D1** | **6D8** | **7PD7** | **8D31** | **999DC** |
| 7440382 | Arsenic | 3.67E-02 | 2.10E-02 | 9.69E-03 | 1.05E-02 | 1.01E-02 | 1.34E-02 | 1.37E-02 | 1.74E-02 | 1.74E-02 | 3.14E-02 | 1.64E-02 | 1.62E-02 | 9.14E-02 | 1.59E-02 | 4.17E-03 | 4.17E-03 | 1.77E-02 | 1.99E-02 | 1.78E-02 | 1.10E-02 | 1.89E-02 | 1.16E-02 | 8.84E-03 | 3.51E-03 | 1.02E-01 |
| 7440417 | Beryllium | 3.93E-03 | 3.42E-03 | 1.58E-03 | 1.66E-03 | 1.61E-03 | 2.08E-03 | 2.12E-03 | 2.70E-03 | 2.70E-03 | 4.86E-03 | 9.81E-03 | 9.69E-03 | 1.48E-02 | 2.57E-03 | 6.76E-04 | 6.76E-04 | 3.03E-03 | 3.41E-03 | 3.05E-03 | 1.88E-03 | 3.05E-03 | 2.00E-03 | 1.51E-03 | 2.10E-03 | 1.64E-02 |
| 7440439 | Cadmium | 6.55E-03 | 8.60E-03 | 3.97E-03 | 5.68E-03 | 2.68E-03 | 5.07E-03 | 5.17E-03 | 6.59E-03 | 6.59E-03 | 1.19E-02 | 1.64E-02 | 1.62E-02 | 2.47E-02 | 4.29E-03 | 1.13E-03 | 1.13E-03 | 5.05E-03 | 5.68E-03 | 5.09E-03 | 3.13E-03 | 5.09E-03 | 3.33E-03 | 2.52E-03 | 3.51E-03 | 2.93E-02 |
| 7440473 | Chromium (total) | 7.27E-02 | 1.58E-01 | 7.30E-02 | 9.17E-02 | 5.83E-02 | 9.08E-02 | 9.27E-02 | 1.18E-01 | 1.18E-01 | 2.12E-01 | 1.19E-01 | 1.17E-01 | 1.53E+00 | 2.67E-01 | 7.01E-02 | 7.01E-02 | 2.62E-01 | 2.94E-01 | 2.64E-01 | 1.62E-01 | 3.17E-01 | 1.72E-01 | 1.31E-01 | 6.73E-02 | 1.14E+00 |
| 18540299 | Chromium VI | 2.62E-04 | 2.03E-03 | 9.38E-04 | 1.79E-03 | 2.14E-04 | 1.14E-03 | 1.16E-03 | 1.48E-03 | 1.48E-03 | 2.66E-03 | 1.31E-03 | 1.29E-03 | 2.37E-01 | 4.11E-02 | 1.08E-02 | 1.08E-02 | 6.97E-02 | 7.84E-02 | 7.02E-02 | 4.32E-02 | 4.89E-02 | 4.59E-02 | 3.48E-02 | 2.81E-04 | 2.26E-01 |
| 7440508 | Copper | 1.60E-01 | 1.57E-01 | 7.24E-02 | 7.67E-02 | 7.28E-02 | 9.44E-02 | 9.63E-02 | 1.23E-01 | 1.23E-01 | 2.21E-01 | 8.38E-02 | 8.27E-02 | 3.81E-01 | 6.63E-02 | 1.74E-02 | 1.74E-02 | 8.99E-02 | 1.01E-01 | 9.06E-02 | 5.57E-02 | 7.87E-02 | 5.92E-02 | 4.49E-02 | 3.93E-02 | 5.36E-01 |
| 1175 | Crystalline silica | 8.55E-01 | 5.50E+00 | 2.54E+00 | 3.14E+00 | 2.01E+00 | 3.07E+00 | 3.14E+00 | 3.99E+00 | 3.99E+00 | 7.19E+00 | 1.33E-01 | 1.32E-01 | 2.01E-01 | 3.50E-02 | 9.19E-03 | 9.19E-03 | 2.47E-01 | 2.78E-01 | 2.49E-01 | 1.53E-01 | 4.15E-02 | 1.63E-01 | 1.24E-01 | 1.04E+01 | 9.07E+00 |
| 7439921 | Lead | 1.78E-02 | 8.20E-03 | 3.78E-03 | 5.73E-03 | 2.68E-03 | 5.42E-03 | 5.53E-03 | 7.04E-03 | 7.04E-03 | 1.27E-02 | 1.64E-02 | 1.62E-02 | 6.90E-02 | 1.20E-02 | 3.15E-03 | 3.15E-03 | 1.25E-02 | 1.41E-02 | 1.26E-02 | 7.76E-03 | 1.42E-02 | 8.25E-03 | 6.26E-03 | 3.65E-03 | 6.46E-02 |
| 7439976 | Mercury | 1.13E-03 | 1.43E-03 | 6.59E-04 | 1.17E-03 | 2.57E-04 | 8.45E-04 | 8.63E-04 | 1.10E-03 | 1.10E-03 | 1.98E-03 | 5.10E-02 | 5.04E-02 | 1.97E-04 | 3.43E-05 | 9.01E-06 | 9.01E-06 | 4.04E-05 | 4.54E-05 | 4.07E-05 | 2.50E-05 | 4.07E-05 | 2.66E-05 | 2.02E-05 | 5.61E-04 | 2.16E-03 |
| 7440020 | Nickel | 1.13E+00 | 1.96E-01 | 9.02E-02 | 1.52E-01 | 7.49E-02 | 1.64E-01 | 1.68E-01 | 2.14E-01 | 2.14E-01 | 3.85E-01 | 4.97E+00 | 4.91E+00 | 1.48E+00 | 2.57E-01 | 6.76E-02 | 6.76E-02 | 4.34E-01 | 4.89E-01 | 4.38E-01 | 2.69E-01 | 3.05E-01 | 2.86E-01 | 2.17E-01 | 6.45E-02 | 2.68E+00 |
| 7782492 | Selenium | 1.31E-02 | 1.14E-02 | 5.25E-03 | 5.54E-03 | 5.35E-03 | 6.93E-03 | 7.07E-03 | 9.00E-03 | 9.00E-03 | 1.62E-02 | 3.27E-02 | 3.23E-02 | 4.93E-02 | 8.57E-03 | 2.25E-03 | 2.25E-03 | 1.01E-02 | 1.14E-02 | 1.02E-02 | 6.26E-03 | 1.02E-02 | 6.65E-03 | 5.05E-03 | 7.01E-03 | 5.44E-02 |
| 1314621 | Vanadium | 3.41E+00 | 9.22E-01 | 4.25E-01 | 4.98E-01 | 4.71E-01 | 6.79E-01 | 6.93E-01 | 8.82E-01 | 8.82E-01 | 1.59E+00 | 1.44E+01 | 1.42E+01 | 8.02E+00 | 1.39E+00 | 3.66E-01 | 3.66E-01 | 1.45E+00 | 1.64E+00 | 1.47E+00 | 9.02E-01 | 1.66E+00 | 9.58E-01 | 7.27E-01 | 5.33E-02 | 8.73E+00 |

**TABLE 4D**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES - 2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| | | 2005 PRODUCTION | | | | | | | | | | | | | | | | AVERAGE PRODUCTION FOR 2008/2009 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical** | **S501** | **S502** | **1** | **2** | **3** | **4A** | **4B** | **4C** | **4D** | **5** | **6A** | **6B** | **6C** | **6D** | **7** | **8** | **S501** | **S502** | **1** | **2** | **3** | **4A** | **4B** | **4C** | **4D** | **5** | **6A** | **6B** | **6C** | **6D** | **7** | **8** |
| 7440382 | Arsenic | - | - | 8.04E-02 | 8.04E-02 | 1.07E-01 | 4.65E-02 | 4.65E-02 | 4.65E-02 | 4.65E-02 | 3.04E-02 | 2.92E-02 | 2.92E-02 | 2.92E-02 | 2.92E-02 | 2.80E-03 | 4.21E-03 | - | - | 5.54E-02 | 5.54E-02 | 6.23E-02 | 2.70E-02 | 2.70E-02 | 2.70E-02 | 2.70E-02 | 1.93E-02 | 2.07E-02 | 2.07E-02 | 2.07E-02 | 2.07E-02 | 2.67E-03 | 4.07E-03 |
| 71432 | Benzene | - | - | - | - | - | - | - | - | - | - | 2.28E-03 | 2.28E-03 | 2.28E-03 | 2.28E-03 | 1.35E-04 | - | - | - | - | - | - | - | - | - | - | - | 1.32E-03 | 1.32E-03 | 1.32E-03 | 1.32E-03 | 7.83E-05 | - |
| 7440417 | Beryllium | - | - | 3.02E-02 | 3.02E-02 | 2.69E-02 | 6.76E-03 | 6.76E-03 | 6.76E-03 | 6.76E-03 | 1.75E-02 | 1.02E-02 | 1.02E-02 | 1.02E-02 | 1.02E-02 | 1.68E-03 | 6.08E-03 | - | - | 2.01E-02 | 2.01E-02 | 1.56E-02 | 3.93E-03 | 3.93E-03 | 3.93E-03 | 3.93E-03 | 1.10E-02 | 8.03E-03 | 8.03E-03 | 8.03E-03 | 8.03E-03 | 1.60E-03 | 6.01E-03 |
| 7440439 | Cadmium | - | - | 5.03E-02 | 5.03E-02 | 5.79E-02 | 1.65E-02 | 1.65E-02 | 1.65E-02 | 1.65E-02 | 3.03E-02 | 1.69E-02 | 1.69E-02 | 1.69E-02 | 1.69E-02 | 2.80E-03 | 4.04E-03 | - | - | 3.35E-02 | 3.35E-02 | 3.36E-02 | 9.55E-03 | 9.55E-03 | 9.55E-03 | 9.55E-03 | 1.92E-02 | 1.33E-02 | 1.33E-02 | 1.33E-02 | 1.33E-02 | 2.67E-03 | 3.91E-03 |
| 18540299 | Chromium VI | - | - | 4.02E-03 | 4.02E-03 | 1.06E-02 | 3.30E-02 | 3.30E-02 | 3.30E-02 | 3.30E-02 | 2.34E-03 | 2.36E-02 | 2.36E-02 | 2.36E-02 | 2.36E-02 | 2.24E-04 | 3.23E-04 | - | - | 2.68E-03 | 2.68E-03 | 6.17E-03 | 1.92E-02 | 1.92E-02 | 1.92E-02 | 1.92E-02 | 1.47E-03 | 1.89E-02 | 1.89E-02 | 1.89E-02 | 1.89E-02 | 2.13E-04 | 3.13E-04 |
| 7440508 | Copper | - | - | 9.23E-01 | 9.23E-01 | 8.84E-01 | 3.14E-01 | 3.14E-01 | 3.14E-01 | 3.14E-01 | 3.37E-01 | 3.58E-01 | 3.58E-01 | 3.58E-01 | 3.58E-01 | 3.13E-02 | 3.54E-02 | - | - | 6.18E-01 | 6.18E-01 | 5.13E-01 | 1.82E-01 | 1.82E-01 | 1.82E-01 | 1.82E-01 | 2.13E-01 | 2.75E-01 | 2.75E-01 | 2.75E-01 | 2.75E-01 | 2.99E-02 | 3.39E-02 |
| 1175 | Crystalline silica | - | - | 2.30E+02 | 2.30E+02 | 8.69E+01 | 7.93E+00 | 7.93E+00 | 7.93E+00 | 7.93E+00 | 8.66E+01 | 6.63E+01 | 6.63E+01 | 6.63E+01 | 6.63E+01 | 8.30E+00 | 8.51E+00 | - | - | 1.50E+02 | 1.50E+02 | 5.04E+01 | 4.60E+00 | 4.60E+00 | 4.60E+00 | 4.60E+00 | 5.43E+01 | 5.78E+01 | 5.78E+01 | 5.78E+01 | 5.78E+01 | 7.92E+00 | 8.12E+00 |
| 9901 | Diesel PM | 3.14E+00 | 6.28E+00 | - | - | - | - | - | - | - | 3.83E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | - | 3.14E+00 | 6.28E+00 | - | - | - | - | - | - | - | 3.83E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | - |
| 7439921 | Lead | - | - | 5.03E-02 | 5.03E-02 | 5.69E-02 | 2.37E-02 | 2.37E-02 | 2.37E-02 | 2.37E-02 | 3.04E-02 | 4.40E-02 | 4.40E-02 | 4.40E-02 | 4.40E-02 | 2.91E-03 | 4.15E-03 | - | - | 3.35E-02 | 3.35E-02 | 3.30E-02 | 1.38E-02 | 1.38E-02 | 1.38E-02 | 1.38E-02 | 1.90E-02 | 3.20E-02 | 3.20E-02 | 3.20E-02 | 3.20E-02 | 2.77E-03 | 4.02E-03 |
| 7439976 | Mercury | - | - | 1.15E-02 | 1.15E-02 | 9.63E-03 | 1.60E-02 | 1.60E-02 | 1.60E-02 | 1.60E-02 | 4.71E-03 | 2.05E-03 | 2.05E-03 | 2.05E-03 | 2.05E-03 | 4.47E-04 | 1.49E-03 | - | - | 7.69E-03 | 7.69E-03 | 5.58E-03 | 9.25E-03 | 9.25E-03 | 9.25E-03 | 9.25E-03 | 2.96E-03 | 1.58E-03 | 1.58E-03 | 1.58E-03 | 1.58E-03 | 4.27E-04 | 1.46E-03 |
| 7440020 | Nickel | - | - | 1.59E+00 | 1.59E+00 | 1.21E+00 | 6.11E-01 | 6.11E-01 | 6.11E-01 | 6.11E-01 | 5.40E-01 | 9.67E-01 | 9.67E-01 | 9.67E-01 | 9.67E-01 | 5.14E-02 | 5.59E-02 | - | - | 1.05E+00 | 1.05E+00 | 7.02E-01 | 3.55E-01 | 3.55E-01 | 3.55E-01 | 3.55E-01 | 3.39E-01 | 7.18E-01 | 7.18E-01 | 7.18E-01 | 7.18E-01 | 4.91E-02 | 5.35E-02 |
| 7782492 | Selenium | - | - | 1.01E-01 | 1.01E-01 | 8.97E-02 | 2.47E-02 | 2.47E-02 | 2.47E-02 | 2.47E-02 | 5.85E-02 | 2.04E-02 | 2.04E-02 | 2.04E-02 | 2.04E-02 | 5.59E-03 | 8.08E-03 | - | - | 6.71E-02 | 6.71E-02 | 5.20E-02 | 1.43E-02 | 1.43E-02 | 1.43E-02 | 1.43E-02 | 3.67E-02 | 1.88E-02 | 1.88E-02 | 1.88E-02 | 1.88E-02 | 5.34E-03 | 7.82E-03 |
| 108883 | Toluene | - | - | - | - | - | - | - | - | - | - | 8.97E-03 | 8.97E-03 | 8.97E-03 | 8.97E-03 | 5.40E-03 | - | - | - | - | - | - | - | - | - | - | - | 5.20E-03 | 5.20E-03 | 5.20E-03 | 5.20E-03 | 3.13E-03 | - |
| 1314621 | Vanadium | - | - | 1.83E+00 | 1.83E+00 | 4.07E+00 | 2.59E+00 | 2.59E+00 | 2.59E+00 | 2.59E+00 | 5.73E-01 | 2.38E+00 | 2.38E+00 | 2.38E+00 | 2.38E+00 | 4.25E-02 | 6.37E-02 | - | - | 1.24E+00 | 1.24E+00 | 2.36E+00 | 1.50E+00 | 1.50E+00 | 1.50E+00 | 1.50E+00 | 3.85E-01 | 1.64E+00 | 1.64E+00 | 1.64E+00 | 1.64E+00 | 4.06E-02 | 6.17E-02 |
| 1330207 | Xylenes (mixed) | - | - | - | - | - | - | - | - | - | - | 1.31E-02 | 1.31E-02 | 1.31E-02 | 1.31E-02 | 4.89E-02 | - | - | - | - | - | - | - | - | - | - | - | 7.63E-03 | 7.63E-03 | 7.63E-03 | 7.63E-03 | 2.84E-02 | - |

**TABLE 5A**

**MAXIMUM HOURLY EMISSION RATES FOR THE KILN - 2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009[1]**

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2005 Production | Average Production for 2008/2009 |
|---|---|---|---|
| 75070 | Acetaldehyde | 1.68E-01 | 1.68E-01 |
| 107028 | Acrolein | 6.51E-03 | 6.51E-03 |
| 7440382 | Arsenic | 1.10E-04 | 1.10E-04 |
| 7440393 | Barium | 1.42E-03 | 1.42E-03 |
| 56553 | Benz[a]anthracene | 1.90E-06 | 1.90E-06 |
| 71432 | Benzene | 1.40E+00 | 1.40E+00 |
| 50328 | Benzo[a]pyrene | 4.27E-08 | 4.27E-08 |
| 205992 | Benzo[b]fluoranthene | 2.71E-07 | 2.71E-07 |
| 207089 | Benzo[k]fluoranthene | 4.27E-08 | 4.27E-08 |
| 100447 | Benzyl chloride | 1.47E-02 | 1.47E-02 |
| 7440417 | Beryllium | 5.52E-05 | 5.52E-05 |
| 106990 | 1,3-Butadiene | 1.33E-02 | 1.33E-02 |
| 7440439 | Cadmium | 5.52E-05 | 5.52E-05 |
| 56235 | Carbon tetrachloride | 8.94E-03 | 8.94E-03 |
| 108907 | Chlorobenzene | 8.04E-02 | 8.04E-02 |
| 67663 | Chloroform | 4.16E-03 | 4.16E-03 |
| 7440473 | Chromium (total) | 8.04E-04 | 8.04E-04 |
| 18540299 | Chromium VI | 4.87E-05 | 4.87E-05 |
| 218019 | Chrysene | 5.60E-06 | 5.60E-06 |
| 7440508 | Copper | 6.15E-04 | 6.15E-04 |
| 1175 | Crystalline silica | 0.00E+00 | 0.00E+00 |
| 53703 | Dibenz[a,h]anthracene | 4.27E-08 | 4.27E-08 |
| 106467 | p-Dichlorobenzene | 8.54E-03 | 8.54E-03 |
| 75343 | 1,1-Dichloroethane | 2.87E-03 | 2.87E-03 |
| 78875 | 1,2-Dichloropropane | 3.94E-03 | 3.94E-03 |
| 542756 | 1,3-Dichloropropene | 1.61E-02 | 1.61E-02 |
| 9901 | Diesel PM | 0.00E+00 | 0.00E+00 |
| 75003 | Ethyl chloride | 5.62E-03 | 5.62E-03 |
| 100414 | Ethylbenzene | 1.39E-01 | 1.39E-01 |
| 106934 | Ethylene dibromide | 8.73E-03 | 8.73E-03 |
| 107062 | Ethylene dichloride | 3.45E-03 | 3.45E-03 |
| 50000 | Formaldehyde | 9.15E-03 | 9.15E-03 |
| 87683 | Hexachlorobutadiene | 1.52E-02 | 1.52E-02 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 1.40E-09 | 1.40E-09 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 6.77E-10 | 6.77E-10 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.75E-10 | 1.75E-10 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 3.90E-10 | 3.90E-10 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 3.85E-10 | 3.85E-10 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 3.98E-10 | 3.98E-10 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 5.90E-10 | 5.90E-10 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 5.52E-10 | 5.52E-10 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.86E-10 | 1.86E-10 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 3.40E-10 | 3.40E-10 |
| 7647010 | Hydrochloric acid | 1.55E+01 | 1.55E+01 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 3.17E-08 | 3.17E-08 |
| 7439921 | Lead | 1.28E-04 | 1.28E-04 |

**TABLE 5A**

**MAXIMUM HOURLY EMISSION RATES FOR THE KILN - 2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009[1]**

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2005 Production | Average Production for 2008/2009 |
|---|---|---|---|
| 7439965 | Manganese | 5.79E-04 | 5.79E-04 |
| 7439976 | Mercury | 2.00E-01 | 1.84E-01 |
| 74839 | Methyl bromide | 9.07E-02 | 9.07E-02 |
| 71556 | Methyl chloroform | 4.65E-03 | 4.65E-03 |
| 75092 | Methylene chloride | 1.87E-02 | 1.87E-02 |
| 91203 | Naphthalene | 2.01E-02 | 2.01E-02 |
| 7440020 | Nickel | 9.46E-04 | 9.46E-04 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.92E-09 | 2.92E-09 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 6.69E-10 | 6.69E-10 |
| 40321764 | 1,2,3,7,8-PeCDD | 3.44E-10 | 3.44E-10 |
| 57117416 | 1,2,3,7,8-PeCDF | 2.66E-09 | 2.66E-09 |
| 57117314 | 2,3,4,7,8-PeCDF | 3.98E-09 | 3.98E-09 |
| 127184 | Perchloroethylene | 7.70E-03 | 7.70E-03 |
| 7782492 | Selenium | 6.17E-04 | 6.17E-04 |
| 7440224 | Silver | 1.07E-04 | 1.07E-04 |
| 100425 | Styrene | 3.52E-02 | 3.52E-02 |
| 1746016 | 2,3,7,8-TCDD | 3.38E-10 | 3.38E-10 |
| 51207319 | 2,3,7,8-TCDF | 1.67E-08 | 1.67E-08 |
| 79345 | 1,1,2,2-Tetrachloroethane | 5.85E-03 | 5.85E-03 |
| 7440280 | Thallium | 6.17E-04 | 6.17E-04 |
| 108883 | Toluene | 1.25E+00 | 1.25E+00 |
| 79005 | 1,1,2-Trichloroethane | 7.75E-03 | 7.75E-03 |
| 79016 | Trichloroethylene | 6.10E-03 | 6.10E-03 |
| 1314621 | Vanadium | 5.52E-04 | 5.52E-04 |
| 75014 | Vinyl chloride | 2.06E-02 | 2.06E-02 |
| 75354 | Vinylidene chloride | 5.64E-03 | 5.64E-03 |
| 95476 | o-Xylene | 1.97E-01 | 1.97E-01 |
| 1330207 | Xylenes (mixed) | 1.01E+00 | 1.01E+00 |

Notes:
1. Only mercury emissions were revised from 2005 production scenario

**TABLE 5B**

**MAXIMUM HOURLY EMISSION RATES FOR SOURCE GROUP - DUST COLLECTORS[1] – 2005 PRODUCTION AND AVERAGE PRODUCTION FOR 2008/2009**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | Emission Source Group | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1D4 | 2D1 | 3D1 | 3D4 | 3D5 | 4D3 | 4D4 | 5D1 | 5D2 | 5D3 | 5D5 | 5D6 | 5D11_20 | 5D23 | 5D27 | 5D28 | 6D17 | 6D19 | 6D2 | 6D1218 | 6D1 | 6D8 | 7PD7 | 8D31 | 999DC |
| 7440382 | Arsenic | 9.60E-06 | 6.33E-06 | 2.37E-06 | 3.41E-06 | 3.22E-06 | 4.36E-06 | 4.36E-06 | 4.36E-06 | 4.36E-06 | 7.84E-06 | 4.13E-06 | 4.13E-06 | 2.28E-05 | 3.97E-06 | 1.59E-06 | 1.59E-06 | 4.50E-06 | 5.06E-06 | 5.63E-06 | 3.60E-06 | 5.96E-06 | 3.83E-06 | 2.25E-06 | 1.82E-06 | 4.16E-05 |
| 7440417 | Beryllium | 1.03E-06 | 1.03E-06 | 3.86E-07 | 5.40E-07 | 5.14E-07 | 6.75E-07 | 6.75E-07 | 6.75E-07 | 6.75E-07 | 1.22E-06 | 2.48E-06 | 2.48E-06 | 3.70E-06 | 6.43E-07 | 2.57E-07 | 2.57E-07 | 7.71E-07 | 8.68E-07 | 9.64E-07 | 6.17E-07 | 9.64E-07 | 6.56E-07 | 3.86E-07 | 1.09E-06 | 6.52E-06 |
| 7440439 | Cadmium | 1.71E-06 | 2.59E-06 | 9.71E-07 | 1.84E-06 | 8.57E-07 | 1.65E-06 | 1.65E-06 | 1.65E-06 | 1.65E-06 | 2.96E-06 | 4.13E-06 | 4.13E-06 | 6.16E-06 | 1.07E-06 | 4.29E-07 | 4.29E-07 | 1.29E-06 | 1.45E-06 | 1.61E-06 | 1.03E-06 | 1.61E-06 | 1.09E-06 | 6.43E-07 | 1.82E-06 | 1.15E-05 |
| 7440473 | Chromium (total) | 1.90E-05 | 4.76E-05 | 1.79E-05 | 2.98E-05 | 1.87E-05 | 2.95E-05 | 2.95E-05 | 2.95E-05 | 2.95E-05 | 5.31E-05 | 2.99E-05 | 2.99E-05 | 3.84E-04 | 6.67E-05 | 2.67E-05 | 2.67E-05 | 6.66E-05 | 7.49E-05 | 8.33E-05 | 5.33E-05 | 1.00E-04 | 5.66E-05 | 3.33E-05 | 3.50E-05 | 4.37E-04 |
| 18540299 | Chromium VI | 6.86E-08 | 6.12E-07 | 2.29E-07 | 5.81E-07 | 6.86E-08 | 3.69E-07 | 3.69E-07 | 3.69E-07 | 3.69E-07 | 6.64E-07 | 3.30E-07 | 3.30E-07 | 5.92E-05 | 1.03E-05 | 4.11E-06 | 4.11E-06 | 1.77E-05 | 2.00E-05 | 2.22E-05 | 1.42E-05 | 1.54E-05 | 1.51E-05 | 8.87E-06 | 1.46E-07 | 8.40E-05 |
| 7440508 | Copper | 4.18E-05 | 4.72E-05 | 1.77E-05 | 2.49E-05 | 2.33E-05 | 3.07E-05 | 3.07E-05 | 3.07E-05 | 3.07E-05 | 5.52E-05 | 2.11E-05 | 2.11E-05 | 9.53E-05 | 1.66E-05 | 6.63E-06 | 6.63E-06 | 2.29E-05 | 2.57E-05 | 2.86E-05 | 1.83E-05 | 2.49E-05 | 1.95E-05 | 1.14E-05 | 2.04E-05 | 2.12E-04 |
| 1175 | Crystalline silica | 2.24E-04 | 1.66E-03 | 6.21E-04 | 1.02E-03 | 6.43E-04 | 9.98E-04 | 9.98E-04 | 9.98E-04 | 9.98E-04 | 1.80E-03 | 3.37E-05 | 3.37E-05 | 5.03E-05 | 8.74E-06 | 3.50E-06 | 3.50E-06 | 6.29E-05 | 7.08E-05 | 7.87E-05 | 5.04E-05 | 1.31E-05 | 5.35E-05 | 3.15E-05 | 5.41E-03 | 3.77E-03 |
| 7439921 | Lead | 4.66E-06 | 2.47E-06 | 9.26E-07 | 1.86E-06 | 8.57E-07 | 1.76E-06 | 1.76E-06 | 1.76E-06 | 1.76E-06 | 3.17E-06 | 4.13E-06 | 4.13E-06 | 1.73E-05 | 3.00E-06 | 1.20E-06 | 1.20E-06 | 3.19E-06 | 3.59E-06 | 3.99E-06 | 2.55E-06 | 4.50E-06 | 2.71E-06 | 1.59E-06 | 1.89E-06 | 2.62E-05 |
| 7439976 | Mercury | 2.95E-07 | 4.30E-07 | 1.61E-07 | 3.80E-07 | 8.23E-08 | 2.75E-07 | 2.75E-07 | 2.75E-07 | 2.75E-07 | 4.94E-07 | 1.29E-05 | 1.29E-05 | 4.93E-08 | 8.57E-09 | 3.43E-09 | 3.43E-09 | 1.03E-08 | 1.16E-08 | 1.29E-08 | 8.23E-09 | 1.29E-08 | 8.74E-09 | 5.14E-09 | 2.91E-07 | 1.30E-06 |
| 7440020 | Nickel | 2.95E-04 | 5.89E-05 | 2.21E-05 | 4.93E-05 | 2.40E-05 | 5.34E-05 | 5.34E-05 | 5.34E-05 | 5.34E-05 | 9.61E-05 | 1.25E-03 | 1.25E-03 | 3.70E-04 | 6.43E-05 | 2.57E-05 | 2.57E-05 | 1.11E-04 | 1.24E-04 | 1.38E-04 | 8.85E-05 | 9.64E-05 | 9.40E-05 | 5.53E-05 | 3.35E-05 | 1.11E-03 |
| 7782492 | Selenium | 3.43E-06 | 3.43E-06 | 1.29E-06 | 1.80E-06 | 1.71E-06 | 2.25E-06 | 2.25E-06 | 2.25E-06 | 2.25E-06 | 4.05E-06 | 8.25E-06 | 8.25E-06 | 1.23E-05 | 2.14E-06 | 8.57E-07 | 8.57E-07 | 2.57E-06 | 2.89E-06 | 3.21E-06 | 2.06E-06 | 3.21E-06 | 2.19E-06 | 1.29E-06 | 3.64E-06 | 2.17E-05 |
| 1314621 | Vanadium | 8.91E-04 | 2.78E-04 | 1.04E-04 | 1.62E-04 | 1.51E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 3.97E-04 | 3.63E-03 | 3.63E-03 | 2.00E-03 | 3.49E-04 | 1.39E-04 | 1.39E-04 | 3.70E-04 | 4.17E-04 | 4.63E-04 | 2.96E-04 | 5.23E-04 | 3.15E-04 | 1.85E-04 | 2.77E-05 | 3.60E-03 |

Notes:

1. Only mercury emissions were revised from 2005 production scenario

**TABLE 5C**

**MAXIMUM HOURLY EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES[1] – 2005 PRODUCTION AND AVERAGE PRODUCTION**

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | Emission Source Group | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S501 | S502 | 1 | 2 | 3 | 4A | 4B | 4C | 4D | 5 | 6A | 6B | 6C | 6D | 7 | 8 |
| 7440382 | Arsenic | - | - | 3.22E-05 | 3.22E-05 | 9.69E-06 | 1.98E-05 | 1.98E-05 | 1.98E-05 | 1.98E-05 | 1.88E-05 | 8.76E-06 | 8.76E-06 | 8.76E-06 | 8.76E-06 | 1.12E-06 | 1.68E-06 |
| 71432 | Benzene | - | - | - | - | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | 9.10E-07 | 9.10E-07 | 9.10E-07 | 9.10E-07 | 5.40E-08 | - |
| 7440417 | Beryllium | - | - | 1.21E-05 | 1.21E-05 | 2.43E-06 | 2.99E-06 | 2.99E-06 | 2.99E-06 | 2.99E-06 | 1.10E-05 | 2.33E-06 | 2.33E-06 | 2.33E-06 | 2.33E-06 | 6.71E-07 | 2.43E-06 |
| 7440439 | Cadmium | - | - | 2.01E-05 | 2.01E-05 | 5.22E-06 | 7.23E-06 | 7.23E-06 | 7.23E-06 | 7.23E-06 | 1.88E-05 | 3.86E-06 | 3.86E-06 | 3.86E-06 | 3.86E-06 | 1.12E-06 | 1.62E-06 |
| 7440473 | Chromium (total) | - | - | 4.09E-04 | 4.09E-04 | 9.69E-05 | 1.62E-04 | 1.62E-04 | 1.62E-04 | 1.62E-04 | 3.49E-04 | 1.28E-04 | 1.28E-04 | 1.28E-04 | 1.28E-04 | 2.15E-05 | 2.53E-05 |
| 18540299 | Chromium VI | - | - | 1.61E-06 | 1.61E-06 | 9.60E-07 | 1.06E-05 | 1.06E-05 | 1.06E-05 | 1.06E-05 | 1.47E-06 | 5.03E-06 | 5.03E-06 | 5.03E-06 | 5.03E-06 | 8.95E-08 | 1.29E-07 |
| 7440508 | Copper | - | - | 3.69E-04 | 3.69E-04 | 7.98E-05 | 1.36E-04 | 1.36E-04 | 1.36E-04 | 1.36E-04 | 2.10E-04 | 8.57E-05 | 8.57E-05 | 8.57E-05 | 8.57E-05 | 1.25E-05 | 1.42E-05 |
| 1175 | Crystalline silica | - | - | 9.19E-02 | 9.19E-02 | 7.84E-03 | 3.88E-03 | 3.88E-03 | 3.88E-03 | 3.88E-03 | 5.45E-02 | 9.96E-03 | 9.96E-03 | 9.96E-03 | 9.96E-03 | 3.32E-03 | 3.40E-03 |
| 9901 | Diesel PM | 2.99E-01 | 5.98E-01 | - | - | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.90E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | - |
| 7439921 | Lead | - | - | 2.01E-05 | 2.01E-05 | 5.13E-06 | 9.22E-06 | 9.22E-06 | 9.22E-06 | 9.22E-06 | 1.91E-05 | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.16E-06 | 1.66E-06 |
| 7439976 | Mercury | - | - | 4.61E-06 | 4.61E-06 | 8.69E-07 | 3.14E-06 | 3.14E-06 | 3.14E-06 | 3.14E-06 | 2.95E-06 | 4.95E-07 | 4.95E-07 | 4.95E-07 | 4.95E-07 | 1.79E-07 | 5.94E-07 |
| 7440020 | Nickel | - | - | 6.36E-04 | 6.36E-04 | 1.09E-04 | 2.63E-04 | 2.63E-04 | 2.63E-04 | 2.63E-04 | 3.39E-04 | 2.62E-04 | 2.62E-04 | 2.62E-04 | 2.62E-04 | 2.06E-05 | 2.24E-05 |
| 7782492 | Selenium | - | - | 4.02E-05 | 4.02E-05 | 8.09E-06 | 1.05E-05 | 1.05E-05 | 1.05E-05 | 1.05E-05 | 3.67E-05 | 2.32E-06 | 2.32E-06 | 2.32E-06 | 2.32E-06 | 2.24E-06 | 3.23E-06 |
| 108883 | Toluene | - | - | - | - | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | 3.59E-06 | 3.59E-06 | 3.59E-06 | 3.59E-06 | 2.16E-06 | - |
| 1314621 | Vanadium | - | - | 7.34E-04 | 7.34E-04 | 3.67E-04 | 1.08E-03 | 1.08E-03 | 1.08E-03 | 1.08E-03 | 3.30E-04 | 7.56E-04 | 7.56E-04 | 7.56E-04 | 7.56E-04 | 1.70E-05 | 2.55E-05 |
| 1330207 | Xylenes (mixed) | - | - | - | - | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | 5.25E-06 | 5.25E-06 | 5.25E-06 | 5.25E-06 | 1.96E-05 | - |

Notes:

1. Only mercury emissions were revised from 2005 production scenario

## TABLE 6

## LOCATION OF KEY OFF-SITE RECEPTORS

Lehigh Southwest Cement Company
Cupertino Facility

| Model ID# | Receptor Type | Description | Elevation (meters) | UTM Coordinates[1] |
|---|---|---|---|---|
| 10586 | Census Location | Census Tract 511703 | 143.72 | 579150.4 , 4133424.4 |
| 10587 | Census Location | Census Tract 511702 | 95.76 | 580171.6 , 4134226.7 |
| 10588 | Census Location | Census Tract 510100 | 78.58 | 581455.3 , 4133175.3 |
| 10589 | Census Location | Census Tract 507805 | 85.69 | 583712.2 , 4132349.8 |
| 10590 | Census Location | Census Tract 507703 | 125.19 | 582339.3 , 4130693.2 |
| 10591 | Census Location | Census Tract 507701 | 99.92 | 584046.1 , 4130743.2 |
| 10592 | Census Location | Census Tract 507807 | 88.5 | 585016.9 , 4130016.4 |
| 10593 | Census Location | Census Tract 507702 | 125.75 | 583904.0 , 4129096.1 |
| 10594 | Census Location | Census Tract 507808 | 96.81 | 585157.5 , 4128925.4 |
| 10595 | Census Location | Census Tract 507600 | 264.77 | 583844 , 4126181.2 |
| 10903 | Census Location | Census Tract 509902 | 50.81 | 582500 , 4136000 |
| 10608 | Census Location | Census Tract 510002 | 71.62 | 582500 , 4133500 |
| 10609 | Census Location | Census Tract 508301 | 70.92 | 583500 , 4133500 |
| 10615 | Census Location | Census Tract 508401 | 55.41 | 583500 , 4135500 |
| 10617 | Census Location | Census Tract 511701 | 138.43 | 577500 , 4136000 |
| 10618 | Census Location | Census Tract 510200 | 58.2 | 579500 , 4136000 |
| 10638 | Census Location | Census Tract 507806 | 76.35 | 585300 , 4131600 |
| 10633 | Census Location | Census Tract 507906 | 80.1 | 586900 , 4128800 |
| 10632 | Census Location | Census Tract 507905 | 79.89 | 586300 , 4128800 |
| 10614 | Census Location | Census Tract 510001 | 60.29 | 581500 , 4135000 |
| 10900 | Census Location | Census Tract 509901 | 49.81 | 581000 , 4136000 |
| 10647 | Daycare | De Anza College Child Development Center<br>21250 Stevens Creek Boulevard, Cupertino 95014 | 91.84 | 584608 , 4130709 |
| 10600 | Daycare | Kindercare Learning Center<br>1515 S. De Anza Boulevard | 91.39 | 585720.8 , 4128214.5 |
| 10604 | Preschool | Children's House of Los Altos<br>770 Berry Avenue, Los Altos 94024 | 58.5 | 580371.2 , 4135348.2 |
| 10605 | Preschool | Foothill Preschool<br>2100 Woods Lane, Los Altos 94024 | 82.69 | 581783.8 , 4132851.4 |
| 10606 | Preschool | Los Altos Christian Preschool<br>625 Magdalena Avenue, Los Altos 94024 | 60.44 | 579699 , 4135147.9 |
| 10607 | Preschool | Los Altos United Methodist Children's Center<br>655 Magdalena Avenue, Los Altos 94024 | 59.57 | 579789.9 , 4135231.1 |

**TABLE 6**

**LOCATION OF KEY OFF-SITE RECEPTORS**
Lehigh Southwest Cement Company
Cupertino Facility

| Model ID# | Receptor Type | Description | Elevation (meters) | UTM Coordinates[1] |
|---|---|---|---|---|
| 10601 | Preschool | Play & Learn Preschool Daycare<br>10067 Byrne Avenue, Cupertino 95014 | 103.93 | 583372.6 , 4130990.7 |
| 10690 | School-Age Care | Happy Childhood Education<br>1091 S. DeAnza Boulevard, San Jose 95129 | 82.54 | 585749.2 , 4129341.2 |
| 10643 | School | Blach Intermediate School<br>1120 Covington Rd, Los Altos 94024 | 54.91 | 581289 , 4135590 |
| 10645 | School | Creekside Private School<br>10300 Creston Dr. Cupertino 95014 | 85.81 | 583251 , 4132945 |
| 10646 | School | Cupertino Junior High School<br>1650 S. Bernardo Ave, Sunnyvale 94087 | 79.28 | 583348 , 4132945 |
| 10650 | School | Garden Gate Elementary School<br>10500 Ann Arbor Avenue, Cupertino 95014 | 79.64 | 584603 , 4132007 |
| 10651 | School | Homestead High School<br>21370 Homestead Rd, Cupertino 95014 | 77.56 | 584167 , 4132593 |
| 10652 | School | Kennedy Middle School<br>821 Bubb Rd, Cupertino 95014 | 106.21 | 584043 , 4129779 |
| 10599 | School | Lincoln Elementary School<br>21710 McClellan Road, Cupertino 95014 | 107.46 | 583832.3 , 4130282.4 |
| 10654 | School | Loyola School<br>770 Berry Avenue, Los Altos 94024 | 60.02 | 580364 , 4135237 |
| 10688 | School | Meyerholz Elementary School<br>6990 Melvin Drive, San Jose 95129 | 76.69 | 586259.7 , 4129392.5 |
| 10656 | School | Miramonte School<br>1175 Altamead Drive, Los Altos 94024 | 56.49 | 581344 , 4135423 |
| 10603 | School | Montclaire Elementary and School-Age Child Development Center<br>1160 St. Joseph Avenue, Los Altos 94024 | 78.4 | 581300.9 , 4133301.3 |
| 10679 | School | Mountain View High School<br>3535 Truman Avenue, Mountain View 94040 | 59.05 | 582475.8 , 4135015.5 |
| 10659 | School | Oak Elementary School<br>1501 Oak Avenue, Los Altos 94024 | 59.6 | 582218 , 4134902 |
| 10598 | School | Regnart Elementary and CDC<br>1180 Yorkshire Drive, Cupertino 95014 | 111.85 | 584472 , 4128982.4 |
| 10682 | School | South Peninsula Hebrew Day School<br>1030 Astoria Drive, Sunnyvale 94087 | 63.82 | 583463.9 , 4134098.5 |

**TABLE 6**

**LOCATION OF KEY OFF-SITE RECEPTORS**
Lehigh Southwest Cement Company
Cupertino Facility

| Model ID# | Receptor Type | Description | Elevation (meters) | UTM Coordinates[1] |
|---|---|---|---|---|
| 10672 | School | St. Francis High School<br>1885 Miramonte Avenue, Mountain View 94040 | 48.05 | 581051.7 , 4136201 |
| 10661 | School | St. Simon Elementary School<br>1840 Grant Road, Los Altos 94024 | 72.5 | 581553 , 4133763 |
| 10576 | School | Stevens Creek Elementary School<br>10300 Ainsworth Drive, Cupertino 95014 | 107.48 | 582896 , 4131568 |
| 10680 | School | Stratford School<br>1196 Lime Drive, Sunnyvale 94087 | 58.71 | 583735.7 , 4134738.1 |
| 10663 | School | Waldorf School-Peninsula<br>11311 Mora Drive, Los Altos 94024 | 100.27 | 580133 , 4133320 |
| 10664 | School | West Valley Elementary School<br>1635 Belleville Way, Sunnyvale 94087 | 74.89 | 583118 , 4133107 |
| 2040 | MEIR - Chronic | Residential area near San Jacinto Road | 227.39 | 581903.9 , 4129939.0 |
| 3700 | MEIR - Chronic (2013 only) | Residential area near west end of Voss Avenue | 186.1 | 581663.9 , 4130689.3 |
| 2041 | MEIR - Acute (2013 only) | Residential area near San Jacinto Road | 221.47 | 581933.9 , 4129939.3 |
| 2042 | MEIR - Cancer | Residential area near San Jacinto Road | 215.88 | 581963.9 , 4129939.0 |
| 3701 | MEIR - Acute | Residential area near west end of Voss Avenue | 184.14 | 581693.9 , 4130689.3 |
| 5076 | MEIW | County Buildings on St. Joseph Avenue | 142.83 | 581333.9 , 4131199.3 |
| 10581 | MEIW - Chronic (2013 only) | County Park Buildings on St. Joseph Avenue | 126.8 | 581014.7 , 4131626.0 |
| 2037 | PMI | Chronic Noncancer | 245.78 | 581813.9 , 4129939.3 |
| 12476 | PMI | Cancer (2013 only) | 210.99 | 580558.9 , 4131490.1 |
| 12506 | PMI | Cancer and Chronic Noncancer (2013 only) | 252.02 | 580125.7 , 4131176.41 |
| 6363 | PMI | Acute Noncancer (2013 only) | 210.0 | 580583.9 , 4131529.35 |
| 13156 | PMI | Acute Noncancer | 209.67 | 581749.1 , 4129521.75 |

Note
1. Universal Transverse Mercator Coordinate System

Abbreviations
MEIW = Maximum Exposed Individual Worker
MEIR = Maximum Exposed Individual Resident
PMI = Point of Maximum Impact

**TABLE 7**

**HARP RISK MODELING AND EXPOSURE ASSESSMENT OPTIONS**

Lehigh Southwest Cement Company

Cupertino Facility

| Parameter Description | Assumption | Rationale |
|---|---|---|
| Residential Cancer and Chronic (70-year) Exposure - Inhalation | Use 80th percentile breathing rate - (302 L/kg-day or 21 $m^3$/day for a 70-kilogram adult) | Derived Adjusted[1] Method per CARB, 2003 and BAAQMD, 2010 |
| Residential Cancer and Chronic Exposure (70-year) - Breathing Rate (Inhalation is not a dominant pathway) | 271 L/kg-day (19 $m^3$/day for a 70-kilogram adult) | Average Daily Breathing Rate per OEHHA, 2003 |
| Student Cancer and Chronic (9-year) Exposure - Inhalation | Use 95th percentile breathing rate - (581 L/kg-day for a 15-kilogram child) | Derived OEHHA Method 9-year Child Resident per BAAQMD, 2010 |
| Worker Cancer and Chronic Exposure - Inhalation | 149 L/kg-day (10.4 $m^3$/day for a 70-kilogram adult) | OEHHA, 2003; corresponds to 1.3 $m^3$/hr for an 8-hour day[2] |
| Worker Exposure for Carcinogenic and Chronic Exposure - Exposure Frequency/Duration | 49 wks/yr, 5 days/wk, 8 hrs/day, 40 yrs | HARP Model default worker schedule; OEHHA, 2003 |
| Deposition Rate | 0.02 m/s | Controlled sources; OEHHA, 2003 |
| Fraction of Homegrown produce ingested | 0.052 | Default urban per OEHHA, 2003 |

**TABLE 7**

**HARP RISK MODELING AND EXPOSURE ASSESSMENT OPTIONS**

Lehigh Southwest Cement Company

Cupertino Facility

Notes

1. Uses maximum predicted exposure for two most significant exposure pathways and average exposure for remaining pathways.
2. OEHHA guidance provides only a point estimate (the value presented) for worker exposure, unlike the range of inhalation rates provided for residential exposure.

Abbreviations

BAAQMD = Bay Area Air Quality Management District

CARB = California Air Resouces Board

HARP = Hotspots Analysis Reporting Program

hours/yr = hours per year

L/kg-day = liter per kilogram bodyweight per day

$m^3$/day = cubic meters per day

m/s = meters per second

OEHHA = Office of Environmental Health Hazard Assessment

**TABLE 8A**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 4.66E-04 | 3.86E-04 | 3.74E-04 | 3.65E-04 | 1.60E-04 | 1.56E-04 | 1.81E-04 | 2.06E-04 | 4.58E-05 | 1.45E-04 | 6.47E-05 | 4.91E-05 | 3.56E-05 | 4.59E-05 | 5.98E-05 | 2.87E-05 | 5.89E-05 | 3.39E-05 | 2.96E-05 | 2.78E-05 | 4.65E-05 | 3.85E-05 |
| 1,1,2-Trichloroethane | 7.76E-04 | 6.43E-04 | 6.23E-04 | 6.07E-04 | 2.67E-04 | 2.60E-04 | 3.01E-04 | 3.42E-04 | 7.62E-05 | 2.41E-04 | 1.08E-04 | 8.17E-05 | 5.93E-05 | 7.64E-05 | 9.94E-05 | 4.77E-05 | 9.80E-05 | 5.64E-05 | 4.92E-05 | 4.63E-05 | 7.74E-05 | 6.41E-05 |
| 1,1-Dichloroethane | 2.88E-04 | 2.38E-04 | 2.31E-04 | 2.25E-04 | 9.89E-05 | 9.64E-05 | 1.12E-04 | 1.27E-04 | 2.83E-05 | 8.92E-05 | 3.99E-05 | 3.03E-05 | 2.20E-05 | 2.83E-05 | 3.69E-05 | 1.77E-05 | 3.63E-05 | 2.09E-05 | 1.82E-05 | 1.72E-05 | 2.87E-05 | 2.38E-05 |
| 1,2-Dichloropropane | 3.94E-04 | 3.26E-04 | 3.16E-04 | 3.08E-04 | 1.35E-04 | 1.32E-04 | 1.53E-04 | 1.74E-04 | 3.87E-05 | 1.22E-04 | 5.46E-05 | 4.15E-05 | 3.01E-05 | 3.88E-05 | 5.04E-05 | 2.42E-05 | 4.97E-05 | 2.86E-05 | 2.50E-05 | 2.35E-05 | 3.93E-05 | 3.25E-05 |
| 1,3-Butadiene | 1.33E-03 | 1.11E-03 | 1.07E-03 | 1.04E-03 | 4.58E-04 | 4.47E-04 | 5.18E-04 | 5.88E-04 | 1.31E-04 | 4.14E-04 | 1.85E-04 | 1.41E-04 | 1.02E-04 | 1.31E-04 | 1.71E-04 | 8.20E-05 | 1.68E-04 | 9.70E-05 | 8.45E-05 | 7.95E-05 | 1.33E-04 | 1.10E-04 |
| 1,3-Dichloropropene | 1.61E-03 | 1.34E-03 | 1.29E-03 | 1.26E-03 | 5.54E-04 | 5.41E-04 | 6.26E-04 | 7.11E-04 | 1.58E-04 | 5.00E-04 | 2.24E-04 | 1.70E-04 | 1.23E-04 | 1.59E-04 | 2.07E-04 | 9.91E-05 | 2.04E-04 | 1.17E-04 | 1.02E-04 | 9.62E-05 | 1.61E-04 | 1.33E-04 |
| 1,2,3,6,7,8-HxCDD | 3.85E-11 | 3.19E-11 | 3.09E-11 | 3.01E-11 | 1.32E-11 | 1.29E-11 | 1.49E-11 | 1.70E-11 | 3.78E-12 | 1.19E-11 | 5.34E-12 | 4.06E-12 | 2.94E-12 | 3.79E-12 | 4.93E-12 | 2.37E-12 | 4.86E-12 | 2.80E-12 | 2.44E-12 | 2.30E-12 | 3.84E-12 | 3.18E-12 |
| 1,2,3,6,7,8-HxCDF | 5.53E-11 | 4.59E-11 | 4.44E-11 | 4.33E-11 | 1.90E-11 | 1.86E-11 | 2.15E-11 | 2.44E-11 | 5.44E-12 | 1.72E-11 | 7.68E-12 | 5.83E-12 | 4.23E-12 | 5.45E-12 | 7.09E-12 | 3.40E-12 | 6.99E-12 | 4.03E-12 | 3.51E-12 | 3.30E-12 | 5.52E-12 | 4.57E-12 |
| 1,2,3,7,8-PeCDD | 3.44E-11 | 2.85E-11 | 2.76E-11 | 2.69E-11 | 1.18E-11 | 1.15E-11 | 1.34E-11 | 1.52E-11 | 3.38E-12 | 1.07E-11 | 4.78E-12 | 3.63E-12 | 2.63E-12 | 3.39E-12 | 4.41E-12 | 2.12E-12 | 4.35E-12 | 2.50E-12 | 2.18E-12 | 2.05E-12 | 3.44E-12 | 2.85E-12 |
| 1,2,3,7,8-PeCDF | 2.66E-10 | 2.20E-10 | 2.13E-10 | 2.08E-10 | 9.14E-11 | 8.91E-11 | 1.03E-10 | 1.17E-10 | 2.61E-11 | 8.25E-11 | 3.69E-11 | 2.80E-11 | 2.03E-11 | 2.62E-11 | 3.41E-11 | 1.63E-11 | 3.36E-11 | 1.93E-11 | 1.69E-11 | 1.59E-11 | 2.65E-11 | 2.20E-11 |
| 1,2,3,7,8,9-HxCDD | 3.99E-11 | 3.31E-11 | 3.21E-11 | 3.12E-11 | 1.37E-11 | 1.34E-11 | 1.55E-11 | 1.76E-11 | 3.92E-12 | 1.24E-11 | 5.54E-12 | 4.21E-12 | 3.05E-12 | 3.93E-12 | 5.12E-12 | 2.46E-12 | 5.04E-12 | 2.91E-12 | 2.53E-12 | 2.38E-12 | 3.99E-12 | 3.30E-12 |
| 1,2,3,7,8,9-HxCDF | 1.86E-11 | 1.54E-11 | 1.49E-11 | 1.45E-11 | 6.39E-12 | 6.23E-12 | 7.22E-12 | 8.20E-12 | 1.83E-12 | 5.77E-12 | 2.58E-12 | 1.96E-12 | 1.42E-12 | 1.83E-12 | 2.38E-12 | 1.14E-12 | 2.35E-12 | 1.35E-12 | 1.18E-12 | 1.11E-12 | 1.86E-12 | 1.54E-12 |
| 1,2,3,4,6,7,8-HpCDD | 1.40E-10 | 1.16E-10 | 1.12E-10 | 1.09E-10 | 4.81E-11 | 4.69E-11 | 5.43E-11 | 6.17E-11 | 1.37E-11 | 4.34E-11 | 1.94E-11 | 1.47E-11 | 1.07E-11 | 1.38E-11 | 1.79E-11 | 8.60E-12 | 1.77E-11 | 1.02E-11 | 8.87E-12 | 8.34E-12 | 1.40E-11 | 1.16E-11 |
| 1,2,3,4,6,7,8-HpCDF | 6.78E-11 | 5.62E-11 | 5.45E-11 | 5.31E-11 | 2.33E-11 | 2.27E-11 | 2.63E-11 | 2.99E-11 | 6.66E-12 | 2.10E-11 | 9.41E-12 | 7.15E-12 | 5.18E-12 | 6.68E-12 | 8.69E-12 | 4.17E-12 | 8.57E-12 | 4.94E-12 | 4.30E-12 | 4.05E-12 | 6.77E-12 | 5.61E-12 |
| 1,2,3,4,7,8-HxCDD | 3.91E-11 | 3.24E-11 | 3.14E-11 | 3.06E-11 | 1.34E-11 | 1.31E-11 | 1.52E-11 | 1.72E-11 | 3.84E-12 | 1.21E-11 | 5.42E-12 | 4.12E-12 | 2.99E-12 | 3.85E-12 | 5.01E-12 | 2.40E-12 | 4.93E-12 | 2.84E-12 | 2.48E-12 | 2.33E-12 | 3.90E-12 | 3.23E-12 |
| 1,2,3,4,7,8-HxCDF | 5.91E-11 | 4.90E-11 | 4.75E-11 | 4.62E-11 | 2.03E-11 | 1.98E-11 | 2.30E-11 | 2.61E-11 | 5.81E-12 | 1.83E-11 | 8.20E-12 | 6.23E-12 | 4.52E-12 | 5.82E-12 | 7.58E-12 | 3.63E-12 | 7.47E-12 | 4.30E-12 | 3.75E-12 | 3.53E-12 | 5.90E-12 | 4.89E-12 |
| 1,2,3,4,7,8,9-HpCDF | 1.74E-11 | 1.44E-11 | 1.40E-11 | 1.36E-11 | 5.99E-12 | 5.85E-12 | 6.77E-12 | 7.69E-12 | 1.71E-12 | 5.41E-12 | 2.42E-12 | 1.84E-12 | 1.33E-12 | 1.72E-12 | 2.23E-12 | 1.07E-12 | 2.20E-12 | 1.27E-12 | 1.10E-12 | 1.04E-12 | 1.74E-12 | 1.44E-12 |
| 1,2,3,4,6,7,8,9-OCDD | 2.93E-10 | 2.43E-10 | 2.36E-10 | 2.29E-10 | 1.01E-10 | 9.84E-11 | 1.14E-10 | 1.29E-10 | 2.88E-11 | 9.10E-11 | 4.07E-11 | 3.09E-11 | 2.24E-11 | 2.89E-11 | 3.76E-11 | 1.80E-11 | 3.71E-11 | 2.13E-11 | 1.86E-11 | 1.75E-11 | 2.93E-11 | 2.43E-11 |
| 1,2,3,4,6,7,8,9-OCDF | 6.70E-11 | 5.55E-11 | 5.38E-11 | 5.24E-11 | 2.30E-11 | 2.25E-11 | 2.60E-11 | 2.95E-11 | 6.58E-12 | 2.08E-11 | 9.29E-12 | 7.06E-12 | 5.12E-12 | 6.59E-12 | 8.58E-12 | 4.12E-12 | 8.46E-12 | 4.87E-12 | 4.24E-12 | 3.99E-12 | 6.68E-12 | 5.54E-12 |
| 2,3,7,8-TCDD | 3.38E-11 | 2.80E-11 | 2.72E-11 | 2.65E-11 | 1.16E-11 | 1.13E-11 | 1.31E-11 | 1.49E-11 | 3.33E-12 | 1.05E-11 | 4.70E-12 | 3.57E-12 | 2.59E-12 | 3.33E-12 | 4.34E-12 | 2.08E-12 | 4.27E-12 | 2.46E-12 | 2.15E-12 | 2.02E-12 | 3.38E-12 | 2.80E-12 |
| 2,3,7,8-TCDF | 1.67E-09 | 1.38E-09 | 1.34E-09 | 1.31E-09 | 5.74E-10 | 5.60E-10 | 6.49E-10 | 7.37E-10 | 1.64E-10 | 5.18E-10 | 2.32E-10 | 1.76E-10 | 1.28E-10 | 1.64E-10 | 2.14E-10 | 1.03E-10 | 2.11E-10 | 1.22E-10 | 1.06E-10 | 9.96E-11 | 1.67E-10 | 1.38E-10 |
| 2,3,4,6,7,8-HxCDF | 3.41E-11 | 2.83E-11 | 2.74E-11 | 2.67E-11 | 1.17E-11 | 1.14E-11 | 1.33E-11 | 1.51E-11 | 3.35E-12 | 1.06E-11 | 4.74E-12 | 3.60E-12 | 2.61E-12 | 3.36E-12 | 4.37E-12 | 2.10E-12 | 4.31E-12 | 2.48E-12 | 2.16E-12 | 2.04E-12 | 3.41E-12 | 2.82E-12 |
| 2,3,4,7,8-PeCDF | 3.98E-10 | 3.30E-10 | 3.20E-10 | 3.11E-10 | 1.37E-10 | 1.33E-10 | 1.55E-10 | 1.76E-10 | 3.91E-11 | 1.23E-10 | 5.52E-11 | 4.19E-11 | 3.04E-11 | 3.92E-11 | 5.10E-11 | 2.45E-11 | 5.03E-11 | 2.90E-11 | 2.52E-11 | 2.37E-11 | 3.97E-11 | 3.29E-11 |
| Acetaldehyde | 1.68E-02 | 1.40E-02 | 1.35E-02 | 1.32E-02 | 5.79E-03 | 5.65E-03 | 6.54E-03 | 7.43E-03 | 1.66E-03 | 5.23E-03 | 2.34E-03 | 1.78E-03 | 1.29E-03 | 1.66E-03 | 2.16E-03 | 1.04E-03 | 2.13E-03 | 1.23E-03 | 1.07E-03 | 1.01E-03 | 1.68E-03 | 1.39E-03 |
| Acrolein | 6.52E-04 | 5.40E-04 | 5.24E-04 | 5.10E-04 | 2.24E-04 | 2.19E-04 | 2.53E-04 | 2.88E-04 | 6.41E-05 | 2.02E-04 | 9.05E-05 | 6.87E-05 | 4.98E-05 | 6.42E-05 | 8.36E-05 | 4.01E-05 | 8.24E-05 | 4.75E-05 | 4.13E-05 | 3.89E-05 | 6.51E-05 | 5.39E-05 |
| Arsenic | 2.69E-05 | 2.69E-05 | 2.73E-05 | 2.72E-05 | 2.34E-05 | 2.26E-05 | 2.61E-05 | 4.65E-05 | 7.72E-06 | 2.61E-05 | 6.39E-06 | 6.92E-06 | 3.88E-06 | 7.00E-06 | 9.74E-06 | 5.04E-06 | 9.92E-06 | 5.09E-06 | 4.87E-06 | 4.60E-06 | 7.02E-06 | 5.54E-06 |
| Benz(a)anthracene | 1.90E-07 | 1.58E-07 | 1.53E-07 | 1.49E-07 | 6.54E-08 | 6.38E-08 | 7.39E-08 | 8.40E-08 | 1.87E-08 | 5.90E-08 | 2.64E-08 | 2.01E-08 | 1.45E-08 | 1.87E-08 | 2.44E-08 | 1.17E-08 | 2.40E-08 | 1.38E-08 | 1.21E-08 | 1.14E-08 | 1.90E-08 | 1.57E-08 |
| Benzo(a)pyrene | 4.28E-09 | 3.55E-09 | 3.44E-09 | 3.35E-09 | 1.47E-09 | 1.44E-09 | 1.66E-09 | 1.89E-09 | 4.21E-10 | 1.33E-09 | 5.95E-10 | 4.52E-10 | 3.27E-10 | 4.22E-10 | 5.49E-10 | 2.63E-10 | 5.41E-10 | 3.12E-10 | 2.72E-10 | 2.56E-10 | 4.28E-10 | 3.54E-10 |
| Benzo(b)fluoranthene | 2.72E-08 | 2.25E-08 | 2.18E-08 | 2.12E-08 | 9.34E-09 | 9.11E-09 | 1.05E-08 | 1.20E-08 | 2.67E-09 | 8.43E-09 | 3.77E-09 | 2.86E-09 | 2.08E-09 | 2.67E-09 | 3.48E-09 | 1.67E-09 | 3.43E-09 | 1.98E-09 | 1.72E-09 | 1.62E-09 | 2.71E-09 | 2.25E-09 |
| Benzo(k)fluoranthene | 4.28E-09 | 3.55E-09 | 3.44E-09 | 3.35E-09 | 1.47E-09 | 1.44E-09 | 1.66E-09 | 1.89E-09 | 4.21E-10 | 1.33E-09 | 5.95E-10 | 4.52E-10 | 3.27E-10 | 4.22E-10 | 5.49E-10 | 2.63E-10 | 5.41E-10 | 3.12E-10 | 2.72E-10 | 2.56E-10 | 4.28E-10 | 3.54E-10 |
| Benzene | 1.40E-01 | 1.16E-01 | 1.13E-01 | 1.10E-01 | 4.82E-02 | 4.70E-02 | 5.44E-02 | 6.18E-02 | 1.38E-02 | 4.35E-02 | 1.94E-02 | 1.48E-02 | 1.07E-02 | 1.38E-02 | 1.80E-02 | 8.62E-03 | 1.77E-02 | 1.02E-02 | 8.89E-03 | 8.36E-03 | 1.40E-02 | 1.16E-02 |
| Benzyl chloride | 1.47E-03 | 1.22E-03 | 1.18E-03 | 1.15E-03 | 5.04E-04 | 4.92E-04 | 5.70E-04 | 6.47E-04 | 1.44E-04 | 4.55E-04 | 2.04E-04 | 1.55E-04 | 1.12E-04 | 1.44E-04 | 1.88E-04 | 9.02E-05 | 1.85E-04 | 1.07E-04 | 9.30E-05 | 8.75E-05 | 1.46E-04 | 1.21E-04 |
| Beryllium | 9.15E-06 | 8.87E-06 | 8.94E-06 | 8.90E-06 | 6.74E-06 | 6.52E-06 | 7.54E-06 | 1.17E-05 | 2.17E-06 | 7.22E-06 | 1.97E-06 | 1.98E-06 | 1.18E-06 | 1.99E-06 | 2.76E-06 | 1.43E-06 | 2.79E-06 | 1.50E-06 | 1.42E-06 | 1.30E-06 | 1.98E-06 | 1.59E-06 |
| Cadmium | 1.24E-05 | 1.25E-05 | 1.27E-05 | 1.26E-05 | 1.07E-05 | 1.03E-05 | 1.19E-05 | 1.98E-05 | 3.52E-06 | 1.19E-05 | 2.96E-06 | 3.15E-06 | 1.80E-06 | 3.19E-06 | 4.51E-06 | 2.33E-06 | 4.57E-06 | 2.41E-06 | 2.31E-06 | 2.12E-06 | 3.17E-06 | 2.53E-06 |
| Carbon tetrachloride | 8.95E-04 | 7.42E-04 | 7.19E-04 | 7.00E-04 | 3.08E-04 | 3.00E-04 | 3.47E-04 | 3.95E-04 | 8.79E-05 | 2.78E-04 | 1.24E-04 | 9.43E-05 | 6.84E-05 | 8.81E-05 | 1.15E-04 | 5.50E-05 | 1.13E-04 | 6.51E-05 | 5.67E-05 | 5.34E-05 | 8.93E-05 | 7.40E-05 |
| Chlorobenzene | 8.05E-03 | 6.67E-03 | 6.46E-03 | 6.29E-03 | 2.77E-03 | 2.70E-03 | 3.12E-03 | 3.55E-03 | 7.91E-04 | 2.50E-03 | 1.12E-03 | 8.48E-04 | 6.15E-04 | 7.92E-04 | 1.03E-03 | 4.95E-04 | 1.02E-03 | 5.86E-04 | 5.10E-04 | 4.80E-04 | 8.03E-04 | 6.65E-04 |
| Chloroform | 4.17E-04 | 3.45E-04 | 3.35E-04 | 3.26E-04 | 1.43E-04 | 1.40E-04 | 1.62E-04 | 1.84E-04 | 4.10E-05 | 1.29E-04 | 5.78E-05 | 4.39E-05 | 3.19E-05 | 4.10E-05 | 5.34E-05 | 2.56E-05 | 5.26E-05 | 3.03E-05 | 2.64E-05 | 2.49E-05 | 4.16E-05 | 3.45E-05 |
| Chrysene | 5.61E-07 | 4.65E-07 | 4.50E-07 | 4.39E-07 | 1.93E-07 | 1.88E-07 | 2.18E-07 | 2.47E-07 | 5.51E-08 | 1.74E-07 | 7.78E-08 | 5.91E-08 | 4.29E-08 | 5.52E-08 | 7.19E-08 | 3.45E-08 | 7.08E-08 | 4.08E-08 | 3.55E-08 | 3.34E-08 | 5.60E-08 | 4.64E-08 |
| Copper | 1.79E-04 | 1.85E-04 | 1.90E-04 | 1.91E-04 | 1.75E-04 | 1.69E-04 | 1.94E-04 | 3.31E-04 | 5.78E-05 | 1.97E-04 | 4.61E-05 | 5.09E-05 | 2.83E-05 | 5.20E-05 | 7.35E-05 | 3.83E-05 | 7.49E-05 | 3.93E-05 | 3.78E-05 | 3.47E-05 | 5.15E-05 | 4.10E-05 |
| Chromium VI | 2.11E-05 | 2.19E-05 | 2.26E-05 | 2.37E-05 | 2.14E-05 | 2.06E-05 | 2.35E-05 | 4.90E-05 | 7.44E-06 | 2.27E-05 | 5.60E-06 | 6.46E-06 | 3.29E-06 | 6.57E-06 | 8.67E-06 | 4.49E-06 | 8.94E-06 | 4.00E-06 | 3.90E-06 | 4.15E-06 | 6.87E-06 | 5.19E-06 |
| Dibenz(a,h)anthracene | 4.28E-09 | 3.55E-09 | 3.44E-09 | 3.35E-09 | 1.47E-09 | 1.44E-09 | 1.66E-09 | 1.89E-09 | 4.21E-10 | 1.33E-09 | 5.95E-10 | 4.52E-10 | 3.27E-10 | 4.22E-10 | 5.49E-10 | 2.63E-10 | 5.41E-10 | 3.12E-10 | 2.72E-10 | 2.56E-10 | 4.28E-10 | 3.54E-10 |
| Diesel PM | 2.61E-04 | 4.23E-04 | 4.71E-04 | 4.96E-04 | 4.83E-04 | 4.64E-04 | 6.03E-04 | 9.11E-04 | 1.59E-04 | 5.21E-04 | 1.20E-04 | 1.30E-04 | 7.45E-05 | 1.40E-04 | 2.11E-04 | 1.01E-04 | 1.76E-04 | 9.32E-05 | 9.24E-05 | 9.47E-05 | 1.40E-04 | 1.28E-04 |
| Ethylene dibromide | 8.74E-04 | 7.25E-04 | 7.02E-04 | 6.84E-04 | 3.01E-04 | 2.93E-04 | 3.40E-04 | 3.86E-04 | 8.59E-05 | 2.71E-04 | 1.21E-04 | 9.21E-05 | 6.68E-05 | 8.61E-05 | 1.12E-04 | 5.38E-05 | 1.10E-04 | 6.36E-05 | 5.54E-05 | 5.22E-05 | 8.73E-05 | 7.23E-05 |
| Ethylene dichloride | 3.46E-04 | 2.86E-04 | 2.78E-04 | 2.70E-04 | 1.19E-04 | 1.16E-04 | 1.34E-04 | 1.53E-04 | 3.40E-05 | 1.07E-04 | 4.80E-05 | 3.64E-05 | 2.64E-05 | 3.40E-05 | 4.43E-05 | 2.13E-05 | 4.37E-05 | 2.52E-05 | 2.19E-05 | 2.06E-05 | 3.45E-05 | 2.86E-05 |
| Ethylbenzene | 1.39E-02 | 1.15E-02 | 1.12E-02 | 1.09E-02 | 4.79E-03 | 4.67E-03 | 5.41E-03 | 6.15E-03 | 1.37E-03 | 4.32E-03 | 1.93E-03 | 1.47E-03 | 1.06E-03 | 1.37E-03 | 1.79E-03 | 8.56E-04 | 1.76E-03 | 1.01E-03 | 8.83E-04 | 8.31E-04 | 1.39E-03 | 1.15E-03 |
| Ethyl chloride | 5.62E-04 | 4.66E-04 | 4.51E-04 | 4.40E-04 | 1.93E-04 | 1.89E-04 | 2.18E-04 | 2.48E-04 | 5.52E-05 | 1.74E-04 | 7.80E-05 | 5.92E-05 | 4.30E-05 | 5.53E-05 | 7.20E-05 | 3.46E-05 | 7.10E-05 | 4.09E-05 | 3.56E-05 | 3.35E-05 | 5.61E-05 | 4.65E-05 |
| Formaldehyde | 9.17E-04 | 7.60E-04 | 7.36E-04 | 7.17E-04 | 3.15E-04 | 3.07E-04 | 3.56E-04 | 4.04E-04 | 9.01E-05 | 2.84E-04 | 1.27E-04 | 9.66E-05 | 7.00E-05 | 9.02E-05 | 1.17E-04 | 5.63E-05 | 1.16E-04 | 6.67E-05 | 5.81E-05 | 5.47E-05 | 9.15E-05 | 7.58E-05 |
| Hydrochloric acid | 1.55E+00 | 1.29E+00 | 1.25E+00 | 1.22E+00 | 5.34E-01 | 5.21E-01 | 6.03E-01 | 6.86E-01 | 1.53E-01 | 4.82E-01 | 2.16E-01 | 1.64E-01 | 1.19E-01 | 1.53E-01 | 1.99E-01 | 9.55E-02 | 1.96E-01 | 1.13E-01 | 9.85E-02 | 9.27E-02 | 1.55E-01 | 1.28E-01 |
| Indeno(1,2,3-c,d)pyrene | 3.18E-09 | 2.64E-09 | 2.55E-09 | 2.49E-09 | 1.09E-09 | 1.07E-09 | 1.24E-09 | 1.40E-09 | 3.13E-10 | 9.87E-10 | 4.41E-10 | 3.35E-10 | 2.43E-10 | 3.13E-10 | 4.08E-10 | 1.96E-10 | 4.02E-10 | 2.31E-10 | 2.02E-10 | 1.90E-10 | 3.18E-10 | 2.63E-10 |

**TABLE 8A**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Lead | 2.39E-05 | 2.36E-05 | 2.41E-05 | 2.43E-05 | 1.93E-05 | 1.86E-05 | 2.15E-05 | 3.44E-05 | 6.18E-06 | 2.07E-05 | 5.36E-06 | 5.55E-06 | 3.19E-06 | 5.63E-06 | 7.65E-06 | 3.87E-06 | 7.87E-06 | 3.93E-06 | 3.74E-06 | 3.57E-06 | 5.64E-06 | 4.48E-06 |
| Manganese | 5.80E-05 | 4.80E-05 | 4.65E-05 | 4.53E-05 | 1.99E-05 | 1.94E-05 | 2.25E-05 | 2.56E-05 | 5.69E-06 | 1.80E-05 | 8.04E-06 | 6.11E-06 | 4.43E-06 | 5.71E-06 | 7.43E-06 | 3.56E-06 | 7.32E-06 | 4.22E-06 | 3.67E-06 | 3.46E-06 | 5.78E-06 | 4.79E-06 |
| Mercury | 1.86E-02 | 1.54E-02 | 1.49E-02 | 1.45E-02 | 6.40E-03 | 6.24E-03 | 7.22E-03 | 8.21E-03 | 1.83E-03 | 5.77E-03 | 2.58E-03 | 1.96E-03 | 1.42E-03 | 1.83E-03 | 2.38E-03 | 1.14E-03 | 2.35E-03 | 1.35E-03 | 1.18E-03 | 1.11E-03 | 1.86E-03 | 1.54E-03 |
| Methyl bromide | 9.08E-03 | 7.52E-03 | 7.29E-03 | 7.10E-03 | 3.12E-03 | 3.04E-03 | 3.53E-03 | 4.01E-03 | 8.92E-04 | 2.82E-03 | 1.26E-03 | 9.57E-04 | 6.94E-04 | 8.94E-04 | 1.16E-03 | 5.58E-04 | 1.15E-03 | 6.61E-04 | 5.76E-04 | 5.42E-04 | 9.06E-04 | 7.50E-04 |
| Methylene chloride | 1.87E-03 | 1.55E-03 | 1.50E-03 | 1.47E-03 | 6.44E-04 | 6.28E-04 | 7.28E-04 | 8.27E-04 | 1.84E-04 | 5.81E-04 | 2.60E-04 | 1.97E-04 | 1.43E-04 | 1.84E-04 | 2.40E-04 | 1.15E-04 | 2.37E-04 | 1.36E-04 | 1.19E-04 | 1.12E-04 | 1.87E-04 | 1.55E-04 |
| Naphthalene | 2.02E-03 | 1.67E-03 | 1.62E-03 | 1.58E-03 | 6.94E-04 | 6.77E-04 | 7.84E-04 | 8.91E-04 | 1.98E-04 | 6.26E-04 | 2.80E-04 | 2.13E-04 | 1.54E-04 | 1.99E-04 | 2.59E-04 | 1.24E-04 | 2.55E-04 | 1.47E-04 | 1.28E-04 | 1.20E-04 | 2.02E-04 | 1.67E-04 |
| Nickel | 5.25E-04 | 5.72E-04 | 5.77E-04 | 5.66E-04 | 4.86E-04 | 4.69E-04 | 5.49E-04 | 9.24E-04 | 1.61E-04 | 5.21E-04 | 1.40E-04 | 1.46E-04 | 8.71E-05 | 1.49E-04 | 2.00E-04 | 1.05E-04 | 2.04E-04 | 1.07E-04 | 1.02E-04 | 9.63E-05 | 1.48E-04 | 1.20E-04 |
| o-Xylene | 1.98E-02 | 1.64E-02 | 1.59E-02 | 1.55E-02 | 6.79E-03 | 6.62E-03 | 7.67E-03 | 8.72E-03 | 1.94E-03 | 6.13E-03 | 2.74E-03 | 2.08E-03 | 1.51E-03 | 1.95E-03 | 2.53E-03 | 1.21E-03 | 2.49E-03 | 1.44E-03 | 1.25E-03 | 1.18E-03 | 1.97E-03 | 1.63E-03 |
| p-Dichlorobenzene | 8.56E-04 | 7.09E-04 | 6.87E-04 | 6.69E-04 | 2.94E-04 | 2.87E-04 | 3.32E-04 | 3.77E-04 | 8.41E-05 | 2.65E-04 | 1.19E-04 | 9.02E-05 | 6.54E-05 | 8.42E-05 | 1.10E-04 | 5.26E-05 | 1.08E-04 | 6.23E-05 | 5.42E-05 | 5.10E-05 | 8.54E-05 | 7.07E-05 |
| Perchloroethylene | 7.71E-04 | 6.39E-04 | 6.19E-04 | 6.03E-04 | 2.65E-04 | 2.59E-04 | 2.99E-04 | 3.40E-04 | 7.58E-05 | 2.39E-04 | 1.07E-04 | 8.13E-05 | 5.89E-05 | 7.59E-05 | 9.88E-05 | 4.74E-05 | 9.74E-05 | 5.61E-05 | 4.89E-05 | 4.60E-05 | 7.70E-05 | 6.38E-05 |
| Selenium | 7.31E-05 | 6.43E-05 | 6.31E-05 | 6.19E-05 | 3.54E-05 | 3.44E-05 | 3.97E-05 | 5.56E-05 | 1.10E-05 | 3.55E-05 | 1.22E-05 | 1.08E-05 | 7.03E-06 | 1.05E-05 | 1.42E-05 | 7.18E-06 | 1.42E-05 | 7.92E-06 | 7.25E-06 | 6.71E-06 | 1.05E-05 | 8.56E-06 |
| Crystalline silica | 1.15E-02 | 1.43E-02 | 1.53E-02 | 1.58E-02 | 1.69E-02 | 1.63E-02 | 1.85E-02 | 2.71E-02 | 5.94E-03 | 1.90E-02 | 4.34E-03 | 5.00E-03 | 2.78E-03 | 5.25E-03 | 7.71E-03 | 4.31E-03 | 7.65E-03 | 4.58E-03 | 4.46E-03 | 3.78E-03 | 5.09E-03 | 4.14E-03 |
| Styrene | 3.53E-03 | 2.93E-03 | 2.83E-03 | 2.76E-03 | 1.21E-03 | 1.18E-03 | 1.37E-03 | 1.56E-03 | 3.47E-04 | 1.09E-03 | 4.90E-04 | 3.72E-04 | 2.70E-04 | 3.48E-04 | 4.52E-04 | 2.17E-04 | 4.46E-04 | 2.57E-04 | 2.24E-04 | 2.11E-04 | 3.52E-04 | 2.92E-04 |
| Trichloroethylene | 6.12E-04 | 5.07E-04 | 4.91E-04 | 4.78E-04 | 2.10E-04 | 2.05E-04 | 2.37E-04 | 2.70E-04 | 6.01E-05 | 1.90E-04 | 8.48E-05 | 6.44E-05 | 4.67E-05 | 6.02E-05 | 7.84E-05 | 3.76E-05 | 7.72E-05 | 4.45E-05 | 3.88E-05 | 3.65E-05 | 6.10E-05 | 5.06E-05 |
| 1,1,2,2-Tetrachloroethane | 5.85E-04 | 4.85E-04 | 4.70E-04 | 4.58E-04 | 2.01E-04 | 1.96E-04 | 2.27E-04 | 2.58E-04 | 5.75E-05 | 1.82E-04 | 8.12E-05 | 6.17E-05 | 4.47E-05 | 5.76E-05 | 7.50E-05 | 3.60E-05 | 7.39E-05 | 4.26E-05 | 3.71E-05 | 3.49E-05 | 5.84E-05 | 4.84E-05 |
| Toluene | 1.26E-01 | 1.04E-01 | 1.01E-01 | 9.83E-02 | 4.32E-02 | 4.21E-02 | 4.88E-02 | 5.54E-02 | 1.23E-02 | 3.90E-02 | 1.74E-02 | 1.32E-02 | 9.60E-03 | 1.24E-02 | 1.61E-02 | 7.72E-03 | 1.59E-02 | 9.14E-03 | 7.97E-03 | 7.50E-03 | 1.25E-02 | 1.04E-02 |
| Vanadium | 1.41E-03 | 1.57E-03 | 1.59E-03 | 1.56E-03 | 1.44E-03 | 1.39E-03 | 1.63E-03 | 2.93E-03 | 4.73E-04 | 1.59E-03 | 3.94E-04 | 4.27E-04 | 2.44E-04 | 4.36E-04 | 5.83E-04 | 2.99E-04 | 6.01E-04 | 2.94E-04 | 2.81E-04 | 2.76E-04 | 4.37E-04 | 3.49E-04 |
| Vinyl chloride | 2.06E-03 | 1.71E-03 | 1.66E-03 | 1.61E-03 | 7.09E-04 | 6.92E-04 | 8.01E-04 | 9.10E-04 | 2.03E-04 | 6.40E-04 | 2.86E-04 | 2.17E-04 | 1.58E-04 | 2.03E-04 | 2.64E-04 | 1.27E-04 | 2.60E-04 | 1.50E-04 | 1.31E-04 | 1.23E-04 | 2.06E-04 | 1.71E-04 |
| Vinylidene chloride | 5.65E-04 | 4.68E-04 | 4.54E-04 | 4.42E-04 | 1.94E-04 | 1.89E-04 | 2.19E-04 | 2.49E-04 | 5.55E-05 | 1.75E-04 | 7.84E-05 | 5.95E-05 | 4.32E-05 | 5.56E-05 | 7.24E-05 | 3.47E-05 | 7.14E-05 | 4.11E-05 | 3.58E-05 | 3.37E-05 | 5.64E-05 | 4.67E-05 |
| Xylenes (mixed) | 1.01E-01 | 8.37E-02 | 8.11E-02 | 7.90E-02 | 3.47E-02 | 3.39E-02 | 3.92E-02 | 4.45E-02 | 9.92E-03 | 3.13E-02 | 1.40E-02 | 1.06E-02 | 7.72E-03 | 9.94E-03 | 1.29E-02 | 6.21E-03 | 1.27E-02 | 7.35E-03 | 6.40E-03 | 6.02E-03 | 1.01E-02 | 8.35E-03 |

**TABLE 8A**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 3.15E-05 | 2.98E-05 | 3.18E-05 | 6.92E-05 | 2.51E-05 | 2.97E-05 | 3.23E-05 | 4.35E-05 | 5.18E-05 | 3.98E-05 | 3.04E-05 | 3.00E-05 | 3.01E-05 | 2.66E-05 | 3.52E-05 | 4.25E-05 | 2.09E-04 | 3.40E-04 | 1.83E-04 |
| 1,1,2-Trichloroethane | 5.24E-05 | 4.96E-05 | 5.29E-05 | 1.15E-04 | 4.18E-05 | 4.94E-05 | 5.37E-05 | 7.24E-05 | 8.62E-05 | 6.61E-05 | 5.06E-05 | 4.99E-05 | 5.00E-05 | 4.43E-05 | 5.85E-05 | 7.07E-05 | 3.48E-04 | 5.66E-04 | 3.04E-04 |
| 1,1-Dichloroethane | 1.94E-05 | 1.84E-05 | 1.96E-05 | 4.27E-05 | 1.55E-05 | 1.83E-05 | 1.99E-05 | 2.68E-05 | 3.20E-05 | 2.45E-05 | 1.88E-05 | 1.85E-05 | 1.86E-05 | 1.64E-05 | 2.17E-05 | 2.62E-05 | 1.29E-04 | 2.10E-04 | 1.13E-04 |
| 1,2-Dichloropropane | 2.66E-05 | 2.52E-05 | 2.68E-05 | 5.84E-05 | 2.12E-05 | 2.51E-05 | 2.72E-05 | 3.67E-05 | 4.37E-05 | 3.36E-05 | 2.57E-05 | 2.53E-05 | 2.54E-05 | 2.25E-05 | 2.97E-05 | 3.59E-05 | 1.77E-04 | 2.87E-04 | 1.54E-04 |
| 1,3-Butadiene | 9.00E-05 | 8.52E-05 | 9.10E-05 | 1.98E-04 | 7.19E-05 | 8.50E-05 | 9.23E-05 | 1.24E-04 | 1.48E-04 | 1.14E-04 | 8.70E-05 | 8.57E-05 | 8.60E-05 | 7.61E-05 | 1.01E-04 | 1.22E-04 | 5.98E-04 | 9.74E-04 | 5.23E-04 |
| 1,3-Dichloropropene | 1.09E-04 | 1.03E-04 | 1.10E-04 | 2.39E-04 | 8.69E-05 | 1.03E-04 | 1.12E-04 | 1.50E-04 | 1.79E-04 | 1.37E-04 | 1.05E-04 | 1.04E-04 | 1.04E-04 | 9.20E-05 | 1.22E-04 | 1.47E-04 | 7.23E-04 | 1.18E-03 | 6.33E-04 |
| 1,2,3,6,7,8-HxCDD | 2.60E-12 | 2.46E-12 | 2.63E-12 | 5.71E-12 | 2.07E-12 | 2.45E-12 | 2.66E-12 | 3.59E-12 | 4.28E-12 | 3.28E-12 | 2.51E-12 | 2.47E-12 | 2.48E-12 | 2.20E-12 | 2.90E-12 | 3.51E-12 | 1.73E-11 | 2.81E-11 | 1.51E-11 |
| 1,2,3,6,7,8-HxCDF | 3.74E-12 | 3.54E-12 | 3.77E-12 | 8.21E-12 | 2.98E-12 | 3.53E-12 | 3.83E-12 | 5.16E-12 | 6.15E-12 | 4.72E-12 | 3.61E-12 | 3.56E-12 | 3.57E-12 | 3.16E-12 | 4.17E-12 | 5.05E-12 | 2.48E-11 | 4.04E-11 | 2.17E-11 |
| 1,2,3,7,8-PeCDD | 2.32E-12 | 2.20E-12 | 2.35E-12 | 5.11E-12 | 1.86E-12 | 2.19E-12 | 2.38E-12 | 3.21E-12 | 3.82E-12 | 2.94E-12 | 2.25E-12 | 2.21E-12 | 2.22E-12 | 1.97E-12 | 2.60E-12 | 3.14E-12 | 1.54E-11 | 2.51E-11 | 1.35E-11 |
| 1,2,3,7,8-PeCDF | 1.79E-11 | 1.70E-11 | 1.81E-11 | 3.94E-11 | 1.43E-11 | 1.69E-11 | 1.84E-11 | 2.48E-11 | 2.95E-11 | 2.27E-11 | 1.73E-11 | 1.71E-11 | 1.71E-11 | 1.52E-11 | 2.00E-11 | 2.42E-11 | 1.19E-10 | 1.94E-10 | 1.04E-10 |
| 1,2,3,7,8,9-HxCDD | 2.70E-12 | 2.55E-12 | 2.72E-12 | 5.93E-12 | 2.15E-12 | 2.55E-12 | 2.76E-12 | 3.73E-12 | 4.44E-12 | 3.41E-12 | 2.61E-12 | 2.57E-12 | 2.58E-12 | 2.28E-12 | 3.01E-12 | 3.64E-12 | 1.79E-11 | 2.92E-11 | 1.57E-11 |
| 1,2,3,7,8,9-HxCDF | 1.26E-12 | 1.19E-12 | 1.27E-12 | 2.76E-12 | 1.00E-12 | 1.19E-12 | 1.29E-12 | 1.74E-12 | 2.07E-12 | 1.59E-12 | 1.21E-12 | 1.20E-12 | 1.20E-12 | 1.06E-12 | 1.40E-12 | 1.70E-12 | 8.34E-12 | 1.36E-11 | 7.30E-12 |
| 1,2,3,4,6,7,8-HpCDD | 9.44E-12 | 8.94E-12 | 9.54E-12 | 2.08E-11 | 7.54E-12 | 8.92E-12 | 9.68E-12 | 1.31E-11 | 1.55E-11 | 1.19E-11 | 9.13E-12 | 8.99E-12 | 9.02E-12 | 7.98E-12 | 1.05E-11 | 1.28E-11 | 6.27E-11 | 1.02E-10 | 5.49E-11 |
| 1,2,3,4,6,7,8-HpCDF | 4.58E-12 | 4.34E-12 | 4.63E-12 | 1.01E-11 | 3.66E-12 | 4.32E-12 | 4.69E-12 | 6.33E-12 | 7.54E-12 | 5.78E-12 | 4.43E-12 | 4.36E-12 | 4.38E-12 | 3.87E-12 | 5.12E-12 | 6.19E-12 | 3.04E-11 | 4.95E-11 | 2.66E-11 |
| 1,2,3,4,7,8-HxCDD | 2.64E-12 | 2.50E-12 | 2.67E-12 | 5.80E-12 | 2.11E-12 | 2.49E-12 | 2.70E-12 | 3.65E-12 | 4.34E-12 | 3.33E-12 | 2.55E-12 | 2.51E-12 | 2.52E-12 | 2.23E-12 | 2.95E-12 | 3.56E-12 | 1.75E-11 | 2.85E-11 | 1.53E-11 |
| 1,2,3,4,7,8-HxCDF | 3.99E-12 | 3.78E-12 | 4.03E-12 | 8.77E-12 | 3.19E-12 | 3.77E-12 | 4.09E-12 | 5.52E-12 | 6.57E-12 | 5.04E-12 | 3.86E-12 | 3.80E-12 | 3.81E-12 | 3.37E-12 | 4.46E-12 | 5.39E-12 | 2.65E-11 | 4.32E-11 | 2.32E-11 |
| 1,2,3,4,7,8,9-HpCDF | 1.18E-12 | 1.11E-12 | 1.19E-12 | 2.59E-12 | 9.39E-13 | 1.11E-12 | 1.21E-12 | 1.63E-12 | 1.94E-12 | 1.49E-12 | 1.14E-12 | 1.12E-12 | 1.12E-12 | 9.95E-13 | 1.31E-12 | 1.59E-12 | 7.82E-12 | 1.27E-11 | 6.84E-12 |
| 1,2,3,4,6,7,8,9-OCDD | 1.98E-11 | 1.88E-11 | 2.00E-11 | 4.35E-11 | 1.58E-11 | 1.87E-11 | 2.03E-11 | 2.74E-11 | 3.26E-11 | 2.50E-11 | 1.91E-11 | 1.89E-11 | 1.89E-11 | 1.67E-11 | 2.21E-11 | 2.68E-11 | 1.32E-10 | 2.14E-10 | 1.15E-10 |
| 1,2,3,4,6,7,8,9-OCDF | 4.52E-12 | 4.28E-12 | 4.57E-12 | 9.94E-12 | 3.61E-12 | 4.27E-12 | 4.63E-12 | 6.25E-12 | 7.44E-12 | 5.71E-12 | 4.37E-12 | 4.30E-12 | 4.32E-12 | 3.82E-12 | 5.05E-12 | 6.11E-12 | 3.00E-11 | 4.89E-11 | 2.63E-11 |
| 2,3,7,8-TCDD | 2.29E-12 | 2.16E-12 | 2.31E-12 | 5.02E-12 | 1.82E-12 | 2.16E-12 | 2.34E-12 | 3.16E-12 | 3.76E-12 | 2.89E-12 | 2.21E-12 | 2.18E-12 | 2.18E-12 | 1.93E-12 | 2.55E-12 | 3.09E-12 | 1.52E-11 | 2.47E-11 | 1.33E-11 |
| 2,3,7,8-TCDF | 1.13E-10 | 1.07E-10 | 1.14E-10 | 2.48E-10 | 9.00E-11 | 1.06E-10 | 1.16E-10 | 1.56E-10 | 1.86E-10 | 1.42E-10 | 1.09E-10 | 1.07E-10 | 1.08E-10 | 9.54E-11 | 1.26E-10 | 1.52E-10 | 7.49E-10 | 1.22E-09 | 6.56E-10 |
| 2,3,4,6,7,8-HxCDF | 2.30E-12 | 2.18E-12 | 2.33E-12 | 5.07E-12 | 1.84E-12 | 2.18E-12 | 2.36E-12 | 3.19E-12 | 3.79E-12 | 2.91E-12 | 2.23E-12 | 2.19E-12 | 2.20E-12 | 1.95E-12 | 2.57E-12 | 3.11E-12 | 1.53E-11 | 2.49E-11 | 1.34E-11 |
| 2,3,4,7,8-PeCDF | 2.69E-11 | 2.54E-11 | 2.71E-11 | 5.91E-11 | 2.14E-11 | 2.54E-11 | 2.75E-11 | 3.71E-11 | 4.42E-11 | 3.39E-11 | 2.60E-11 | 2.56E-11 | 2.57E-11 | 2.27E-11 | 3.00E-11 | 3.63E-11 | 1.79E-10 | 2.91E-10 | 1.56E-10 |
| Acetaldehyde | 1.14E-03 | 1.08E-03 | 1.15E-03 | 2.50E-03 | 9.08E-04 | 1.07E-03 | 1.17E-03 | 1.57E-03 | 1.87E-03 | 1.44E-03 | 1.10E-03 | 1.08E-03 | 1.09E-03 | 9.62E-04 | 1.27E-03 | 1.54E-03 | 7.56E-03 | 1.23E-02 | 6.61E-03 |
| Acrolein | 4.40E-05 | 4.17E-05 | 4.45E-05 | 9.68E-05 | 3.51E-05 | 4.16E-05 | 4.51E-05 | 6.09E-05 | 7.25E-05 | 5.56E-05 | 4.26E-05 | 4.19E-05 | 4.21E-05 | 3.72E-05 | 4.92E-05 | 5.95E-05 | 2.93E-04 | 4.76E-04 | 2.56E-04 |
| Arsenic | 4.59E-06 | 4.22E-06 | 4.34E-06 | 7.77E-06 | 5.08E-06 | 4.81E-06 | 5.04E-06 | 7.60E-06 | 1.04E-05 | 5.95E-06 | 4.18E-06 | 4.66E-06 | 4.14E-06 | 4.47E-06 | 4.07E-06 | 4.61E-06 | 4.89E-05 | 5.89E-05 | 2.07E-05 |
| Benz(a)anthracene | 1.28E-08 | 1.22E-08 | 1.30E-08 | 2.82E-08 | 1.03E-08 | 1.21E-08 | 1.32E-08 | 1.78E-08 | 2.11E-08 | 1.62E-08 | 1.24E-08 | 1.22E-08 | 1.23E-08 | 1.09E-08 | 1.43E-08 | 1.74E-08 | 8.54E-08 | 1.39E-07 | 7.47E-08 |
| Benzo(a)pyrene | 2.89E-10 | 2.74E-10 | 2.92E-10 | 6.36E-10 | 2.31E-10 | 2.73E-10 | 2.96E-10 | 4.00E-10 | 4.76E-10 | 3.65E-10 | 2.80E-10 | 2.75E-10 | 2.76E-10 | 2.45E-10 | 3.23E-10 | 3.91E-10 | 1.92E-09 | 3.13E-09 | 1.68E-09 |
| Benzo(b)fluoranthene | 1.83E-09 | 1.74E-09 | 1.85E-09 | 4.03E-09 | 1.46E-09 | 1.73E-09 | 1.88E-09 | 2.53E-09 | 3.02E-09 | 2.32E-09 | 1.77E-09 | 1.75E-09 | 1.75E-09 | 1.55E-09 | 2.05E-09 | 2.48E-09 | 1.22E-08 | 1.98E-08 | 1.07E-08 |
| Benzo(k)fluoranthene | 2.89E-10 | 2.74E-10 | 2.92E-10 | 6.36E-10 | 2.31E-10 | 2.73E-10 | 2.96E-10 | 4.00E-10 | 4.76E-10 | 3.65E-10 | 2.80E-10 | 2.75E-10 | 2.76E-10 | 2.45E-10 | 3.23E-10 | 3.91E-10 | 1.92E-09 | 3.13E-09 | 1.68E-09 |
| Benzene | 9.46E-03 | 8.96E-03 | 9.56E-03 | 2.08E-02 | 7.55E-03 | 8.93E-03 | 9.70E-03 | 1.31E-02 | 1.56E-02 | 1.20E-02 | 9.15E-03 | 9.01E-03 | 9.04E-03 | 8.00E-03 | 1.06E-02 | 1.28E-02 | 6.29E-02 | 1.02E-01 | 5.50E-02 |
| Benzyl chloride | 9.91E-05 | 9.38E-05 | 1.00E-04 | 2.18E-04 | 7.91E-05 | 9.35E-05 | 1.02E-04 | 1.37E-04 | 1.63E-04 | 1.25E-04 | 9.57E-05 | 9.43E-05 | 9.46E-05 | 8.37E-05 | 1.11E-04 | 1.34E-04 | 6.58E-04 | 1.07E-03 | 5.76E-04 |
| Beryllium | 1.31E-06 | 1.20E-06 | 1.26E-06 | 2.30E-06 | 1.41E-06 | 1.37E-06 | 1.44E-06 | 2.14E-06 | 2.94E-06 | 1.70E-06 | 1.21E-06 | 1.33E-06 | 1.19E-06 | 1.25E-06 | 1.19E-06 | 1.37E-06 | 1.22E-05 | 1.43E-05 | 6.37E-06 |
| Cadmium | 2.10E-06 | 1.91E-06 | 1.99E-06 | 3.53E-06 | 2.35E-06 | 2.22E-06 | 2.32E-06 | 3.52E-06 | 4.91E-06 | 2.71E-06 | 1.93E-06 | 2.15E-06 | 1.88E-06 | 2.04E-06 | 1.84E-06 | 2.10E-06 | 2.08E-05 | 2.53E-05 | 9.74E-06 |
| Carbon tetrachloride | 6.04E-05 | 5.72E-05 | 6.10E-05 | 1.33E-04 | 4.82E-05 | 5.70E-05 | 6.19E-05 | 8.35E-05 | 9.94E-05 | 7.63E-05 | 5.84E-05 | 5.75E-05 | 5.77E-05 | 5.11E-05 | 6.75E-05 | 8.16E-05 | 4.01E-04 | 6.53E-04 | 3.51E-04 |
| Chlorobenzene | 5.43E-04 | 5.14E-04 | 5.49E-04 | 1.19E-03 | 4.34E-04 | 5.13E-04 | 5.57E-04 | 7.51E-04 | 8.94E-04 | 6.86E-04 | 5.25E-04 | 5.17E-04 | 5.19E-04 | 4.59E-04 | 6.07E-04 | 7.34E-04 | 3.61E-03 | 5.88E-03 | 3.16E-03 |
| Chloroform | 2.81E-05 | 2.66E-05 | 2.84E-05 | 6.19E-05 | 2.25E-05 | 2.66E-05 | 2.88E-05 | 3.89E-05 | 4.63E-05 | 3.56E-05 | 2.72E-05 | 2.68E-05 | 2.69E-05 | 2.38E-05 | 3.14E-05 | 3.80E-05 | 1.87E-04 | 3.04E-04 | 1.64E-04 |
| Chrysene | 3.79E-08 | 3.58E-08 | 3.82E-08 | 8.32E-08 | 3.02E-08 | 3.57E-08 | 3.88E-08 | 5.23E-08 | 6.23E-08 | 4.78E-08 | 3.66E-08 | 3.60E-08 | 3.62E-08 | 3.20E-08 | 4.23E-08 | 5.11E-08 | 2.52E-07 | 4.09E-07 | 2.20E-07 |
| Copper | 3.40E-05 | 3.09E-05 | 3.22E-05 | 5.57E-05 | 3.89E-05 | 3.63E-05 | 3.77E-05 | 5.77E-05 | 8.15E-05 | 4.41E-05 | 3.11E-05 | 3.49E-05 | 3.03E-05 | 3.34E-05 | 2.91E-05 | 3.31E-05 | 3.48E-04 | 4.17E-04 | 1.53E-04 |
| Chromium VI | 4.13E-06 | 3.95E-06 | 3.86E-06 | 7.30E-06 | 4.62E-06 | 4.33E-06 | 4.56E-06 | 6.83E-06 | 8.69E-06 | 5.68E-06 | 3.60E-06 | 4.14E-06 | 3.84E-06 | 4.23E-06 | 3.71E-06 | 4.12E-06 | 5.15E-05 | 4.79E-05 | 1.94E-05 |
| Dibenz(a,h)anthracene | 2.89E-10 | 2.74E-10 | 2.92E-10 | 6.36E-10 | 2.31E-10 | 2.73E-10 | 2.96E-10 | 4.00E-10 | 4.76E-10 | 3.65E-10 | 2.80E-10 | 2.75E-10 | 2.76E-10 | 2.45E-10 | 3.23E-10 | 3.91E-10 | 1.92E-09 | 3.13E-09 | 1.68E-09 |
| Diesel PM | 8.89E-05 | 8.29E-05 | 8.60E-05 | 1.38E-04 | 1.06E-04 | 1.01E-04 | 8.36E-05 | 1.46E-04 | 2.09E-04 | 1.47E-04 | 7.92E-05 | 7.86E-05 | 8.81E-05 | 1.10E-04 | 7.15E-05 | 8.10E-05 | 9.40E-04 | 3.63E-04 | 5.00E-04 |
| Ethylene dibromide | 5.90E-05 | 5.59E-05 | 5.96E-05 | 1.30E-04 | 4.71E-05 | 5.57E-05 | 6.05E-05 | 8.16E-05 | 9.71E-05 | 7.46E-05 | 5.71E-05 | 5.62E-05 | 5.64E-05 | 4.99E-05 | 6.59E-05 | 7.97E-05 | 3.92E-04 | 6.38E-04 | 3.43E-04 |
| Ethylene dichloride | 2.33E-05 | 2.21E-05 | 2.36E-05 | 5.13E-05 | 1.86E-05 | 2.20E-05 | 2.39E-05 | 3.23E-05 | 3.84E-05 | 2.95E-05 | 2.26E-05 | 2.22E-05 | 2.23E-05 | 1.97E-05 | 2.61E-05 | 3.15E-05 | 1.55E-04 | 2.52E-04 | 1.36E-04 |
| Ethylbenzene | 9.41E-04 | 8.90E-04 | 9.50E-04 | 2.07E-03 | 7.51E-04 | 8.88E-04 | 9.64E-04 | 1.30E-03 | 1.55E-03 | 1.19E-03 | 9.09E-04 | 8.95E-04 | 8.99E-04 | 7.95E-04 | 1.05E-03 | 1.27E-03 | 6.25E-03 | 1.02E-02 | 5.47E-03 |
| Ethyl chloride | 3.80E-05 | 3.59E-05 | 3.83E-05 | 8.34E-05 | 3.03E-05 | 3.58E-05 | 3.89E-05 | 5.25E-05 | 6.25E-05 | 4.79E-05 | 3.67E-05 | 3.61E-05 | 3.63E-05 | 3.21E-05 | 4.24E-05 | 5.13E-05 | 2.52E-04 | 4.10E-04 | 2.21E-04 |
| Formaldehyde | 6.19E-05 | 5.86E-05 | 6.25E-05 | 1.36E-04 | 4.94E-05 | 5.84E-05 | 6.34E-05 | 8.55E-05 | 1.02E-04 | 7.82E-05 | 5.98E-05 | 5.89E-05 | 5.91E-05 | 5.23E-05 | 6.91E-05 | 8.36E-05 | 4.11E-04 | 6.69E-04 | 3.60E-04 |
| Hydrochloric acid | 1.05E-01 | 9.93E-02 | 1.06E-01 | 2.31E-01 | 8.38E-02 | 9.91E-02 | 1.08E-01 | 1.45E-01 | 1.73E-01 | 1.33E-01 | 1.01E-01 | 9.99E-02 | 1.00E-01 | 8.87E-02 | 1.17E-01 | 1.42E-01 | 6.97E-01 | 1.13E+00 | 6.10E-01 |
| Indeno(1,2,3-c,d)pyrene | 2.15E-10 | 2.03E-10 | 2.17E-10 | 4.72E-10 | 1.71E-10 | 2.03E-10 | 2.20E-10 | 2.97E-10 | 3.53E-10 | 2.71E-10 | 2.08E-10 | 2.04E-10 | 2.05E-10 | 1.82E-10 | 2.40E-10 | 2.90E-10 | 1.43E-09 | 2.32E-09 | 1.25E-09 |

**TABLE 8A**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 3.65E-06 | 3.37E-06 | 3.47E-06 | 6.38E-06 | 3.87E-06 | 3.74E-06 | 3.95E-06 | 5.94E-06 | 7.89E-06 | 4.80E-06 | 3.28E-06 | 3.66E-06 | 3.31E-06 | 3.54E-06 | 3.28E-06 | 3.76E-06 | 3.60E-05 | 3.98E-05 | 1.79E-05 |
| Manganese | 3.91E-06 | 3.70E-06 | 3.95E-06 | 8.60E-06 | 3.12E-06 | 3.69E-06 | 4.01E-06 | 5.41E-06 | 6.44E-06 | 4.94E-06 | 3.78E-06 | 3.73E-06 | 3.74E-06 | 3.31E-06 | 4.37E-06 | 5.29E-06 | 2.60E-05 | 4.23E-05 | 2.27E-05 |
| Mercury | 1.26E-03 | 1.19E-03 | 1.27E-03 | 2.76E-03 | 1.00E-03 | 1.19E-03 | 1.29E-03 | 1.74E-03 | 2.07E-03 | 1.59E-03 | 1.21E-03 | 1.20E-03 | 1.20E-03 | 1.06E-03 | 1.40E-03 | 1.70E-03 | 8.35E-03 | 1.36E-02 | 7.30E-03 |
| Methyl bromide | 6.13E-04 | 5.80E-04 | 6.19E-04 | 1.35E-03 | 4.89E-04 | 5.79E-04 | 6.28E-04 | 8.47E-04 | 1.01E-03 | 7.74E-04 | 5.92E-04 | 5.84E-04 | 5.86E-04 | 5.18E-04 | 6.85E-04 | 8.28E-04 | 4.07E-03 | 6.63E-03 | 3.56E-03 |
| Methylene chloride | 1.27E-04 | 1.20E-04 | 1.28E-04 | 2.78E-04 | 1.01E-04 | 1.19E-04 | 1.30E-04 | 1.75E-04 | 2.08E-04 | 1.60E-04 | 1.22E-04 | 1.20E-04 | 1.21E-04 | 1.07E-04 | 1.41E-04 | 1.71E-04 | 8.41E-04 | 1.37E-03 | 7.35E-04 |
| Naphthalene | 1.36E-04 | 1.29E-04 | 1.38E-04 | 3.00E-04 | 1.09E-04 | 1.29E-04 | 1.40E-04 | 1.88E-04 | 2.24E-04 | 1.72E-04 | 1.32E-04 | 1.30E-04 | 1.30E-04 | 1.15E-04 | 1.52E-04 | 1.84E-04 | 9.06E-04 | 1.47E-03 | 7.92E-04 |
| Nickel | 9.76E-05 | 9.09E-05 | 9.35E-05 | 1.69E-04 | 1.05E-04 | 1.01E-04 | 1.06E-04 | 1.56E-04 | 2.12E-04 | 1.28E-04 | 8.89E-05 | 9.80E-05 | 8.88E-05 | 9.45E-05 | 9.17E-05 | 1.00E-04 | 9.66E-04 | 9.91E-04 | 4.61E-04 |
| o-Xylene | 1.33E-03 | 1.26E-03 | 1.35E-03 | 2.93E-03 | 1.06E-03 | 1.26E-03 | 1.37E-03 | 1.84E-03 | 2.19E-03 | 1.68E-03 | 1.29E-03 | 1.27E-03 | 1.27E-03 | 1.13E-03 | 1.49E-03 | 1.80E-03 | 8.86E-03 | 1.44E-02 | 7.75E-03 |
| p-Dichlorobenzene | 5.78E-05 | 5.47E-05 | 5.84E-05 | 1.27E-04 | 4.61E-05 | 5.45E-05 | 5.92E-05 | 7.98E-05 | 9.50E-05 | 7.30E-05 | 5.58E-05 | 5.50E-05 | 5.52E-05 | 4.88E-05 | 6.45E-05 | 7.80E-05 | 3.84E-04 | 6.25E-04 | 3.36E-04 |
| Perchloroethylene | 5.21E-05 | 4.93E-05 | 5.26E-05 | 1.14E-04 | 4.16E-05 | 4.92E-05 | 5.34E-05 | 7.20E-05 | 8.57E-05 | 6.58E-05 | 5.03E-05 | 4.96E-05 | 4.98E-05 | 4.40E-05 | 5.82E-05 | 7.03E-05 | 3.46E-04 | 5.63E-04 | 3.03E-04 |
| Selenium | 7.03E-06 | 6.55E-06 | 6.90E-06 | 1.37E-05 | 6.81E-06 | 7.09E-06 | 7.52E-06 | 1.08E-05 | 1.41E-05 | 8.99E-06 | 6.68E-06 | 6.98E-06 | 6.53E-06 | 6.39E-06 | 7.05E-06 | 8.30E-06 | 5.76E-05 | 7.92E-05 | 3.67E-05 |
| Crystalline silica | 3.44E-03 | 3.05E-03 | 3.23E-03 | 5.14E-03 | 4.46E-03 | 3.94E-03 | 3.99E-03 | 6.22E-03 | 9.55E-03 | 4.44E-03 | 3.28E-03 | 3.71E-03 | 2.96E-03 | 3.44E-03 | 2.67E-03 | 3.07E-03 | 2.82E-02 | 2.87E-02 | 1.55E-02 |
| Styrene | 2.38E-04 | 2.26E-04 | 2.41E-04 | 5.24E-04 | 1.90E-04 | 2.25E-04 | 2.44E-04 | 3.29E-04 | 3.92E-04 | 3.01E-04 | 2.30E-04 | 2.27E-04 | 2.28E-04 | 2.01E-04 | 2.66E-04 | 3.22E-04 | 1.58E-03 | 2.58E-03 | 1.39E-03 |
| Trichloroethylene | 4.13E-05 | 3.91E-05 | 4.17E-05 | 9.08E-05 | 3.30E-05 | 3.90E-05 | 4.23E-05 | 5.71E-05 | 6.79E-05 | 5.21E-05 | 3.99E-05 | 3.93E-05 | 3.95E-05 | 3.49E-05 | 4.61E-05 | 5.58E-05 | 2.74E-04 | 4.46E-04 | 2.40E-04 |
| 1,1,2,2-Tetrachloroethane | 3.95E-05 | 3.74E-05 | 3.99E-05 | 8.69E-05 | 3.15E-05 | 3.73E-05 | 4.05E-05 | 5.46E-05 | 6.50E-05 | 4.99E-05 | 3.82E-05 | 3.76E-05 | 3.78E-05 | 3.34E-05 | 4.41E-05 | 5.34E-05 | 2.63E-04 | 4.27E-04 | 2.30E-04 |
| Toluene | 8.48E-03 | 8.03E-03 | 8.57E-03 | 1.86E-02 | 6.77E-03 | 8.01E-03 | 8.69E-03 | 1.17E-02 | 1.40E-02 | 1.07E-02 | 8.20E-03 | 8.08E-03 | 8.11E-03 | 7.17E-03 | 9.47E-03 | 1.15E-02 | 5.64E-02 | 9.17E-02 | 4.93E-02 |
| Vanadium | 2.83E-04 | 2.65E-04 | 2.68E-04 | 4.87E-04 | 3.01E-04 | 2.89E-04 | 3.05E-04 | 4.54E-04 | 5.97E-04 | 3.73E-04 | 2.52E-04 | 2.82E-04 | 2.59E-04 | 2.77E-04 | 2.64E-04 | 2.86E-04 | 3.08E-03 | 3.22E-03 | 1.31E-03 |
| Vinyl chloride | 1.39E-04 | 1.32E-04 | 1.41E-04 | 3.06E-04 | 1.11E-04 | 1.31E-04 | 1.43E-04 | 1.92E-04 | 2.29E-04 | 1.76E-04 | 1.35E-04 | 1.33E-04 | 1.33E-04 | 1.18E-04 | 1.56E-04 | 1.88E-04 | 9.25E-04 | 1.51E-03 | 8.09E-04 |
| Vinylidene chloride | 3.82E-05 | 3.61E-05 | 3.85E-05 | 8.39E-05 | 3.04E-05 | 3.60E-05 | 3.91E-05 | 5.27E-05 | 6.28E-05 | 4.82E-05 | 3.69E-05 | 3.63E-05 | 3.65E-05 | 3.23E-05 | 4.26E-05 | 5.15E-05 | 2.53E-04 | 4.13E-04 | 2.22E-04 |
| Xylenes (mixed) | 6.82E-03 | 6.45E-03 | 6.89E-03 | 1.50E-02 | 5.44E-03 | 6.43E-03 | 6.99E-03 | 9.42E-03 | 1.12E-02 | 8.61E-03 | 6.59E-03 | 6.49E-03 | 6.51E-03 | 5.76E-03 | 7.61E-03 | 9.21E-03 | 4.53E-02 | 7.37E-02 | 3.96E-02 |

Note

1. Receptor identifier in the HARP model.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 8B**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 2.70E-04 | 2.24E-04 | 2.17E-04 | 2.11E-04 | 9.29E-05 | 9.06E-05 | 1.05E-04 | 1.19E-04 | 2.65E-05 | 8.38E-05 | 3.75E-05 | 2.85E-05 | 2.06E-05 | 2.66E-05 | 3.46E-05 | 1.66E-05 | 3.41E-05 | 1.97E-05 | 1.71E-05 | 1.61E-05 | 2.70E-05 | 2.23E-05 |
| 1,1,2-Trichloroethane | 4.50E-04 | 3.73E-04 | 3.62E-04 | 3.52E-04 | 1.55E-04 | 1.51E-04 | 1.75E-04 | 1.99E-04 | 4.42E-05 | 1.40E-04 | 6.25E-05 | 4.75E-05 | 3.44E-05 | 4.43E-05 | 5.77E-05 | 2.77E-05 | 5.69E-05 | 3.28E-05 | 2.85E-05 | 2.69E-05 | 4.49E-05 | 3.72E-05 |
| 1,1-Dichloroethane | 1.67E-04 | 1.38E-04 | 1.34E-04 | 1.31E-04 | 5.74E-05 | 5.60E-05 | 6.49E-05 | 7.37E-05 | 1.64E-05 | 5.18E-05 | 2.32E-05 | 1.76E-05 | 1.28E-05 | 1.64E-05 | 2.14E-05 | 1.03E-05 | 2.11E-05 | 1.22E-05 | 1.06E-05 | 9.96E-06 | 1.67E-05 | 1.38E-05 |
| 1,2-Dichloropropane | 2.28E-04 | 1.89E-04 | 1.83E-04 | 1.78E-04 | 7.84E-05 | 7.65E-05 | 8.85E-05 | 1.01E-04 | 2.24E-05 | 7.07E-05 | 3.16E-05 | 2.40E-05 | 1.74E-05 | 2.25E-05 | 2.92E-05 | 1.40E-05 | 2.88E-05 | 1.66E-05 | 1.45E-05 | 1.36E-05 | 2.28E-05 | 1.89E-05 |
| 1,3-Butadiene | 7.74E-04 | 6.42E-04 | 6.22E-04 | 6.06E-04 | 2.66E-04 | 2.60E-04 | 3.01E-04 | 3.42E-04 | 7.61E-05 | 2.40E-04 | 1.07E-04 | 8.16E-05 | 5.92E-05 | 7.62E-05 | 9.92E-05 | 4.76E-05 | 9.78E-05 | 5.63E-05 | 4.91E-05 | 4.62E-05 | 7.73E-05 | 6.40E-05 |
| 1,3-Dichloropropene | 9.37E-04 | 7.76E-04 | 7.52E-04 | 7.33E-04 | 3.22E-04 | 3.14E-04 | 3.64E-04 | 4.13E-04 | 9.20E-05 | 2.91E-04 | 1.30E-04 | 9.87E-05 | 7.16E-05 | 9.22E-05 | 1.20E-04 | 5.76E-05 | 1.18E-04 | 6.82E-05 | 5.94E-05 | 5.59E-05 | 9.35E-05 | 7.75E-05 |
| 1,2,3,6,7,8-HxCDD | 2.24E-11 | 1.85E-11 | 1.80E-11 | 1.75E-11 | 7.69E-12 | 7.50E-12 | 8.69E-12 | 9.87E-12 | 2.20E-12 | 6.94E-12 | 3.10E-12 | 2.36E-12 | 1.71E-12 | 2.20E-12 | 2.87E-12 | 1.38E-12 | 2.82E-12 | 1.63E-12 | 1.42E-12 | 1.33E-12 | 2.23E-12 | 1.85E-12 |
| 1,2,3,6,7,8-HxCDF | 3.21E-11 | 2.66E-11 | 2.58E-11 | 2.51E-11 | 1.10E-11 | 1.08E-11 | 1.25E-11 | 1.42E-11 | 3.15E-12 | 9.96E-12 | 4.45E-12 | 3.38E-12 | 2.45E-12 | 3.16E-12 | 4.11E-12 | 1.97E-12 | 4.05E-12 | 2.34E-12 | 2.04E-12 | 1.91E-12 | 3.20E-12 | 2.65E-12 |
| 1,2,3,7,8-PeCDD | 2.00E-11 | 1.66E-11 | 1.61E-11 | 1.57E-11 | 6.89E-12 | 6.72E-12 | 7.78E-12 | 8.84E-12 | 1.97E-12 | 6.22E-12 | 2.78E-12 | 2.11E-12 | 1.53E-12 | 1.97E-12 | 2.57E-12 | 1.23E-12 | 2.53E-12 | 1.46E-12 | 1.27E-12 | 1.20E-12 | 2.00E-12 | 1.66E-12 |
| 1,2,3,7,8-PeCDF | 1.54E-10 | 1.28E-10 | 1.24E-10 | 1.20E-10 | 5.29E-11 | 5.16E-11 | 5.98E-11 | 6.79E-11 | 1.51E-11 | 4.78E-11 | 2.14E-11 | 1.62E-11 | 1.18E-11 | 1.52E-11 | 1.97E-11 | 9.47E-12 | 1.94E-11 | 1.12E-11 | 9.76E-12 | 9.18E-12 | 1.54E-11 | 1.27E-11 |
| 1,2,3,7,8,9-HxCDD | 2.31E-11 | 1.91E-11 | 1.85E-11 | 1.81E-11 | 7.94E-12 | 7.74E-12 | 8.97E-12 | 1.02E-11 | 2.27E-12 | 7.16E-12 | 3.20E-12 | 2.43E-12 | 1.77E-12 | 2.27E-12 | 2.96E-12 | 1.42E-12 | 2.92E-12 | 1.68E-12 | 1.46E-12 | 1.38E-12 | 2.31E-12 | 1.91E-12 |
| 1,2,3,7,8,9-HxCDF | 1.08E-11 | 8.96E-12 | 8.68E-12 | 8.45E-12 | 3.72E-12 | 3.62E-12 | 4.20E-12 | 4.77E-12 | 1.06E-12 | 3.35E-12 | 1.50E-12 | 1.14E-12 | 8.26E-13 | 1.06E-12 | 1.38E-12 | 6.64E-13 | 1.36E-12 | 7.86E-13 | 6.85E-13 | 6.45E-13 | 1.08E-12 | 8.93E-13 |
| 1,2,3,4,6,7,8-HpCDD | 8.11E-11 | 6.72E-11 | 6.51E-11 | 6.34E-11 | 2.79E-11 | 2.72E-11 | 3.15E-11 | 3.58E-11 | 7.96E-12 | 2.51E-11 | 1.12E-11 | 8.54E-12 | 6.19E-12 | 7.98E-12 | 1.04E-11 | 4.98E-12 | 1.02E-11 | 5.90E-12 | 5.14E-12 | 4.83E-12 | 8.09E-12 | 6.70E-12 |
| 1,2,3,4,6,7,8-HpCDF | 3.94E-11 | 3.26E-11 | 3.16E-11 | 3.08E-11 | 1.35E-11 | 1.32E-11 | 1.53E-11 | 1.74E-11 | 3.87E-12 | 1.22E-11 | 5.46E-12 | 4.15E-12 | 3.01E-12 | 3.88E-12 | 5.04E-12 | 2.42E-12 | 4.97E-12 | 2.86E-12 | 2.50E-12 | 2.35E-12 | 3.93E-12 | 3.25E-12 |
| 1,2,3,4,7,8-HxCDD | 2.27E-11 | 1.88E-11 | 1.82E-11 | 1.77E-11 | 7.79E-12 | 7.60E-12 | 8.80E-12 | 1.00E-11 | 2.23E-12 | 7.03E-12 | 3.14E-12 | 2.39E-12 | 1.73E-12 | 2.23E-12 | 2.90E-12 | 1.39E-12 | 2.86E-12 | 1.65E-12 | 1.44E-12 | 1.35E-12 | 2.26E-12 | 1.87E-12 |
| 1,2,3,4,7,8-HxCDF | 3.43E-11 | 2.84E-11 | 2.75E-11 | 2.68E-11 | 1.18E-11 | 1.15E-11 | 1.33E-11 | 1.51E-11 | 3.37E-12 | 1.06E-11 | 4.76E-12 | 3.61E-12 | 2.62E-12 | 3.38E-12 | 4.39E-12 | 2.11E-12 | 4.33E-12 | 2.49E-12 | 2.17E-12 | 2.04E-12 | 3.42E-12 | 2.83E-12 |
| 1,2,3,4,7,8,9-HpCDF | 1.01E-11 | 8.40E-12 | 8.14E-12 | 7.93E-12 | 3.49E-12 | 3.40E-12 | 3.94E-12 | 4.47E-12 | 9.96E-13 | 3.15E-12 | 1.41E-12 | 1.07E-12 | 7.75E-13 | 9.98E-13 | 1.30E-12 | 6.23E-13 | 1.28E-12 | 7.38E-13 | 6.43E-13 | 6.05E-13 | 1.01E-12 | 8.38E-13 |
| 1,2,3,4,6,7,8,9-OCDD | 1.70E-10 | 1.41E-10 | 1.36E-10 | 1.33E-10 | 5.84E-11 | 5.70E-11 | 6.60E-11 | 7.50E-11 | 1.67E-11 | 5.27E-11 | 2.36E-11 | 1.79E-11 | 1.30E-11 | 1.67E-11 | 2.18E-11 | 1.04E-11 | 2.15E-11 | 1.24E-11 | 1.08E-11 | 1.01E-11 | 1.70E-11 | 1.40E-11 |
| 1,2,3,4,6,7,8,9-OCDF | 3.88E-11 | 3.21E-11 | 3.11E-11 | 3.03E-11 | 1.33E-11 | 1.30E-11 | 1.51E-11 | 1.71E-11 | 3.81E-12 | 1.20E-11 | 5.38E-12 | 4.09E-12 | 2.96E-12 | 3.82E-12 | 4.97E-12 | 2.38E-12 | 4.90E-12 | 2.82E-12 | 2.46E-12 | 2.31E-12 | 3.87E-12 | 3.21E-12 |
| 2,3,7,8-TCDD | 1.96E-11 | 1.63E-11 | 1.57E-11 | 1.53E-11 | 6.74E-12 | 6.58E-12 | 7.61E-12 | 8.65E-12 | 1.93E-12 | 6.08E-12 | 2.72E-12 | 2.07E-12 | 1.50E-12 | 1.93E-12 | 2.51E-12 | 1.21E-12 | 2.48E-12 | 1.43E-12 | 1.24E-12 | 1.17E-12 | 1.96E-12 | 1.62E-12 |
| 2,3,7,8-TCDF | 9.72E-10 | 8.05E-10 | 7.80E-10 | 7.60E-10 | 3.34E-10 | 3.26E-10 | 3.77E-10 | 4.29E-10 | 9.55E-11 | 3.01E-10 | 1.35E-10 | 1.02E-10 | 7.43E-11 | 9.57E-11 | 1.25E-10 | 5.97E-11 | 1.23E-10 | 7.07E-11 | 6.16E-11 | 5.80E-11 | 9.70E-11 | 8.03E-11 |
| 2,3,4,6,7,8-HxCDF | 1.98E-11 | 1.64E-11 | 1.59E-11 | 1.55E-11 | 6.79E-12 | 6.62E-12 | 7.67E-12 | 8.72E-12 | 1.94E-12 | 6.13E-12 | 2.74E-12 | 2.08E-12 | 1.51E-12 | 1.95E-12 | 2.53E-12 | 1.21E-12 | 2.49E-12 | 1.44E-12 | 1.25E-12 | 1.18E-12 | 1.97E-12 | 1.63E-12 |
| 2,3,4,7,8-PeCDF | 2.31E-10 | 1.91E-10 | 1.85E-10 | 1.81E-10 | 7.94E-11 | 7.74E-11 | 8.97E-11 | 1.02E-10 | 2.27E-11 | 7.16E-11 | 3.20E-11 | 2.43E-11 | 1.77E-11 | 2.27E-11 | 2.96E-11 | 1.42E-11 | 2.92E-11 | 1.68E-11 | 1.46E-11 | 1.38E-11 | 2.31E-11 | 1.91E-11 |
| Acetaldehyde | 9.75E-03 | 8.08E-03 | 7.83E-03 | 7.62E-03 | 3.35E-03 | 3.27E-03 | 3.78E-03 | 4.30E-03 | 9.58E-04 | 3.02E-03 | 1.35E-03 | 1.03E-03 | 7.45E-04 | 9.60E-04 | 1.25E-03 | 5.99E-04 | 1.23E-03 | 7.09E-04 | 6.18E-04 | 5.81E-04 | 9.73E-04 | 8.06E-04 |
| Acrolein | 3.79E-04 | 3.14E-04 | 3.04E-04 | 2.97E-04 | 1.30E-04 | 1.27E-04 | 1.47E-04 | 1.67E-04 | 3.72E-05 | 1.18E-04 | 5.26E-05 | 3.99E-05 | 2.90E-05 | 3.73E-05 | 4.86E-05 | 2.33E-05 | 4.79E-05 | 2.76E-05 | 2.40E-05 | 2.26E-05 | 3.78E-05 | 3.13E-05 |
| Arsenic | 1.60E-05 | 1.61E-05 | 1.64E-05 | 1.64E-05 | 1.43E-05 | 1.38E-05 | 1.59E-05 | 2.80E-05 | 4.71E-06 | 1.59E-05 | 3.87E-06 | 4.21E-06 | 2.36E-06 | 4.27E-06 | 5.94E-06 | 3.08E-06 | 6.05E-06 | 3.12E-06 | 2.99E-06 | 2.81E-06 | 4.27E-06 | 3.38E-06 |
| Benz(a)anthracene | 1.10E-07 | 9.15E-08 | 8.87E-08 | 8.63E-08 | 3.80E-08 | 3.70E-08 | 4.29E-08 | 4.87E-08 | 1.08E-08 | 3.42E-08 | 1.53E-08 | 1.16E-08 | 8.44E-09 | 1.09E-08 | 1.41E-08 | 6.79E-09 | 1.39E-08 | 8.03E-09 | 7.00E-09 | 6.59E-09 | 1.10E-08 | 9.13E-09 |
| Benzo(a)pyrene | 2.48E-09 | 2.06E-09 | 1.99E-09 | 1.94E-09 | 8.54E-10 | 8.33E-10 | 9.64E-10 | 1.10E-09 | 2.44E-10 | 7.71E-10 | 3.45E-10 | 2.62E-10 | 1.90E-10 | 2.45E-10 | 3.18E-10 | 1.53E-10 | 3.14E-10 | 1.81E-10 | 1.57E-10 | 1.48E-10 | 2.48E-10 | 2.05E-10 |
| Benzo(b)fluoranthene | 1.57E-08 | 1.30E-08 | 1.26E-08 | 1.23E-08 | 5.39E-09 | 5.26E-09 | 6.09E-09 | 6.92E-09 | 1.54E-09 | 4.87E-09 | 2.18E-09 | 1.65E-09 | 1.20E-09 | 1.54E-09 | 2.01E-09 | 9.64E-10 | 1.98E-09 | 1.14E-09 | 9.94E-10 | 9.36E-10 | 1.57E-09 | 1.30E-09 |
| Benzo(k)fluoranthene | 2.48E-09 | 2.06E-09 | 1.99E-09 | 1.94E-09 | 8.54E-10 | 8.33E-10 | 9.64E-10 | 1.10E-09 | 2.44E-10 | 7.71E-10 | 3.45E-10 | 2.62E-10 | 1.90E-10 | 2.45E-10 | 3.18E-10 | 1.53E-10 | 3.14E-10 | 1.81E-10 | 1.57E-10 | 1.48E-10 | 2.48E-10 | 2.05E-10 |
| Benzene | 8.13E-02 | 6.74E-02 | 6.53E-02 | 6.36E-02 | 2.80E-02 | 2.73E-02 | 3.16E-02 | 3.59E-02 | 7.99E-03 | 2.52E-02 | 1.13E-02 | 8.57E-03 | 6.22E-03 | 8.01E-03 | 1.04E-02 | 5.00E-03 | 1.03E-02 | 5.92E-03 | 5.16E-03 | 4.85E-03 | 8.12E-03 | 6.72E-03 |
| Benzyl chloride | 8.53E-04 | 7.07E-04 | 6.85E-04 | 6.67E-04 | 2.93E-04 | 2.86E-04 | 3.31E-04 | 3.76E-04 | 8.38E-05 | 2.64E-04 | 1.18E-04 | 8.98E-05 | 6.52E-05 | 8.40E-05 | 1.09E-04 | 5.24E-05 | 1.08E-04 | 6.20E-05 | 5.41E-05 | 5.09E-05 | 8.51E-05 | 7.05E-05 |
| Beryllium | 5.52E-06 | 5.44E-06 | 5.53E-06 | 5.54E-06 | 4.37E-06 | 4.22E-06 | 4.89E-06 | 7.42E-06 | 1.39E-06 | 4.68E-06 | 1.23E-06 | 1.26E-06 | 7.36E-07 | 1.27E-06 | 1.76E-06 | 9.02E-07 | 1.79E-06 | 9.46E-07 | 8.97E-07 | 8.26E-07 | 1.26E-06 | 1.01E-06 |
| Cadmium | 7.53E-06 | 7.72E-06 | 7.86E-06 | 7.87E-06 | 6.82E-06 | 6.59E-06 | 7.61E-06 | 1.24E-05 | 2.23E-06 | 7.58E-06 | 1.85E-06 | 1.98E-06 | 1.13E-06 | 2.02E-06 | 2.84E-06 | 1.47E-06 | 2.89E-06 | 1.52E-06 | 1.45E-06 | 1.33E-06 | 2.00E-06 | 1.60E-06 |
| Carbon tetrachloride | 5.19E-04 | 4.30E-04 | 4.16E-04 | 4.06E-04 | 1.78E-04 | 1.74E-04 | 2.01E-04 | 2.29E-04 | 5.09E-05 | 1.61E-04 | 7.20E-05 | 5.46E-05 | 3.96E-05 | 5.11E-05 | 6.65E-05 | 3.19E-05 | 6.55E-05 | 3.77E-05 | 3.29E-05 | 3.09E-05 | 5.18E-05 | 4.29E-05 |
| Chlorobenzene | 4.66E-03 | 3.86E-03 | 3.74E-03 | 3.65E-03 | 1.60E-03 | 1.56E-03 | 1.81E-03 | 2.06E-03 | 4.58E-04 | 1.45E-03 | 6.47E-04 | 4.91E-04 | 3.56E-04 | 4.59E-04 | 5.98E-04 | 2.87E-04 | 5.89E-04 | 3.39E-04 | 2.96E-04 | 2.78E-04 | 4.65E-04 | 3.85E-04 |
| Chloroform | 2.41E-04 | 2.00E-04 | 1.94E-04 | 1.89E-04 | 8.29E-05 | 8.09E-05 | 9.36E-05 | 1.06E-04 | 2.37E-05 | 7.48E-05 | 3.35E-05 | 2.54E-05 | 1.84E-05 | 2.37E-05 | 3.09E-05 | 1.48E-05 | 3.05E-05 | 1.75E-05 | 1.53E-05 | 1.44E-05 | 2.41E-05 | 1.99E-05 |
| Chrysene | 3.25E-07 | 2.70E-07 | 2.61E-07 | 2.54E-07 | 1.12E-07 | 1.09E-07 | 1.26E-07 | 1.44E-07 | 3.20E-08 | 1.01E-07 | 4.51E-08 | 3.43E-08 | 2.49E-08 | 3.20E-08 | 4.17E-08 | 2.00E-08 | 4.11E-08 | 2.37E-08 | 2.06E-08 | 1.94E-08 | 3.25E-08 | 2.69E-08 |
| Copper | 1.10E-04 | 1.15E-04 | 1.19E-04 | 1.20E-04 | 1.12E-04 | 1.08E-04 | 1.24E-04 | 2.06E-04 | 3.68E-05 | 1.26E-04 | 2.91E-05 | 3.22E-05 | 1.79E-05 | 3.31E-05 | 4.66E-05 | 2.42E-05 | 4.76E-05 | 2.49E-05 | 2.40E-05 | 2.20E-05 | 3.27E-05 | 2.60E-05 |
| Chromium VI | 1.26E-05 | 1.31E-05 | 1.37E-05 | 1.43E-05 | 1.31E-05 | 1.26E-05 | 1.43E-05 | 2.93E-05 | 4.50E-06 | 1.39E-05 | 3.37E-06 | 3.89E-06 | 1.98E-06 | 3.97E-06 | 5.23E-06 | 2.70E-06 | 5.42E-06 | 2.41E-06 | 2.35E-06 | 2.49E-06 | 4.14E-06 | 3.13E-06 |
| Dibenz(a,h)anthracene | 2.48E-09 | 2.06E-09 | 1.99E-09 | 1.94E-09 | 8.54E-10 | 8.33E-10 | 9.64E-10 | 1.10E-09 | 2.44E-10 | 7.71E-10 | 3.45E-10 | 2.62E-10 | 1.90E-10 | 2.45E-10 | 3.18E-10 | 1.53E-10 | 3.14E-10 | 1.81E-10 | 1.57E-10 | 1.48E-10 | 2.48E-10 | 2.05E-10 |
| Diesel PM | 2.61E-04 | 4.23E-04 | 4.71E-04 | 4.96E-04 | 4.83E-04 | 4.64E-04 | 6.03E-04 | 9.11E-04 | 1.59E-04 | 5.21E-04 | 1.20E-04 | 1.30E-04 | 7.45E-05 | 1.40E-04 | 2.11E-04 | 1.01E-04 | 1.76E-04 | 9.32E-05 | 9.24E-05 | 9.47E-05 | 1.40E-04 | 1.28E-04 |
| Ethylene dibromide | 5.07E-04 | 4.20E-04 | 4.07E-04 | 3.97E-04 | 1.74E-04 | 1.70E-04 | 1.97E-04 | 2.24E-04 | 4.98E-05 | 1.57E-04 | 7.03E-05 | 5.34E-05 | 3.87E-05 | 4.99E-05 | 6.50E-05 | 3.12E-05 | 6.40E-05 | 3.69E-05 | 3.21E-05 | 3.02E-05 | 5.06E-05 | 4.19E-05 |
| Ethylene dichloride | 2.00E-04 | 1.66E-04 | 1.61E-04 | 1.57E-04 | 6.89E-05 | 6.72E-05 | 7.78E-05 | 8.84E-05 | 1.97E-05 | 6.22E-05 | 2.78E-05 | 2.11E-05 | 1.53E-05 | 1.97E-05 | 2.57E-05 | 1.23E-05 | 2.53E-05 | 1.46E-05 | 1.27E-05 | 1.20E-05 | 2.00E-05 | 1.66E-05 |
| Ethylbenzene | 8.08E-03 | 6.69E-03 | 6.49E-03 | 6.32E-03 | 2.78E-03 | 2.71E-03 | 3.14E-03 | 3.56E-03 | 7.93E-04 | 2.51E-03 | 1.12E-03 | 8.51E-04 | 6.17E-04 | 7.95E-04 | 1.03E-03 | 4.96E-04 | 1.02E-03 | 5.88E-04 | 5.12E-04 | 4.82E-04 | 8.06E-04 | 6.68E-04 |
| Ethyl chloride | 3.27E-04 | 2.71E-04 | 2.62E-04 | 2.56E-04 | 1.12E-04 | 1.10E-04 | 1.27E-04 | 1.44E-04 | 3.21E-05 | 1.01E-04 | 4.53E-05 | 3.44E-05 | 2.50E-05 | 3.22E-05 | 4.19E-05 | 2.01E-05 | 4.13E-05 | 2.38E-05 | 2.07E-05 | 1.95E-05 | 3.26E-05 | 2.70E-05 |
| Formaldehyde | 5.32E-04 | 4.41E-04 | 4.27E-04 | 4.16E-04 | 1.83E-04 | 1.78E-04 | 2.06E-04 | 2.35E-04 | 5.22E-05 | 1.65E-04 | 7.38E-05 | 5.60E-05 | 4.06E-05 | 5.23E-05 | 6.81E-05 | 3.27E-05 | 6.71E-05 | 3.87E-05 | 3.37E-05 | 3.17E-05 | 5.31E-05 | 4.39E-05 |
| Hydrochloric acid | 9.03E-01 | 7.49E-01 | 7.26E-01 | 7.07E-01 | 3.11E-01 | 3.03E-01 | 3.51E-01 | 3.99E-01 | 8.88E-02 | 2.80E-01 | 1.25E-01 | 9.52E-02 | 6.90E-02 | 8.90E-02 | 1.16E-01 | 5.55E-02 | 1.14E-01 | 6.57E-02 | 5.73E-02 | 5.39E-02 | 9.02E-02 | 7.47E-02 |
| Indeno(1,2,3-c,d)pyrene | 1.84E-09 | 1.53E-09 | 1.48E-09 | 1.44E-09 | 6.34E-10 | 6.19E-10 | 7.16E-10 | 8.14E-10 | 1.81E-10 | 5.72E-10 | 2.56E-10 | 1.94E-10 | 1.41E-10 | 1.82E-10 | 2.36E-10 | 1.13E-10 | 2.33E-10 | 1.34E-10 | 1.17E-10 | 1.10E-10 | 1.84E-10 | 1.52E-10 |

**TABLE 8B**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| **Chemical** | | | | | | | | | | | | | | | | | | | | | | |
| Lead | 1.44E-05 | 1.44E-05 | 1.48E-05 | 1.49E-05 | 1.22E-05 | 1.17E-05 | 1.36E-05 | 2.13E-05 | 3.88E-06 | 1.30E-05 | 3.31E-06 | 3.45E-06 | 1.97E-06 | 3.52E-06 | 4.77E-06 | 2.41E-06 | 4.93E-06 | 2.45E-06 | 2.33E-06 | 2.22E-06 | 3.52E-06 | 2.79E-06 |
| Manganese | 3.37E-05 | 2.79E-05 | 2.71E-05 | 2.64E-05 | 1.16E-05 | 1.13E-05 | 1.31E-05 | 1.49E-05 | 3.31E-06 | 1.05E-05 | 4.68E-06 | 3.55E-06 | 2.58E-06 | 3.32E-06 | 4.32E-06 | 2.07E-06 | 4.26E-06 | 2.45E-06 | 2.14E-06 | 2.01E-06 | 3.36E-06 | 2.79E-06 |
| Mercury | 1.08E-02 | 8.97E-03 | 8.69E-03 | 8.47E-03 | 3.72E-03 | 3.63E-03 | 4.20E-03 | 4.78E-03 | 1.06E-03 | 3.36E-03 | 1.50E-03 | 1.14E-03 | 8.27E-04 | 1.07E-03 | 1.39E-03 | 6.66E-04 | 1.37E-03 | 7.88E-04 | 6.86E-04 | 6.46E-04 | 1.08E-03 | 8.95E-04 |
| Methyl bromide | 5.27E-03 | 4.37E-03 | 4.23E-03 | 4.12E-03 | 1.81E-03 | 1.77E-03 | 2.05E-03 | 2.33E-03 | 5.18E-04 | 1.64E-03 | 7.32E-04 | 5.56E-04 | 4.03E-04 | 5.19E-04 | 6.76E-04 | 3.24E-04 | 6.66E-04 | 3.84E-04 | 3.34E-04 | 3.15E-04 | 5.26E-04 | 4.36E-04 |
| Methylene chloride | 1.09E-03 | 9.00E-04 | 8.73E-04 | 8.50E-04 | 3.74E-04 | 3.64E-04 | 4.22E-04 | 4.79E-04 | 1.07E-04 | 3.37E-04 | 1.51E-04 | 1.14E-04 | 8.30E-05 | 1.07E-04 | 1.39E-04 | 6.68E-05 | 1.37E-04 | 7.91E-05 | 6.89E-05 | 6.48E-05 | 1.08E-04 | 8.98E-05 |
| Naphthalene | 1.17E-03 | 9.68E-04 | 9.38E-04 | 9.13E-04 | 4.01E-04 | 3.92E-04 | 4.53E-04 | 5.15E-04 | 1.15E-04 | 3.62E-04 | 1.62E-04 | 1.23E-04 | 8.93E-05 | 1.15E-04 | 1.50E-04 | 7.18E-05 | 1.47E-04 | 8.50E-05 | 7.40E-05 | 6.97E-05 | 1.17E-04 | 9.65E-05 |
| Nickel | 3.17E-04 | 3.48E-04 | 3.53E-04 | 3.48E-04 | 3.04E-04 | 2.93E-04 | 3.43E-04 | 5.66E-04 | 1.00E-04 | 3.26E-04 | 8.62E-05 | 9.03E-05 | 5.35E-05 | 9.24E-05 | 1.24E-04 | 6.50E-05 | 1.27E-04 | 6.61E-05 | 6.30E-05 | 5.95E-05 | 9.15E-05 | 7.43E-05 |
| o-Xylene | 1.15E-02 | 9.50E-03 | 9.20E-03 | 8.96E-03 | 3.94E-03 | 3.84E-03 | 4.45E-03 | 5.06E-03 | 1.13E-03 | 3.56E-03 | 1.59E-03 | 1.21E-03 | 8.76E-04 | 1.13E-03 | 1.47E-03 | 7.05E-04 | 1.45E-03 | 8.34E-04 | 7.27E-04 | 6.84E-04 | 1.14E-03 | 9.47E-04 |
| p-Dichlorobenzene | 4.97E-04 | 4.12E-04 | 3.99E-04 | 3.89E-04 | 1.71E-04 | 1.67E-04 | 1.93E-04 | 2.19E-04 | 4.88E-05 | 1.54E-04 | 6.89E-05 | 5.23E-05 | 3.80E-05 | 4.89E-05 | 6.37E-05 | 3.05E-05 | 6.27E-05 | 3.61E-05 | 3.15E-05 | 2.96E-05 | 4.96E-05 | 4.11E-05 |
| Perchloroethylene | 4.47E-04 | 3.71E-04 | 3.59E-04 | 3.50E-04 | 1.54E-04 | 1.50E-04 | 1.74E-04 | 1.97E-04 | 4.40E-05 | 1.39E-04 | 6.21E-05 | 4.71E-05 | 3.42E-05 | 4.40E-05 | 5.73E-05 | 2.75E-05 | 5.65E-05 | 3.26E-05 | 2.84E-05 | 2.67E-05 | 4.47E-05 | 3.70E-05 |
| Selenium | 4.31E-05 | 3.82E-05 | 3.77E-05 | 3.70E-05 | 2.18E-05 | 2.11E-05 | 2.44E-05 | 3.40E-05 | 6.74E-06 | 2.19E-05 | 7.36E-06 | 6.55E-06 | 4.24E-06 | 6.40E-06 | 8.69E-06 | 4.39E-06 | 8.68E-06 | 4.83E-06 | 4.43E-06 | 4.10E-06 | 6.42E-06 | 5.22E-06 |
| Crystalline silica | 8.22E-03 | 1.04E-02 | 1.13E-02 | 1.17E-02 | 1.26E-02 | 1.22E-02 | 1.39E-02 | 1.96E-02 | 4.31E-03 | 1.40E-02 | 3.13E-03 | 3.61E-03 | 1.99E-03 | 3.80E-03 | 5.49E-03 | 3.01E-03 | 5.53E-03 | 3.17E-03 | 3.09E-03 | 2.66E-03 | 3.69E-03 | 2.99E-03 |
| Styrene | 2.05E-03 | 1.70E-03 | 1.64E-03 | 1.60E-03 | 7.04E-04 | 6.87E-04 | 7.95E-04 | 9.04E-04 | 2.01E-04 | 6.35E-04 | 2.84E-04 | 2.16E-04 | 1.57E-04 | 2.02E-04 | 2.62E-04 | 1.26E-04 | 2.59E-04 | 1.49E-04 | 1.30E-04 | 1.22E-04 | 2.04E-04 | 1.69E-04 |
| Trichloroethylene | 3.54E-04 | 2.94E-04 | 2.85E-04 | 2.77E-04 | 1.22E-04 | 1.19E-04 | 1.38E-04 | 1.56E-04 | 3.48E-05 | 1.10E-04 | 4.92E-05 | 3.73E-05 | 2.71E-05 | 3.49E-05 | 4.54E-05 | 2.18E-05 | 4.48E-05 | 2.58E-05 | 2.25E-05 | 2.11E-05 | 3.54E-05 | 2.93E-05 |
| 1,1,2,2-Tetrachloroethane | 3.40E-04 | 2.82E-04 | 2.73E-04 | 2.66E-04 | 1.17E-04 | 1.14E-04 | 1.32E-04 | 1.50E-04 | 3.34E-05 | 1.05E-04 | 4.72E-05 | 3.58E-05 | 2.60E-05 | 3.35E-05 | 4.36E-05 | 2.09E-05 | 4.29E-05 | 2.47E-05 | 2.15E-05 | 2.03E-05 | 3.39E-05 | 2.81E-05 |
| Toluene | 7.28E-02 | 6.03E-02 | 5.84E-02 | 5.69E-02 | 2.50E-02 | 2.44E-02 | 2.83E-02 | 3.21E-02 | 7.15E-03 | 2.26E-02 | 1.01E-02 | 7.67E-03 | 5.56E-03 | 7.17E-03 | 9.33E-03 | 4.47E-03 | 9.19E-03 | 5.30E-03 | 4.61E-03 | 4.34E-03 | 7.26E-03 | 6.02E-03 |
| Vanadium | 8.40E-04 | 9.40E-04 | 9.52E-04 | 9.37E-04 | 8.71E-04 | 8.40E-04 | 9.87E-04 | 1.75E-03 | 2.85E-04 | 9.57E-04 | 2.36E-04 | 2.56E-04 | 1.46E-04 | 2.62E-04 | 3.51E-04 | 1.80E-04 | 3.62E-04 | 1.77E-04 | 1.69E-04 | 1.66E-04 | 2.63E-04 | 2.10E-04 |
| Vinyl chloride | 1.20E-03 | 9.91E-04 | 9.60E-04 | 9.35E-04 | 4.11E-04 | 4.01E-04 | 4.64E-04 | 5.27E-04 | 1.17E-04 | 3.71E-04 | 1.66E-04 | 1.26E-04 | 9.14E-05 | 1.18E-04 | 1.53E-04 | 7.35E-05 | 1.51E-04 | 8.70E-05 | 7.58E-05 | 7.13E-05 | 1.19E-04 | 9.88E-05 |
| Vinylidene chloride | 3.27E-04 | 2.71E-04 | 2.62E-04 | 2.56E-04 | 1.12E-04 | 1.10E-04 | 1.27E-04 | 1.44E-04 | 3.21E-05 | 1.01E-04 | 4.53E-05 | 3.44E-05 | 2.50E-05 | 3.22E-05 | 4.19E-05 | 2.01E-05 | 4.13E-05 | 2.38E-05 | 2.07E-05 | 1.95E-05 | 3.26E-05 | 2.70E-05 |
| Xylenes (mixed) | 5.85E-02 | 4.85E-02 | 4.70E-02 | 4.58E-02 | 2.01E-02 | 1.96E-02 | 2.27E-02 | 2.58E-02 | 5.75E-03 | 1.82E-02 | 8.12E-03 | 6.17E-03 | 4.47E-03 | 5.76E-03 | 7.50E-03 | 3.60E-03 | 7.39E-03 | 4.26E-03 | 3.71E-03 | 3.49E-03 | 5.84E-03 | 4.84E-03 |

**TABLE 8B**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 1.82E-05 | 1.73E-05 | 1.84E-05 | 4.01E-05 | 1.46E-05 | 1.72E-05 | 1.87E-05 | 2.52E-05 | 3.00E-05 | 2.30E-05 | 1.76E-05 | 1.74E-05 | 1.74E-05 | 1.54E-05 | 2.04E-05 | 2.46E-05 | 1.21E-04 | 1.97E-04 | 1.06E-04 |
| 1,1,2-Trichloroethane | 3.04E-05 | 2.88E-05 | 3.07E-05 | 6.68E-05 | 2.43E-05 | 2.87E-05 | 3.12E-05 | 4.20E-05 | 5.00E-05 | 3.84E-05 | 2.94E-05 | 2.89E-05 | 2.90E-05 | 2.57E-05 | 3.40E-05 | 4.11E-05 | 2.02E-04 | 3.29E-04 | 1.77E-04 |
| 1,1-Dichloroethane | 1.13E-05 | 1.07E-05 | 1.14E-05 | 2.48E-05 | 9.00E-06 | 1.06E-05 | 1.16E-05 | 1.56E-05 | 1.86E-05 | 1.42E-05 | 1.09E-05 | 1.07E-05 | 1.08E-05 | 9.54E-06 | 1.26E-05 | 1.52E-05 | 7.49E-05 | 1.22E-04 | 6.56E-05 |
| 1,2-Dichloropropane | 1.54E-05 | 1.46E-05 | 1.56E-05 | 3.38E-05 | 1.23E-05 | 1.45E-05 | 1.58E-05 | 2.13E-05 | 2.53E-05 | 1.94E-05 | 1.49E-05 | 1.47E-05 | 1.47E-05 | 1.30E-05 | 1.72E-05 | 2.08E-05 | 1.02E-04 | 1.66E-04 | 8.95E-05 |
| 1,3-Butadiene | 5.23E-05 | 4.95E-05 | 5.28E-05 | 1.15E-04 | 4.17E-05 | 4.93E-05 | 5.36E-05 | 7.23E-05 | 8.60E-05 | 6.60E-05 | 5.05E-05 | 4.98E-05 | 4.99E-05 | 4.42E-05 | 5.84E-05 | 7.06E-05 | 3.47E-04 | 5.65E-04 | 3.04E-04 |
| 1,3-Dichloropropene | 6.33E-05 | 5.99E-05 | 6.39E-05 | 1.39E-04 | 5.05E-05 | 5.97E-05 | 6.48E-05 | 8.74E-05 | 1.04E-04 | 7.99E-05 | 6.11E-05 | 6.02E-05 | 6.04E-05 | 5.35E-05 | 7.06E-05 | 8.54E-05 | 4.20E-04 | 6.84E-04 | 3.68E-04 |
| 1,2,3,6,7,8-HxCDD | 1.51E-12 | 1.43E-12 | 1.53E-12 | 3.32E-12 | 1.21E-12 | 1.43E-12 | 1.55E-12 | 2.09E-12 | 2.49E-12 | 1.91E-12 | 1.46E-12 | 1.44E-12 | 1.44E-12 | 1.28E-12 | 1.69E-12 | 2.04E-12 | 1.00E-11 | 1.63E-11 | 8.78E-12 |
| 1,2,3,6,7,8-HxCDF | 2.17E-12 | 2.05E-12 | 2.19E-12 | 4.76E-12 | 1.73E-12 | 2.05E-12 | 2.22E-12 | 3.00E-12 | 3.57E-12 | 2.74E-12 | 2.09E-12 | 2.06E-12 | 2.07E-12 | 1.83E-12 | 2.42E-12 | 2.93E-12 | 1.44E-11 | 2.34E-11 | 1.26E-11 |
| 1,2,3,7,8-PeCDD | 1.35E-12 | 1.28E-12 | 1.37E-12 | 2.97E-12 | 1.08E-12 | 1.28E-12 | 1.39E-12 | 1.87E-12 | 2.23E-12 | 1.71E-12 | 1.31E-12 | 1.29E-12 | 1.29E-12 | 1.14E-12 | 1.51E-12 | 1.83E-12 | 8.99E-12 | 1.46E-11 | 7.87E-12 |
| 1,2,3,7,8-PeCDF | 1.04E-11 | 9.84E-12 | 1.05E-11 | 2.28E-11 | 8.30E-12 | 9.81E-12 | 1.07E-11 | 1.44E-11 | 1.71E-11 | 1.31E-11 | 1.00E-11 | 9.90E-12 | 9.93E-12 | 8.79E-12 | 1.16E-11 | 1.40E-11 | 6.91E-11 | 1.12E-10 | 6.04E-11 |
| 1,2,3,7,8,9-HxCDD | 1.56E-12 | 1.48E-12 | 1.58E-12 | 3.43E-12 | 1.24E-12 | 1.47E-12 | 1.60E-12 | 2.16E-12 | 2.57E-12 | 1.97E-12 | 1.51E-12 | 1.48E-12 | 1.49E-12 | 1.32E-12 | 1.74E-12 | 2.11E-12 | 1.04E-11 | 1.69E-11 | 9.06E-12 |
| 1,2,3,7,8,9-HxCDF | 7.30E-13 | 6.91E-13 | 7.37E-13 | 1.60E-12 | 5.82E-13 | 6.89E-13 | 7.48E-13 | 1.01E-12 | 1.20E-12 | 9.22E-13 | 7.05E-13 | 6.95E-13 | 6.97E-13 | 6.17E-13 | 8.15E-13 | 9.86E-13 | 4.85E-12 | 7.89E-12 | 4.24E-12 |
| 1,2,3,4,6,7,8-HpCDD | 5.47E-12 | 5.18E-12 | 5.53E-12 | 1.20E-11 | 4.37E-12 | 5.17E-12 | 5.61E-12 | 7.56E-12 | 9.00E-12 | 6.91E-12 | 5.29E-12 | 5.21E-12 | 5.23E-12 | 4.63E-12 | 6.11E-12 | 7.39E-12 | 3.64E-11 | 5.92E-11 | 3.18E-11 |
| 1,2,3,4,6,7,8-HpCDF | 2.66E-12 | 2.52E-12 | 2.68E-12 | 5.84E-12 | 2.12E-12 | 2.51E-12 | 2.72E-12 | 3.67E-12 | 4.37E-12 | 3.36E-12 | 2.57E-12 | 2.53E-12 | 2.54E-12 | 2.25E-12 | 2.97E-12 | 3.59E-12 | 1.77E-11 | 2.87E-11 | 1.54E-11 |
| 1,2,3,4,7,8-HxCDD | 1.53E-12 | 1.45E-12 | 1.55E-12 | 3.36E-12 | 1.22E-12 | 1.44E-12 | 1.57E-12 | 2.11E-12 | 2.52E-12 | 1.93E-12 | 1.48E-12 | 1.46E-12 | 1.46E-12 | 1.29E-12 | 1.71E-12 | 2.07E-12 | 1.02E-11 | 1.65E-11 | 8.89E-12 |
| 1,2,3,4,7,8-HxCDF | 2.31E-12 | 2.19E-12 | 2.34E-12 | 5.09E-12 | 1.85E-12 | 2.18E-12 | 2.37E-12 | 3.20E-12 | 3.81E-12 | 2.92E-12 | 2.24E-12 | 2.20E-12 | 2.21E-12 | 1.96E-12 | 2.58E-12 | 3.13E-12 | 1.54E-11 | 2.50E-11 | 1.35E-11 |
| 1,2,3,4,7,8,9-HpCDF | 6.85E-13 | 6.48E-13 | 6.92E-13 | 1.50E-12 | 5.46E-13 | 6.46E-13 | 7.01E-13 | 9.46E-13 | 1.13E-12 | 8.65E-13 | 6.62E-13 | 6.52E-13 | 6.54E-13 | 5.79E-13 | 7.65E-13 | 9.25E-13 | 4.55E-12 | 7.40E-12 | 3.98E-12 |
| 1,2,3,4,6,7,8,9-OCDD | 1.15E-11 | 1.09E-11 | 1.16E-11 | 2.52E-11 | 9.16E-12 | 1.08E-11 | 1.18E-11 | 1.59E-11 | 1.89E-11 | 1.45E-11 | 1.11E-11 | 1.09E-11 | 1.10E-11 | 9.70E-12 | 1.28E-11 | 1.55E-11 | 7.62E-11 | 1.24E-10 | 6.67E-11 |
| 1,2,3,4,6,7,8,9-OCDF | 2.62E-12 | 2.48E-12 | 2.65E-12 | 5.76E-12 | 2.09E-12 | 2.47E-12 | 2.68E-12 | 3.62E-12 | 4.31E-12 | 3.31E-12 | 2.53E-12 | 2.49E-12 | 2.50E-12 | 2.21E-12 | 2.92E-12 | 3.54E-12 | 1.74E-11 | 2.83E-11 | 1.52E-11 |
| 2,3,7,8-TCDD | 1.32E-12 | 1.25E-12 | 1.34E-12 | 2.91E-12 | 1.06E-12 | 1.25E-12 | 1.36E-12 | 1.83E-12 | 2.18E-12 | 1.67E-12 | 1.28E-12 | 1.26E-12 | 1.27E-12 | 1.12E-12 | 1.48E-12 | 1.79E-12 | 8.80E-12 | 1.43E-11 | 7.70E-12 |
| 2,3,7,8-TCDF | 6.56E-11 | 6.21E-11 | 6.63E-11 | 1.44E-10 | 5.24E-11 | 6.19E-11 | 6.72E-11 | 9.07E-11 | 1.08E-10 | 8.29E-11 | 6.34E-11 | 6.25E-11 | 6.27E-11 | 5.55E-11 | 7.33E-11 | 8.86E-11 | 4.36E-10 | 7.09E-10 | 3.81E-10 |
| 2,3,4,6,7,8-HxCDF | 1.33E-12 | 1.26E-12 | 1.35E-12 | 2.93E-12 | 1.06E-12 | 1.26E-12 | 1.37E-12 | 1.84E-12 | 2.19E-12 | 1.68E-12 | 1.29E-12 | 1.27E-12 | 1.27E-12 | 1.13E-12 | 1.49E-12 | 1.80E-12 | 8.86E-12 | 1.44E-11 | 7.75E-12 |
| 2,3,4,7,8-PeCDF | 1.56E-11 | 1.48E-11 | 1.58E-11 | 3.43E-11 | 1.24E-11 | 1.47E-11 | 1.60E-11 | 2.16E-11 | 2.57E-11 | 1.97E-11 | 1.51E-11 | 1.48E-11 | 1.49E-11 | 1.32E-11 | 1.74E-11 | 2.11E-11 | 1.04E-10 | 1.69E-10 | 9.06E-11 |
| Acetaldehyde | 6.58E-04 | 6.23E-04 | 6.65E-04 | 1.45E-03 | 5.25E-04 | 6.21E-04 | 6.74E-04 | 9.10E-04 | 1.08E-03 | 8.31E-04 | 6.36E-04 | 6.27E-04 | 6.29E-04 | 5.56E-04 | 7.35E-04 | 8.89E-04 | 4.37E-03 | 7.12E-03 | 3.83E-03 |
| Acrolein | 2.56E-05 | 2.42E-05 | 2.59E-05 | 5.63E-05 | 2.04E-05 | 2.42E-05 | 2.62E-05 | 3.54E-05 | 4.21E-05 | 3.23E-05 | 2.47E-05 | 2.44E-05 | 2.45E-05 | 2.16E-05 | 2.86E-05 | 3.46E-05 | 1.70E-04 | 2.77E-04 | 1.49E-04 |
| Arsenic | 2.79E-06 | 2.56E-06 | 2.64E-06 | 4.71E-06 | 3.11E-06 | 2.94E-06 | 3.07E-06 | 4.65E-06 | 6.39E-06 | 3.63E-06 | 2.54E-06 | 2.84E-06 | 2.52E-06 | 2.73E-06 | 2.46E-06 | 2.79E-06 | 2.94E-05 | 3.49E-05 | 1.27E-05 |
| Benz(a)anthracene | 7.45E-09 | 7.06E-09 | 7.53E-09 | 1.64E-08 | 5.95E-09 | 7.04E-09 | 7.64E-09 | 1.03E-08 | 1.23E-08 | 9.41E-09 | 7.20E-09 | 7.10E-09 | 7.12E-09 | 6.30E-09 | 8.32E-09 | 1.01E-08 | 4.95E-08 | 8.06E-08 | 4.33E-08 |
| Benzo(a)pyrene | 1.68E-10 | 1.59E-10 | 1.69E-10 | 3.69E-10 | 1.34E-10 | 1.58E-10 | 1.72E-10 | 2.32E-10 | 2.76E-10 | 2.12E-10 | 1.62E-10 | 1.60E-10 | 1.60E-10 | 1.42E-10 | 1.87E-10 | 2.27E-10 | 1.11E-09 | 1.81E-09 | 9.75E-10 |
| Benzo(b)fluoranthene | 1.06E-09 | 1.00E-09 | 1.07E-09 | 2.33E-09 | 8.45E-10 | 1.00E-09 | 1.09E-09 | 1.46E-09 | 1.74E-09 | 1.34E-09 | 1.02E-09 | 1.01E-09 | 1.01E-09 | 8.95E-10 | 1.18E-09 | 1.43E-09 | 7.04E-09 | 1.15E-08 | 6.16E-09 |
| Benzo(k)fluoranthene | 1.68E-10 | 1.59E-10 | 1.69E-10 | 3.69E-10 | 1.34E-10 | 1.58E-10 | 1.72E-10 | 2.32E-10 | 2.76E-10 | 2.12E-10 | 1.62E-10 | 1.60E-10 | 1.60E-10 | 1.42E-10 | 1.87E-10 | 2.27E-10 | 1.11E-09 | 1.81E-09 | 9.75E-10 |
| Benzene | 5.49E-03 | 5.20E-03 | 5.55E-03 | 1.21E-02 | 4.38E-03 | 5.18E-03 | 5.63E-03 | 7.59E-03 | 9.04E-03 | 6.94E-03 | 5.31E-03 | 5.23E-03 | 5.25E-03 | 4.64E-03 | 6.13E-03 | 7.42E-03 | 3.65E-02 | 5.94E-02 | 3.19E-02 |
| Benzyl chloride | 5.76E-05 | 5.45E-05 | 5.82E-05 | 1.27E-04 | 4.59E-05 | 5.43E-05 | 5.90E-05 | 7.96E-05 | 9.47E-05 | 7.27E-05 | 5.56E-05 | 5.48E-05 | 5.50E-05 | 4.87E-05 | 6.43E-05 | 7.78E-05 | 3.82E-04 | 6.23E-04 | 3.35E-04 |
| Beryllium | 8.31E-07 | 7.60E-07 | 7.94E-07 | 1.44E-06 | 8.98E-07 | 8.67E-07 | 9.08E-07 | 1.37E-06 | 1.87E-06 | 1.08E-06 | 7.64E-07 | 8.42E-07 | 7.47E-07 | 7.99E-07 | 7.45E-07 | 8.58E-07 | 7.75E-06 | 8.57E-06 | 4.05E-06 |
| Cadmium | 1.32E-06 | 1.20E-06 | 1.25E-06 | 2.21E-06 | 1.48E-06 | 1.40E-06 | 1.46E-06 | 2.22E-06 | 3.10E-06 | 1.71E-06 | 1.21E-06 | 1.35E-06 | 1.18E-06 | 1.29E-06 | 1.15E-06 | 1.31E-06 | 1.30E-05 | 1.51E-05 | 6.18E-06 |
| Carbon tetrachloride | 3.50E-05 | 3.31E-05 | 3.54E-05 | 7.70E-05 | 2.79E-05 | 3.31E-05 | 3.59E-05 | 4.84E-05 | 5.76E-05 | 4.42E-05 | 3.38E-05 | 3.33E-05 | 3.35E-05 | 2.96E-05 | 3.91E-05 | 4.73E-05 | 2.33E-04 | 3.79E-04 | 2.04E-04 |
| Chlorobenzene | 3.15E-04 | 2.98E-04 | 3.18E-04 | 6.92E-04 | 2.51E-04 | 2.97E-04 | 3.23E-04 | 4.35E-04 | 5.18E-04 | 3.98E-04 | 3.04E-04 | 3.00E-04 | 3.01E-04 | 2.66E-04 | 3.52E-04 | 4.25E-04 | 2.09E-03 | 3.40E-03 | 1.83E-03 |
| Chloroform | 1.63E-05 | 1.54E-05 | 1.64E-05 | 3.58E-05 | 1.30E-05 | 1.54E-05 | 1.67E-05 | 2.25E-05 | 2.68E-05 | 2.06E-05 | 1.57E-05 | 1.55E-05 | 1.56E-05 | 1.38E-05 | 1.82E-05 | 2.20E-05 | 1.08E-04 | 1.76E-04 | 9.46E-05 |
| Chrysene | 2.20E-08 | 2.08E-08 | 2.22E-08 | 4.83E-08 | 1.75E-08 | 2.07E-08 | 2.25E-08 | 3.04E-08 | 3.61E-08 | 2.77E-08 | 2.12E-08 | 2.09E-08 | 2.10E-08 | 1.86E-08 | 2.45E-08 | 2.97E-08 | 1.46E-07 | 2.38E-07 | 1.28E-07 |
| Copper | 2.16E-05 | 1.95E-05 | 2.03E-05 | 3.51E-05 | 2.47E-05 | 2.30E-05 | 2.38E-05 | 3.66E-05 | 5.17E-05 | 2.80E-05 | 1.96E-05 | 2.21E-05 | 1.91E-05 | 2.12E-05 | 1.83E-05 | 2.08E-05 | 2.17E-04 | 2.51E-04 | 9.82E-05 |
| Chromium VI | 2.49E-06 | 2.38E-06 | 2.33E-06 | 4.39E-06 | 2.77E-06 | 2.60E-06 | 2.74E-06 | 4.12E-06 | 5.24E-06 | 3.43E-06 | 2.17E-06 | 2.49E-06 | 2.31E-06 | 2.55E-06 | 2.22E-06 | 2.48E-06 | 3.07E-05 | 2.83E-05 | 1.18E-05 |
| Dibenz(a,h)anthracene | 1.68E-10 | 1.59E-10 | 1.69E-10 | 3.69E-10 | 1.34E-10 | 1.58E-10 | 1.72E-10 | 2.32E-10 | 2.76E-10 | 2.12E-10 | 1.62E-10 | 1.60E-10 | 1.60E-10 | 1.42E-10 | 1.87E-10 | 2.27E-10 | 1.11E-09 | 1.81E-09 | 9.75E-10 |
| Diesel PM | 8.89E-05 | 8.29E-05 | 8.60E-05 | 1.38E-04 | 1.06E-04 | 1.01E-04 | 8.36E-05 | 1.46E-04 | 2.09E-04 | 1.47E-04 | 7.92E-05 | 7.86E-05 | 8.81E-05 | 1.10E-04 | 7.15E-05 | 8.10E-05 | 9.40E-04 | 3.63E-04 | 5.00E-04 |
| Ethylene dibromide | 3.42E-05 | 3.24E-05 | 3.46E-05 | 7.52E-05 | 2.73E-05 | 3.23E-05 | 3.51E-05 | 4.73E-05 | 5.63E-05 | 4.32E-05 | 3.31E-05 | 3.26E-05 | 3.27E-05 | 2.89E-05 | 3.82E-05 | 4.62E-05 | 2.27E-04 | 3.70E-04 | 1.99E-04 |
| Ethylene dichloride | 1.35E-05 | 1.28E-05 | 1.37E-05 | 2.97E-05 | 1.08E-05 | 1.28E-05 | 1.39E-05 | 1.87E-05 | 2.23E-05 | 1.71E-05 | 1.31E-05 | 1.29E-05 | 1.29E-05 | 1.14E-05 | 1.51E-05 | 1.83E-05 | 8.99E-05 | 1.46E-04 | 7.87E-05 |
| Ethylbenzene | 5.45E-04 | 5.16E-04 | 5.51E-04 | 1.20E-03 | 4.35E-04 | 5.15E-04 | 5.59E-04 | 7.54E-04 | 8.97E-04 | 6.89E-04 | 5.27E-04 | 5.19E-04 | 5.21E-04 | 4.61E-04 | 6.09E-04 | 7.37E-04 | 3.62E-03 | 5.90E-03 | 3.17E-03 |
| Ethyl chloride | 2.21E-05 | 2.09E-05 | 2.23E-05 | 4.85E-05 | 1.76E-05 | 2.08E-05 | 2.26E-05 | 3.05E-05 | 3.63E-05 | 2.79E-05 | 2.13E-05 | 2.10E-05 | 2.11E-05 | 1.87E-05 | 2.46E-05 | 2.98E-05 | 1.47E-04 | 2.39E-04 | 1.28E-04 |
| Formaldehyde | 3.59E-05 | 3.40E-05 | 3.63E-05 | 7.89E-05 | 2.86E-05 | 3.39E-05 | 3.68E-05 | 4.96E-05 | 5.91E-05 | 4.53E-05 | 3.47E-05 | 3.42E-05 | 3.43E-05 | 3.03E-05 | 4.01E-05 | 4.85E-05 | 2.38E-04 | 3.88E-04 | 2.09E-04 |
| Hydrochloric acid | 6.10E-02 | 5.77E-02 | 6.16E-02 | 1.34E-01 | 4.87E-02 | 5.76E-02 | 6.25E-02 | 8.43E-02 | 1.00E-01 | 7.70E-02 | 5.90E-02 | 5.81E-02 | 5.83E-02 | 5.16E-02 | 6.81E-02 | 8.24E-02 | 4.05E-01 | 6.60E-01 | 3.55E-01 |
| Indeno(1,2,3-c,d)pyrene | 1.25E-10 | 1.18E-10 | 1.26E-10 | 2.74E-10 | 9.94E-11 | 1.18E-10 | 1.28E-10 | 1.72E-10 | 2.05E-10 | 1.57E-10 | 1.20E-10 | 1.19E-10 | 1.19E-10 | 1.05E-10 | 1.39E-10 | 1.68E-10 | 8.28E-10 | 1.35E-09 | 7.24E-10 |

**TABLE 8B**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 2.28E-06 | 2.09E-06 | 2.16E-06 | 3.94E-06 | 2.41E-06 | 2.33E-06 | 2.46E-06 | 3.71E-06 | 4.93E-06 | 3.00E-06 | 2.03E-06 | 2.28E-06 | 2.05E-06 | 2.22E-06 | 2.02E-06 | 2.32E-06 | 2.23E-05 | 2.38E-05 | 1.12E-05 |
| Manganese | 2.28E-06 | 2.15E-06 | 2.30E-06 | 5.00E-06 | 1.82E-06 | 2.15E-06 | 2.33E-06 | 3.15E-06 | 3.74E-06 | 2.87E-06 | 2.20E-06 | 2.17E-06 | 2.17E-06 | 1.92E-06 | 2.54E-06 | 3.07E-06 | 1.51E-05 | 2.46E-05 | 1.32E-05 |
| Mercury | 7.31E-04 | 6.92E-04 | 7.39E-04 | 1.61E-03 | 5.84E-04 | 6.90E-04 | 7.49E-04 | 1.01E-03 | 1.20E-03 | 9.23E-04 | 7.06E-04 | 6.96E-04 | 6.98E-04 | 6.18E-04 | 8.16E-04 | 9.87E-04 | 4.86E-03 | 7.91E-03 | 4.25E-03 |
| Methyl bromide | 3.56E-04 | 3.37E-04 | 3.60E-04 | 7.82E-04 | 2.84E-04 | 3.36E-04 | 3.65E-04 | 4.92E-04 | 5.86E-04 | 4.50E-04 | 3.44E-04 | 3.39E-04 | 3.40E-04 | 3.01E-04 | 3.98E-04 | 4.81E-04 | 2.37E-03 | 3.85E-03 | 2.07E-03 |
| Methylene chloride | 7.34E-05 | 6.94E-05 | 7.41E-05 | 1.61E-04 | 5.85E-05 | 6.93E-05 | 7.52E-05 | 1.01E-04 | 1.21E-04 | 9.27E-05 | 7.09E-05 | 6.98E-05 | 7.01E-05 | 6.20E-05 | 8.19E-05 | 9.91E-05 | 4.87E-04 | 7.93E-04 | 4.26E-04 |
| Naphthalene | 7.89E-05 | 7.46E-05 | 7.97E-05 | 1.73E-04 | 6.29E-05 | 7.44E-05 | 8.08E-05 | 1.09E-04 | 1.30E-04 | 9.96E-05 | 7.62E-05 | 7.51E-05 | 7.53E-05 | 6.67E-05 | 8.81E-05 | 1.07E-04 | 5.24E-04 | 8.53E-04 | 4.58E-04 |
| Nickel | 6.04E-05 | 5.60E-05 | 5.77E-05 | 1.04E-04 | 6.50E-05 | 6.23E-05 | 6.53E-05 | 9.71E-05 | 1.32E-04 | 7.91E-05 | 5.47E-05 | 6.05E-05 | 5.47E-05 | 5.86E-05 | 5.60E-05 | 6.15E-05 | 5.92E-04 | 5.92E-04 | 2.87E-04 |
| o-Xylene | 7.74E-04 | 7.32E-04 | 7.82E-04 | 1.70E-03 | 6.18E-04 | 7.30E-04 | 7.93E-04 | 1.07E-03 | 1.27E-03 | 9.77E-04 | 7.48E-04 | 7.37E-04 | 7.39E-04 | 6.54E-04 | 8.64E-04 | 1.05E-03 | 5.14E-03 | 8.37E-03 | 4.50E-03 |
| p-Dichlorobenzene | 3.35E-05 | 3.17E-05 | 3.39E-05 | 7.37E-05 | 2.68E-05 | 3.17E-05 | 3.44E-05 | 4.64E-05 | 5.52E-05 | 4.24E-05 | 3.24E-05 | 3.19E-05 | 3.20E-05 | 2.84E-05 | 3.75E-05 | 4.53E-05 | 2.23E-04 | 3.63E-04 | 1.95E-04 |
| Perchloroethylene | 3.02E-05 | 2.86E-05 | 3.05E-05 | 6.64E-05 | 2.41E-05 | 2.85E-05 | 3.10E-05 | 4.18E-05 | 4.97E-05 | 3.82E-05 | 2.92E-05 | 2.88E-05 | 2.89E-05 | 2.55E-05 | 3.37E-05 | 4.08E-05 | 2.01E-04 | 3.27E-04 | 1.76E-04 |
| Selenium | 4.29E-06 | 3.98E-06 | 4.20E-06 | 8.25E-06 | 4.18E-06 | 4.33E-06 | 4.59E-06 | 6.60E-06 | 8.68E-06 | 5.49E-06 | 4.05E-06 | 4.26E-06 | 3.96E-06 | 3.91E-06 | 4.25E-06 | 5.00E-06 | 3.52E-05 | 4.69E-05 | 2.24E-05 |
| Crystalline silica | 2.47E-03 | 2.19E-03 | 2.31E-03 | 3.71E-03 | 3.11E-03 | 2.77E-03 | 2.82E-03 | 4.42E-03 | 6.65E-03 | 3.22E-03 | 2.31E-03 | 2.62E-03 | 2.12E-03 | 2.48E-03 | 1.91E-03 | 2.20E-03 | 2.04E-02 | 1.89E-02 | 1.15E-02 |
| Styrene | 1.38E-04 | 1.31E-04 | 1.40E-04 | 3.04E-04 | 1.10E-04 | 1.31E-04 | 1.42E-04 | 1.91E-04 | 2.28E-04 | 1.75E-04 | 1.34E-04 | 1.32E-04 | 1.32E-04 | 1.17E-04 | 1.54E-04 | 1.87E-04 | 9.19E-04 | 1.50E-03 | 8.04E-04 |
| Trichloroethylene | 2.39E-05 | 2.27E-05 | 2.42E-05 | 5.26E-05 | 1.91E-05 | 2.26E-05 | 2.45E-05 | 3.31E-05 | 3.94E-05 | 3.02E-05 | 2.31E-05 | 2.28E-05 | 2.29E-05 | 2.02E-05 | 2.67E-05 | 3.23E-05 | 1.59E-04 | 2.59E-04 | 1.39E-04 |
| 1,1,2,2-Tetrachloroethane | 2.29E-05 | 2.17E-05 | 2.32E-05 | 5.04E-05 | 1.83E-05 | 2.17E-05 | 2.35E-05 | 3.17E-05 | 3.78E-05 | 2.90E-05 | 2.22E-05 | 2.18E-05 | 2.19E-05 | 1.94E-05 | 2.56E-05 | 3.10E-05 | 1.52E-04 | 2.48E-04 | 1.33E-04 |
| Toluene | 4.91E-03 | 4.65E-03 | 4.96E-03 | 1.08E-02 | 3.92E-03 | 4.64E-03 | 5.04E-03 | 6.79E-03 | 8.08E-03 | 6.21E-03 | 4.75E-03 | 4.68E-03 | 4.69E-03 | 4.15E-03 | 5.49E-03 | 6.64E-03 | 3.26E-02 | 5.31E-02 | 2.86E-02 |
| Vanadium | 1.70E-04 | 1.59E-04 | 1.61E-04 | 2.91E-04 | 1.81E-04 | 1.74E-04 | 1.83E-04 | 2.74E-04 | 3.60E-04 | 2.24E-04 | 1.51E-04 | 1.70E-04 | 1.55E-04 | 1.66E-04 | 1.58E-04 | 1.71E-04 | 1.83E-03 | 1.89E-03 | 7.88E-04 |
| Vinyl chloride | 8.07E-05 | 7.64E-05 | 8.15E-05 | 1.77E-04 | 6.44E-05 | 7.62E-05 | 8.27E-05 | 1.12E-04 | 1.33E-04 | 1.02E-04 | 7.80E-05 | 7.68E-05 | 7.71E-05 | 6.82E-05 | 9.01E-05 | 1.09E-04 | 5.36E-04 | 8.73E-04 | 4.69E-04 |
| Vinylidene chloride | 2.21E-05 | 2.09E-05 | 2.23E-05 | 4.85E-05 | 1.76E-05 | 2.08E-05 | 2.26E-05 | 3.05E-05 | 3.63E-05 | 2.79E-05 | 2.13E-05 | 2.10E-05 | 2.11E-05 | 1.87E-05 | 2.46E-05 | 2.98E-05 | 1.47E-04 | 2.39E-04 | 1.28E-04 |
| Xylenes (mixed) | 3.95E-03 | 3.74E-03 | 3.99E-03 | 8.69E-03 | 3.15E-03 | 3.73E-03 | 4.05E-03 | 5.46E-03 | 6.50E-03 | 4.99E-03 | 3.82E-03 | 3.76E-03 | 3.78E-03 | 3.34E-03 | 4.41E-03 | 5.34E-03 | 2.63E-02 | 4.27E-02 | 2.30E-02 |

Note

1. Receptor identifier in the HARP model.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 8C**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 2.83E-04 | 2.35E-04 | 2.27E-04 | 2.22E-04 | 9.74E-05 | 9.50E-05 | 1.10E-04 | 1.25E-04 | 2.78E-05 | 8.79E-05 | 3.93E-05 | 2.98E-05 | 2.16E-05 | 2.79E-05 | 3.63E-05 | 1.74E-05 | 3.58E-05 | 2.06E-05 | 1.80E-05 | 1.69E-05 | 2.83E-05 | 2.34E-05 |
| 1,1,2-Trichloroethane | 4.72E-04 | 3.91E-04 | 3.79E-04 | 3.69E-04 | 1.62E-04 | 1.58E-04 | 1.83E-04 | 2.08E-04 | 4.64E-05 | 1.46E-04 | 6.55E-05 | 4.97E-05 | 3.61E-05 | 4.65E-05 | 6.05E-05 | 2.90E-05 | 5.96E-05 | 3.43E-05 | 2.99E-05 | 2.82E-05 | 4.71E-05 | 3.90E-05 |
| 1,1-Dichloroethane | 1.74E-04 | 1.44E-04 | 1.40E-04 | 1.36E-04 | 5.99E-05 | 5.85E-05 | 6.77E-05 | 7.69E-05 | 1.71E-05 | 5.41E-05 | 2.42E-05 | 1.84E-05 | 1.33E-05 | 1.72E-05 | 2.23E-05 | 1.07E-05 | 2.20E-05 | 1.27E-05 | 1.10E-05 | 1.04E-05 | 1.74E-05 | 1.44E-05 |
| 1,2-Dichloropropane | 2.40E-04 | 1.99E-04 | 1.92E-04 | 1.87E-04 | 8.24E-05 | 8.04E-05 | 9.31E-05 | 1.06E-04 | 2.35E-05 | 7.43E-05 | 3.33E-05 | 2.53E-05 | 1.83E-05 | 2.36E-05 | 3.07E-05 | 1.47E-05 | 3.03E-05 | 1.74E-05 | 1.52E-05 | 1.43E-05 | 2.39E-05 | 1.98E-05 |
| 1,3-Butadiene | 8.11E-04 | 6.72E-04 | 6.51E-04 | 6.34E-04 | 2.79E-04 | 2.72E-04 | 3.15E-04 | 3.58E-04 | 7.96E-05 | 2.51E-04 | 1.12E-04 | 8.54E-05 | 6.19E-05 | 7.98E-05 | 1.04E-04 | 4.98E-05 | 1.02E-04 | 5.90E-05 | 5.14E-05 | 4.83E-05 | 8.09E-05 | 6.70E-05 |
| 1,3-Dichloropropene | 9.80E-04 | 8.13E-04 | 7.87E-04 | 7.67E-04 | 3.37E-04 | 3.29E-04 | 3.81E-04 | 4.33E-04 | 9.63E-05 | 3.04E-04 | 1.36E-04 | 1.03E-04 | 7.49E-05 | 9.65E-05 | 1.26E-04 | 6.03E-05 | 1.24E-04 | 7.13E-05 | 6.22E-05 | 5.85E-05 | 9.79E-05 | 8.11E-05 |
| 1,2,3,6,7,8-HxCDD | 2.34E-11 | 1.94E-11 | 1.88E-11 | 1.83E-11 | 8.04E-12 | 7.84E-12 | 9.08E-12 | 1.03E-11 | 2.30E-12 | 7.25E-12 | 3.24E-12 | 2.46E-12 | 1.79E-12 | 2.30E-12 | 3.00E-12 | 1.44E-12 | 2.95E-12 | 1.70E-12 | 1.48E-12 | 1.40E-12 | 2.33E-12 | 1.93E-12 |
| 1,2,3,6,7,8-HxCDF | 3.36E-11 | 2.78E-11 | 2.69E-11 | 2.62E-11 | 1.15E-11 | 1.13E-11 | 1.30E-11 | 1.48E-11 | 3.30E-12 | 1.04E-11 | 4.66E-12 | 3.54E-12 | 2.56E-12 | 3.30E-12 | 4.30E-12 | 2.06E-12 | 4.24E-12 | 2.44E-12 | 2.13E-12 | 2.00E-12 | 3.35E-12 | 2.77E-12 |
| 1,2,3,7,8-PeCDD | 2.09E-11 | 1.73E-11 | 1.68E-11 | 1.64E-11 | 7.19E-12 | 7.01E-12 | 8.12E-12 | 9.23E-12 | 2.06E-12 | 6.49E-12 | 2.90E-12 | 2.20E-12 | 1.60E-12 | 2.06E-12 | 2.68E-12 | 1.29E-12 | 2.64E-12 | 1.52E-12 | 1.33E-12 | 1.25E-12 | 2.09E-12 | 1.73E-12 |
| 1,2,3,7,8-PeCDF | 1.61E-10 | 1.34E-10 | 1.29E-10 | 1.26E-10 | 5.54E-11 | 5.41E-11 | 6.26E-11 | 7.11E-11 | 1.58E-11 | 5.00E-11 | 2.24E-11 | 1.70E-11 | 1.23E-11 | 1.59E-11 | 2.07E-11 | 9.91E-12 | 2.04E-11 | 1.17E-11 | 1.02E-11 | 9.62E-12 | 1.61E-11 | 1.33E-11 |
| 1,2,3,7,8,9-HxCDD | 2.43E-11 | 2.01E-11 | 1.95E-11 | 1.90E-11 | 8.34E-12 | 8.13E-12 | 9.42E-12 | 1.07E-11 | 2.38E-12 | 7.52E-12 | 3.37E-12 | 2.56E-12 | 1.85E-12 | 2.39E-12 | 3.11E-12 | 1.49E-12 | 3.06E-12 | 1.77E-12 | 1.54E-12 | 1.45E-12 | 2.42E-12 | 2.01E-12 |
| 1,2,3,7,8,9-HxCDF | 1.13E-11 | 9.38E-12 | 9.09E-12 | 8.85E-12 | 3.89E-12 | 3.79E-12 | 4.39E-12 | 4.99E-12 | 1.11E-12 | 3.51E-12 | 1.57E-12 | 1.19E-12 | 8.65E-13 | 1.11E-12 | 1.45E-12 | 6.96E-13 | 1.43E-12 | 8.23E-13 | 7.17E-13 | 6.75E-13 | 1.13E-12 | 9.35E-13 |
| 1,2,3,4,6,7,8-HpCDD | 8.50E-11 | 7.04E-11 | 6.82E-11 | 6.65E-11 | 2.92E-11 | 2.85E-11 | 3.30E-11 | 3.75E-11 | 8.35E-12 | 2.64E-11 | 1.18E-11 | 8.95E-12 | 6.49E-12 | 8.37E-12 | 1.09E-11 | 5.22E-12 | 1.07E-11 | 6.18E-12 | 5.39E-12 | 5.07E-12 | 8.48E-12 | 7.02E-12 |
| 1,2,3,4,6,7,8-HpCDF | 4.13E-11 | 3.42E-11 | 3.31E-11 | 3.23E-11 | 1.42E-11 | 1.38E-11 | 1.60E-11 | 1.82E-11 | 4.05E-12 | 1.28E-11 | 5.72E-12 | 4.35E-12 | 3.15E-12 | 4.06E-12 | 5.29E-12 | 2.54E-12 | 5.21E-12 | 3.00E-12 | 2.62E-12 | 2.46E-12 | 4.12E-12 | 3.41E-12 |
| 1,2,3,4,7,8-HxCDD | 2.37E-11 | 1.96E-11 | 1.90E-11 | 1.85E-11 | 8.14E-12 | 7.94E-12 | 9.19E-12 | 1.04E-11 | 2.33E-12 | 7.34E-12 | 3.29E-12 | 2.49E-12 | 1.81E-12 | 2.33E-12 | 3.03E-12 | 1.46E-12 | 2.99E-12 | 1.72E-12 | 1.50E-12 | 1.41E-12 | 2.36E-12 | 1.96E-12 |
| 1,2,3,4,7,8-HxCDF | 3.59E-11 | 2.97E-11 | 2.88E-11 | 2.81E-11 | 1.23E-11 | 1.20E-11 | 1.39E-11 | 1.58E-11 | 3.52E-12 | 1.11E-11 | 4.98E-12 | 3.78E-12 | 2.74E-12 | 3.53E-12 | 4.60E-12 | 2.21E-12 | 4.53E-12 | 2.61E-12 | 2.27E-12 | 2.14E-12 | 3.58E-12 | 2.97E-12 |
| 1,2,3,4,7,8,9-HpCDF | 1.06E-11 | 8.80E-12 | 8.53E-12 | 8.30E-12 | 3.65E-12 | 3.56E-12 | 4.12E-12 | 4.68E-12 | 1.04E-12 | 3.29E-12 | 1.47E-12 | 1.12E-12 | 8.11E-13 | 1.05E-12 | 1.36E-12 | 6.53E-13 | 1.34E-12 | 7.73E-13 | 6.73E-13 | 6.33E-13 | 1.06E-12 | 8.78E-13 |
| 1,2,3,4,6,7,8,9-OCDD | 1.79E-10 | 1.48E-10 | 1.43E-10 | 1.40E-10 | 6.14E-11 | 5.99E-11 | 6.94E-11 | 7.88E-11 | 1.76E-11 | 5.54E-11 | 2.48E-11 | 1.88E-11 | 1.37E-11 | 1.76E-11 | 2.29E-11 | 1.10E-11 | 2.26E-11 | 1.30E-11 | 1.13E-11 | 1.07E-11 | 1.78E-11 | 1.48E-11 |
| 1,2,3,4,6,7,8,9-OCDF | 4.07E-11 | 3.37E-11 | 3.27E-11 | 3.18E-11 | 1.40E-11 | 1.36E-11 | 1.58E-11 | 1.79E-11 | 4.00E-12 | 1.26E-11 | 5.64E-12 | 4.29E-12 | 3.11E-12 | 4.00E-12 | 5.21E-12 | 2.50E-12 | 5.14E-12 | 2.96E-12 | 2.58E-12 | 2.43E-12 | 4.06E-12 | 3.36E-12 |
| 2,3,7,8-TCDD | 2.05E-11 | 1.70E-11 | 1.64E-11 | 1.60E-11 | 7.04E-12 | 6.87E-12 | 7.95E-12 | 9.04E-12 | 2.01E-12 | 6.35E-12 | 2.84E-12 | 2.16E-12 | 1.57E-12 | 2.02E-12 | 2.62E-12 | 1.26E-12 | 2.59E-12 | 1.49E-12 | 1.30E-12 | 1.22E-12 | 2.04E-12 | 1.69E-12 |
| 2,3,7,8-TCDF | 1.02E-09 | 8.43E-10 | 8.17E-10 | 7.95E-10 | 3.50E-10 | 3.41E-10 | 3.95E-10 | 4.49E-10 | 9.99E-11 | 3.15E-10 | 1.41E-10 | 1.07E-10 | 7.77E-11 | 1.00E-10 | 1.30E-10 | 6.25E-11 | 1.28E-10 | 7.40E-11 | 6.45E-11 | 6.07E-11 | 1.01E-10 | 8.41E-11 |
| 2,3,4,6,7,8-HxCDF | 2.06E-11 | 1.71E-11 | 1.66E-11 | 1.61E-11 | 7.09E-12 | 6.92E-12 | 8.01E-12 | 9.10E-12 | 2.03E-12 | 6.40E-12 | 2.86E-12 | 2.17E-12 | 1.58E-12 | 2.03E-12 | 2.64E-12 | 1.27E-12 | 2.60E-12 | 1.50E-12 | 1.31E-12 | 1.23E-12 | 2.06E-12 | 1.71E-12 |
| 2,3,4,7,8-PeCDF | 2.43E-10 | 2.01E-10 | 1.95E-10 | 1.90E-10 | 8.34E-11 | 8.13E-11 | 9.42E-11 | 1.07E-10 | 2.38E-11 | 7.52E-11 | 3.37E-11 | 2.56E-11 | 1.85E-11 | 2.39E-11 | 3.11E-11 | 1.49E-11 | 3.06E-11 | 1.77E-11 | 1.54E-11 | 1.45E-11 | 2.42E-11 | 2.01E-11 |
| Acetaldehyde | 1.02E-02 | 8.46E-03 | 8.20E-03 | 7.99E-03 | 3.51E-03 | 3.42E-03 | 3.96E-03 | 4.51E-03 | 1.00E-03 | 3.17E-03 | 1.42E-03 | 1.08E-03 | 7.80E-04 | 1.01E-03 | 1.31E-03 | 6.28E-04 | 1.29E-03 | 7.43E-04 | 6.47E-04 | 6.09E-04 | 1.02E-03 | 8.44E-04 |
| Acrolein | 3.97E-04 | 3.29E-04 | 3.18E-04 | 3.10E-04 | 1.36E-04 | 1.33E-04 | 1.54E-04 | 1.75E-04 | 3.90E-05 | 1.23E-04 | 5.50E-05 | 4.18E-05 | 3.03E-05 | 3.90E-05 | 5.08E-05 | 2.44E-05 | 5.01E-05 | 2.89E-05 | 2.51E-05 | 2.37E-05 | 3.96E-05 | 3.28E-05 |
| Arsenic | 1.67E-05 | 1.68E-05 | 1.71E-05 | 1.71E-05 | 1.49E-05 | 1.43E-05 | 1.66E-05 | 2.92E-05 | 4.90E-06 | 1.66E-05 | 4.04E-06 | 4.39E-06 | 2.45E-06 | 4.44E-06 | 6.18E-06 | 3.21E-06 | 6.30E-06 | 3.24E-06 | 3.11E-06 | 2.92E-06 | 4.45E-06 | 3.52E-06 |
| Benz(a)anthracene | 1.16E-07 | 9.58E-08 | 9.29E-08 | 9.04E-08 | 3.97E-08 | 3.88E-08 | 4.49E-08 | 5.10E-08 | 1.14E-08 | 3.59E-08 | 1.60E-08 | 1.22E-08 | 8.84E-09 | 1.14E-08 | 1.48E-08 | 7.11E-09 | 1.46E-08 | 8.41E-09 | 7.33E-09 | 6.90E-09 | 1.15E-08 | 9.56E-09 |
| Benzo(a)pyrene | 2.60E-09 | 2.15E-09 | 2.09E-09 | 2.03E-09 | 8.94E-10 | 8.72E-10 | 1.01E-09 | 1.15E-09 | 2.55E-10 | 8.07E-10 | 3.61E-10 | 2.74E-10 | 1.99E-10 | 2.56E-10 | 3.33E-10 | 1.60E-10 | 3.28E-10 | 1.89E-10 | 1.65E-10 | 1.55E-10 | 2.60E-10 | 2.15E-10 |
| Benzo(b)fluoranthene | 1.66E-08 | 1.37E-08 | 1.33E-08 | 1.30E-08 | 5.69E-09 | 5.55E-09 | 6.43E-09 | 7.31E-09 | 1.63E-09 | 5.14E-09 | 2.30E-09 | 1.74E-09 | 1.27E-09 | 1.63E-09 | 2.12E-09 | 1.02E-09 | 2.09E-09 | 1.20E-09 | 1.05E-09 | 9.88E-10 | 1.65E-09 | 1.37E-09 |
| Benzo(k)fluoranthene | 2.60E-09 | 2.15E-09 | 2.09E-09 | 2.03E-09 | 8.94E-10 | 8.72E-10 | 1.01E-09 | 1.15E-09 | 2.55E-10 | 8.07E-10 | 3.61E-10 | 2.74E-10 | 1.99E-10 | 2.56E-10 | 3.33E-10 | 1.60E-10 | 3.28E-10 | 1.89E-10 | 1.65E-10 | 1.55E-10 | 2.60E-10 | 2.15E-10 |
| Benzene | 8.51E-02 | 7.05E-02 | 6.84E-02 | 6.66E-02 | 2.93E-02 | 2.85E-02 | 3.31E-02 | 3.76E-02 | 8.36E-03 | 2.64E-02 | 1.18E-02 | 8.97E-03 | 6.51E-03 | 8.38E-03 | 1.09E-02 | 5.23E-03 | 1.07E-02 | 6.19E-03 | 5.40E-03 | 5.08E-03 | 8.50E-03 | 7.04E-03 |
| Benzyl chloride | 8.92E-04 | 7.39E-04 | 7.16E-04 | 6.98E-04 | 3.07E-04 | 2.99E-04 | 3.46E-04 | 3.93E-04 | 8.76E-05 | 2.77E-04 | 1.24E-04 | 9.40E-05 | 6.82E-05 | 8.78E-05 | 1.14E-04 | 5.48E-05 | 1.13E-04 | 6.49E-05 | 5.65E-05 | 5.32E-05 | 8.90E-05 | 7.37E-05 |
| Beryllium | 5.75E-06 | 5.66E-06 | 5.75E-06 | 5.75E-06 | 4.52E-06 | 4.37E-06 | 5.06E-06 | 7.70E-06 | 1.44E-06 | 4.84E-06 | 1.28E-06 | 1.30E-06 | 7.64E-07 | 1.32E-06 | 1.82E-06 | 9.36E-07 | 1.85E-06 | 9.82E-07 | 9.31E-07 | 8.57E-07 | 1.31E-06 | 1.05E-06 |
| Cadmium | 7.84E-06 | 8.03E-06 | 8.17E-06 | 8.18E-06 | 7.07E-06 | 6.83E-06 | 7.90E-06 | 1.28E-05 | 2.31E-06 | 7.86E-06 | 1.92E-06 | 2.06E-06 | 1.17E-06 | 2.10E-06 | 2.95E-06 | 1.52E-06 | 3.00E-06 | 1.58E-06 | 1.51E-06 | 1.38E-06 | 2.08E-06 | 1.66E-06 |
| Carbon tetrachloride | 5.43E-04 | 4.50E-04 | 4.36E-04 | 4.25E-04 | 1.87E-04 | 1.82E-04 | 2.11E-04 | 2.40E-04 | 5.34E-05 | 1.69E-04 | 7.54E-05 | 5.72E-05 | 4.15E-05 | 5.35E-05 | 6.96E-05 | 3.34E-05 | 6.86E-05 | 3.95E-05 | 3.44E-05 | 3.24E-05 | 5.42E-05 | 4.49E-05 |
| Chlorobenzene | 4.89E-03 | 4.06E-03 | 3.93E-03 | 3.83E-03 | 1.68E-03 | 1.64E-03 | 1.90E-03 | 2.16E-03 | 4.81E-04 | 1.52E-03 | 6.79E-04 | 5.16E-04 | 3.74E-04 | 4.82E-04 | 6.27E-04 | 3.01E-04 | 6.18E-04 | 3.56E-04 | 3.10E-04 | 2.92E-04 | 4.89E-04 | 4.05E-04 |
| Chloroform | 2.53E-04 | 2.09E-04 | 2.03E-04 | 1.98E-04 | 8.69E-05 | 8.48E-05 | 9.81E-05 | 1.12E-04 | 2.48E-05 | 7.84E-05 | 3.51E-05 | 2.66E-05 | 1.93E-05 | 2.49E-05 | 3.24E-05 | 1.55E-05 | 3.19E-05 | 1.84E-05 | 1.60E-05 | 1.51E-05 | 2.52E-05 | 2.09E-05 |
| Chrysene | 3.41E-07 | 2.83E-07 | 2.74E-07 | 2.67E-07 | 1.17E-07 | 1.14E-07 | 1.33E-07 | 1.51E-07 | 3.35E-08 | 1.06E-07 | 4.74E-08 | 3.60E-08 | 2.61E-08 | 3.36E-08 | 4.37E-08 | 2.10E-08 | 4.31E-08 | 2.48E-08 | 2.16E-08 | 2.04E-08 | 3.41E-08 | 2.82E-08 |
| Copper | 1.14E-04 | 1.20E-04 | 1.24E-04 | 1.25E-04 | 1.16E-04 | 1.12E-04 | 1.29E-04 | 2.15E-04 | 3.82E-05 | 1.30E-04 | 3.02E-05 | 3.35E-05 | 1.86E-05 | 3.43E-05 | 4.84E-05 | 2.52E-05 | 4.94E-05 | 2.58E-05 | 2.49E-05 | 2.28E-05 | 3.39E-05 | 2.70E-05 |
| Chromium VI | 1.31E-05 | 1.37E-05 | 1.42E-05 | 1.49E-05 | 1.36E-05 | 1.31E-05 | 1.49E-05 | 3.06E-05 | 4.69E-06 | 1.44E-05 | 3.52E-06 | 4.06E-06 | 2.07E-06 | 4.14E-06 | 5.46E-06 | 2.81E-06 | 5.65E-06 | 2.51E-06 | 2.45E-06 | 2.60E-06 | 4.32E-06 | 3.27E-06 |
| Dibenz(a,h)anthracene | 2.60E-09 | 2.15E-09 | 2.09E-09 | 2.03E-09 | 8.94E-10 | 8.72E-10 | 1.01E-09 | 1.15E-09 | 2.55E-10 | 8.07E-10 | 3.61E-10 | 2.74E-10 | 1.99E-10 | 2.56E-10 | 3.33E-10 | 1.60E-10 | 3.28E-10 | 1.89E-10 | 1.65E-10 | 1.55E-10 | 2.60E-10 | 2.15E-10 |
| Diesel PM | 2.61E-04 | 4.23E-04 | 4.71E-04 | 4.96E-04 | 4.83E-04 | 4.64E-04 | 6.03E-04 | 9.11E-04 | 1.59E-04 | 5.21E-04 | 1.20E-04 | 1.30E-04 | 7.45E-05 | 1.40E-04 | 2.11E-04 | 1.01E-04 | 1.76E-04 | 9.32E-05 | 9.24E-05 | 9.47E-05 | 1.40E-04 | 1.28E-04 |
| Ethylene dibromide | 5.32E-04 | 4.41E-04 | 4.27E-04 | 4.16E-04 | 1.83E-04 | 1.78E-04 | 2.06E-04 | 2.35E-04 | 5.22E-05 | 1.65E-04 | 7.38E-05 | 5.60E-05 | 4.06E-05 | 5.23E-05 | 6.81E-05 | 3.27E-05 | 6.71E-05 | 3.87E-05 | 3.37E-05 | 3.17E-05 | 5.31E-05 | 4.39E-05 |
| Ethylene dichloride | 2.09E-04 | 1.73E-04 | 1.68E-04 | 1.64E-04 | 7.19E-05 | 7.01E-05 | 8.12E-05 | 9.23E-05 | 2.06E-05 | 6.49E-05 | 2.90E-05 | 2.20E-05 | 1.60E-05 | 2.06E-05 | 2.68E-05 | 1.29E-05 | 2.64E-05 | 1.52E-05 | 1.33E-05 | 1.25E-05 | 2.09E-05 | 1.73E-05 |
| Ethylbenzene | 8.47E-03 | 7.02E-03 | 6.80E-03 | 6.62E-03 | 2.91E-03 | 2.84E-03 | 3.29E-03 | 3.74E-03 | 8.32E-04 | 2.63E-03 | 1.17E-03 | 8.92E-04 | 6.47E-04 | 8.34E-04 | 1.09E-03 | 5.21E-04 | 1.07E-03 | 6.16E-04 | 5.37E-04 | 5.05E-04 | 8.45E-04 | 7.00E-04 |
| Ethyl chloride | 3.41E-04 | 2.83E-04 | 2.74E-04 | 2.67E-04 | 1.17E-04 | 1.14E-04 | 1.33E-04 | 1.51E-04 | 3.35E-05 | 1.06E-04 | 4.74E-05 | 3.60E-05 | 2.61E-05 | 3.36E-05 | 4.37E-05 | 2.10E-05 | 4.31E-05 | 2.48E-05 | 2.16E-05 | 2.04E-05 | 3.41E-05 | 2.82E-05 |
| Formaldehyde | 5.56E-04 | 4.61E-04 | 4.47E-04 | 4.35E-04 | 1.91E-04 | 1.87E-04 | 2.16E-04 | 2.45E-04 | 5.47E-05 | 1.73E-04 | 7.72E-05 | 5.86E-05 | 4.25E-05 | 5.48E-05 | 7.13E-05 | 3.42E-05 | 7.03E-05 | 4.05E-05 | 3.53E-05 | 3.32E-05 | 5.55E-05 | 4.60E-05 |
| Hydrochloric acid | 9.46E-01 | 7.84E-01 | 7.59E-01 | 7.40E-01 | 3.25E-01 | 3.17E-01 | 3.67E-01 | 4.17E-01 | 9.29E-02 | 2.93E-01 | 1.31E-01 | 9.96E-02 | 7.23E-02 | 9.31E-02 | 1.21E-01 | 5.81E-02 | 1.19E-01 | 6.88E-02 | 5.99E-02 | 5.64E-02 | 9.44E-02 | 7.82E-02 |
| Indeno(1,2,3-c,d)pyrene | 1.93E-09 | 1.60E-09 | 1.55E-09 | 1.51E-09 | 6.64E-10 | 6.48E-10 | 7.50E-10 | 8.52E-10 | 1.90E-10 | 5.99E-10 | 2.68E-10 | 2.04E-10 | 1.48E-10 | 1.90E-10 | 2.48E-10 | 1.19E-10 | 2.44E-10 | 1.41E-10 | 1.22E-10 | 1.15E-10 | 1.93E-10 | 1.60E-10 |

**TABLE 8C**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| **Chemical** | | | | | | | | | | | | | | | | | | | | | | |
| Lead | 1.50E-05 | 1.50E-05 | 1.54E-05 | 1.55E-05 | 1.26E-05 | 1.22E-05 | 1.41E-05 | 2.22E-05 | 4.03E-06 | 1.35E-05 | 3.44E-06 | 3.59E-06 | 2.05E-06 | 3.66E-06 | 4.96E-06 | 2.50E-06 | 5.12E-06 | 2.54E-06 | 2.43E-06 | 2.31E-06 | 3.65E-06 | 2.90E-06 |
| Manganese | 3.52E-05 | 2.91E-05 | 2.82E-05 | 2.75E-05 | 1.21E-05 | 1.18E-05 | 1.36E-05 | 1.55E-05 | 3.45E-06 | 1.09E-05 | 4.88E-06 | 3.70E-06 | 2.69E-06 | 3.46E-06 | 4.50E-06 | 2.16E-06 | 4.44E-06 | 2.56E-06 | 2.23E-06 | 2.10E-06 | 3.51E-06 | 2.91E-06 |
| Mercury | 7.93E-03 | 6.57E-03 | 6.37E-03 | 6.21E-03 | 2.73E-03 | 2.66E-03 | 3.08E-03 | 3.50E-03 | 7.80E-04 | 2.46E-03 | 1.10E-03 | 8.36E-04 | 6.06E-04 | 7.82E-04 | 1.02E-03 | 4.88E-04 | 1.00E-03 | 5.78E-04 | 5.03E-04 | 4.74E-04 | 7.92E-04 | 6.56E-04 |
| Mercury (2011) [2] | 3.79E-03 | 3.14E-03 | 3.05E-03 | 2.97E-03 | 1.31E-03 | 1.27E-03 | 1.47E-03 | 1.68E-03 | 3.73E-04 | 1.18E-03 | 5.27E-04 | 4.00E-04 | 2.90E-04 | 3.74E-04 | 4.87E-04 | 2.34E-04 | 4.80E-04 | 2.76E-04 | 2.41E-04 | 2.27E-04 | 3.79E-04 | 3.14E-04 |
| Methyl bromide | 5.52E-03 | 4.57E-03 | 4.43E-03 | 4.32E-03 | 1.90E-03 | 1.85E-03 | 2.14E-03 | 2.44E-03 | 5.42E-04 | 1.71E-03 | 7.66E-04 | 5.82E-04 | 4.22E-04 | 5.43E-04 | 7.07E-04 | 3.39E-04 | 6.97E-04 | 4.02E-04 | 3.50E-04 | 3.29E-04 | 5.51E-04 | 4.56E-04 |
| Methylene chloride | 1.14E-03 | 9.44E-04 | 9.15E-04 | 8.91E-04 | 3.92E-04 | 3.82E-04 | 4.42E-04 | 5.02E-04 | 1.12E-04 | 3.53E-04 | 1.58E-04 | 1.20E-04 | 8.70E-05 | 1.12E-04 | 1.46E-04 | 7.00E-05 | 1.44E-04 | 8.29E-05 | 7.22E-05 | 6.79E-05 | 1.14E-04 | 9.41E-05 |
| Naphthalene | 1.22E-03 | 1.01E-03 | 9.82E-04 | 9.57E-04 | 4.20E-04 | 4.10E-04 | 4.75E-04 | 5.40E-04 | 1.20E-04 | 3.79E-04 | 1.70E-04 | 1.29E-04 | 9.35E-05 | 1.20E-04 | 1.57E-04 | 7.52E-05 | 1.54E-04 | 8.90E-05 | 7.75E-05 | 7.30E-05 | 1.22E-04 | 1.01E-04 |
| Nickel | 3.30E-04 | 3.63E-04 | 3.68E-04 | 3.63E-04 | 3.16E-04 | 3.05E-04 | 3.57E-04 | 5.89E-04 | 1.04E-04 | 3.38E-04 | 8.97E-05 | 9.40E-05 | 5.57E-05 | 9.61E-05 | 1.29E-04 | 6.76E-05 | 1.32E-04 | 6.88E-05 | 6.56E-05 | 6.19E-05 | 9.52E-05 | 7.72E-05 |
| o-Xylene | 1.20E-02 | 9.94E-03 | 9.64E-03 | 9.38E-03 | 4.12E-03 | 4.02E-03 | 4.66E-03 | 5.29E-03 | 1.18E-03 | 3.72E-03 | 1.66E-03 | 1.26E-03 | 9.17E-04 | 1.18E-03 | 1.54E-03 | 7.38E-04 | 1.52E-03 | 8.73E-04 | 7.61E-04 | 7.16E-04 | 1.20E-03 | 9.92E-04 |
| p-Dichlorobenzene | 5.20E-04 | 4.31E-04 | 4.18E-04 | 4.07E-04 | 1.79E-04 | 1.74E-04 | 2.02E-04 | 2.29E-04 | 5.11E-05 | 1.61E-04 | 7.22E-05 | 5.48E-05 | 3.97E-05 | 5.12E-05 | 6.66E-05 | 3.20E-05 | 6.57E-05 | 3.78E-05 | 3.30E-05 | 3.10E-05 | 5.19E-05 | 4.30E-05 |
| Perchloroethylene | 4.69E-04 | 3.89E-04 | 3.77E-04 | 3.67E-04 | 1.61E-04 | 1.57E-04 | 1.82E-04 | 2.07E-04 | 4.61E-05 | 1.46E-04 | 6.51E-05 | 4.94E-05 | 3.59E-05 | 4.62E-05 | 6.01E-05 | 2.88E-05 | 5.92E-05 | 3.41E-05 | 2.97E-05 | 2.80E-05 | 4.68E-05 | 3.88E-05 |
| Selenium | 4.50E-05 | 3.98E-05 | 3.92E-05 | 3.86E-05 | 2.26E-05 | 2.20E-05 | 2.54E-05 | 3.53E-05 | 7.01E-06 | 2.28E-05 | 7.67E-06 | 6.82E-06 | 4.42E-06 | 6.66E-06 | 9.05E-06 | 4.57E-06 | 9.03E-06 | 5.02E-06 | 4.61E-06 | 4.26E-06 | 6.68E-06 | 5.43E-06 |
| Crystalline silica | 8.43E-03 | 1.06E-02 | 1.15E-02 | 1.20E-02 | 1.29E-02 | 1.24E-02 | 1.42E-02 | 2.00E-02 | 4.42E-03 | 1.43E-02 | 3.20E-03 | 3.70E-03 | 2.04E-03 | 3.90E-03 | 5.63E-03 | 3.09E-03 | 5.66E-03 | 3.26E-03 | 3.18E-03 | 2.73E-03 | 3.77E-03 | 3.07E-03 |
| Styrene | 2.14E-03 | 1.77E-03 | 1.71E-03 | 1.67E-03 | 7.34E-04 | 7.16E-04 | 8.29E-04 | 9.42E-04 | 2.10E-04 | 6.62E-04 | 2.96E-04 | 2.25E-04 | 1.63E-04 | 2.10E-04 | 2.74E-04 | 1.31E-04 | 2.70E-04 | 1.55E-04 | 1.35E-04 | 1.27E-04 | 2.13E-04 | 1.77E-04 |
| Trichloroethylene | 3.72E-04 | 3.08E-04 | 2.99E-04 | 2.91E-04 | 1.28E-04 | 1.25E-04 | 1.44E-04 | 1.64E-04 | 3.65E-05 | 1.15E-04 | 5.16E-05 | 3.92E-05 | 2.84E-05 | 3.66E-05 | 4.77E-05 | 2.29E-05 | 4.70E-05 | 2.71E-05 | 2.36E-05 | 2.22E-05 | 3.71E-05 | 3.07E-05 |
| 1,1,2,2-Tetrachloroethane | 3.56E-04 | 2.95E-04 | 2.86E-04 | 2.78E-04 | 1.22E-04 | 1.19E-04 | 1.38E-04 | 1.57E-04 | 3.50E-05 | 1.10E-04 | 4.94E-05 | 3.75E-05 | 2.72E-05 | 3.50E-05 | 4.56E-05 | 2.19E-05 | 4.49E-05 | 2.59E-05 | 2.26E-05 | 2.12E-05 | 3.55E-05 | 2.94E-05 |
| Toluene | 7.63E-02 | 6.32E-02 | 6.12E-02 | 5.96E-02 | 2.62E-02 | 2.56E-02 | 2.96E-02 | 3.36E-02 | 7.49E-03 | 2.37E-02 | 1.06E-02 | 8.04E-03 | 5.83E-03 | 7.51E-03 | 9.77E-03 | 4.69E-03 | 9.63E-03 | 5.55E-03 | 4.83E-03 | 4.55E-03 | 7.61E-03 | 6.30E-03 |
| Vanadium | 8.78E-04 | 9.81E-04 | 9.93E-04 | 9.78E-04 | 9.08E-04 | 8.76E-04 | 1.03E-03 | 1.82E-03 | 2.97E-04 | 9.98E-04 | 2.46E-04 | 2.67E-04 | 1.53E-04 | 2.74E-04 | 3.66E-04 | 1.88E-04 | 3.78E-04 | 1.84E-04 | 1.76E-04 | 1.73E-04 | 2.74E-04 | 2.19E-04 |
| Vinyl chloride | 1.25E-03 | 1.04E-03 | 1.00E-03 | 9.78E-04 | 4.30E-04 | 4.19E-04 | 4.86E-04 | 5.52E-04 | 1.23E-04 | 3.88E-04 | 1.74E-04 | 1.32E-04 | 9.56E-05 | 1.23E-04 | 1.60E-04 | 7.69E-05 | 1.58E-04 | 9.10E-05 | 7.93E-05 | 7.46E-05 | 1.25E-04 | 1.03E-04 |
| Vinylidene chloride | 3.43E-04 | 2.84E-04 | 2.75E-04 | 2.68E-04 | 1.18E-04 | 1.15E-04 | 1.33E-04 | 1.51E-04 | 3.37E-05 | 1.06E-04 | 4.76E-05 | 3.61E-05 | 2.62E-05 | 3.38E-05 | 4.39E-05 | 2.11E-05 | 4.33E-05 | 2.49E-05 | 2.17E-05 | 2.04E-05 | 3.42E-05 | 2.83E-05 |
| Xylenes (mixed) | 6.13E-02 | 5.08E-02 | 4.92E-02 | 4.79E-02 | 2.11E-02 | 2.06E-02 | 2.38E-02 | 2.70E-02 | 6.02E-03 | 1.90E-02 | 8.51E-03 | 6.46E-03 | 4.68E-03 | 6.04E-03 | 7.86E-03 | 3.77E-03 | 7.74E-03 | 4.46E-03 | 3.89E-03 | 3.66E-03 | 6.12E-03 | 5.07E-03 |

**TABLE 8C**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 1.91E-05 | 1.81E-05 | 1.93E-05 | 4.20E-05 | 1.53E-05 | 1.81E-05 | 1.96E-05 | 2.64E-05 | 3.15E-05 | 2.42E-05 | 1.85E-05 | 1.82E-05 | 1.83E-05 | 1.62E-05 | 2.14E-05 | 2.58E-05 | 1.27E-04 | 2.07E-04 | 1.11E-04 |
| 1,1,2-Trichloroethane | 3.19E-05 | 3.02E-05 | 3.22E-05 | 7.01E-05 | 2.54E-05 | 3.01E-05 | 3.27E-05 | 4.41E-05 | 5.24E-05 | 4.03E-05 | 3.08E-05 | 3.03E-05 | 3.05E-05 | 2.69E-05 | 3.56E-05 | 4.31E-05 | 2.12E-04 | 3.45E-04 | 1.85E-04 |
| 1,1-Dichloroethane | 1.18E-05 | 1.11E-05 | 1.19E-05 | 2.59E-05 | 9.39E-06 | 1.11E-05 | 1.21E-05 | 1.63E-05 | 1.94E-05 | 1.49E-05 | 1.14E-05 | 1.12E-05 | 1.12E-05 | 9.95E-06 | 1.31E-05 | 1.59E-05 | 7.82E-05 | 1.27E-04 | 6.84E-05 |
| 1,2-Dichloropropane | 1.62E-05 | 1.53E-05 | 1.63E-05 | 3.56E-05 | 1.29E-05 | 1.53E-05 | 1.66E-05 | 2.24E-05 | 2.66E-05 | 2.04E-05 | 1.56E-05 | 1.54E-05 | 1.55E-05 | 1.37E-05 | 1.81E-05 | 2.19E-05 | 1.08E-04 | 1.75E-04 | 9.41E-05 |
| 1,3-Butadiene | 5.47E-05 | 5.18E-05 | 5.53E-05 | 1.20E-04 | 4.37E-05 | 5.17E-05 | 5.61E-05 | 7.56E-05 | 9.00E-05 | 6.91E-05 | 5.29E-05 | 5.21E-05 | 5.23E-05 | 4.63E-05 | 6.11E-05 | 7.39E-05 | 3.64E-04 | 5.92E-04 | 3.18E-04 |
| 1,3-Dichloropropene | 6.62E-05 | 6.27E-05 | 6.69E-05 | 1.46E-04 | 5.28E-05 | 6.25E-05 | 6.78E-05 | 9.15E-05 | 1.09E-04 | 8.36E-05 | 6.40E-05 | 6.30E-05 | 6.33E-05 | 5.60E-05 | 7.39E-05 | 8.94E-05 | 4.40E-04 | 7.16E-04 | 3.85E-04 |
| 1,2,3,6,7,8-HxCDD | 1.58E-12 | 1.49E-12 | 1.60E-12 | 3.47E-12 | 1.26E-12 | 1.49E-12 | 1.62E-12 | 2.18E-12 | 2.60E-12 | 1.99E-12 | 1.53E-12 | 1.50E-12 | 1.51E-12 | 1.33E-12 | 1.76E-12 | 2.13E-12 | 1.05E-11 | 1.71E-11 | 9.18E-12 |
| 1,2,3,6,7,8-HxCDF | 2.27E-12 | 2.14E-12 | 2.29E-12 | 4.98E-12 | 1.81E-12 | 2.14E-12 | 2.32E-12 | 3.13E-12 | 3.73E-12 | 2.86E-12 | 2.19E-12 | 2.16E-12 | 2.16E-12 | 1.92E-12 | 2.53E-12 | 3.06E-12 | 1.51E-11 | 2.45E-11 | 1.32E-11 |
| 1,2,3,7,8-PeCDD | 1.41E-12 | 1.34E-12 | 1.43E-12 | 3.10E-12 | 1.13E-12 | 1.33E-12 | 1.45E-12 | 1.95E-12 | 2.32E-12 | 1.78E-12 | 1.36E-12 | 1.34E-12 | 1.35E-12 | 1.19E-12 | 1.58E-12 | 1.91E-12 | 9.38E-12 | 1.53E-11 | 8.21E-12 |
| 1,2,3,7,8-PeCDF | 1.09E-11 | 1.03E-11 | 1.10E-11 | 2.39E-11 | 8.69E-12 | 1.03E-11 | 1.12E-11 | 1.50E-11 | 1.79E-11 | 1.37E-11 | 1.05E-11 | 1.04E-11 | 1.04E-11 | 9.20E-12 | 1.22E-11 | 1.47E-11 | 7.23E-11 | 1.18E-10 | 6.33E-11 |
| 1,2,3,7,8,9-HxCDD | 1.64E-12 | 1.55E-12 | 1.65E-12 | 3.60E-12 | 1.31E-12 | 1.55E-12 | 1.68E-12 | 2.26E-12 | 2.69E-12 | 2.07E-12 | 1.58E-12 | 1.56E-12 | 1.56E-12 | 1.38E-12 | 1.83E-12 | 2.21E-12 | 1.09E-11 | 1.77E-11 | 9.52E-12 |
| 1,2,3,7,8,9-HxCDF | 7.64E-13 | 7.23E-13 | 7.72E-13 | 1.68E-12 | 6.10E-13 | 7.21E-13 | 7.83E-13 | 1.06E-12 | 1.26E-12 | 9.65E-13 | 7.38E-13 | 7.27E-13 | 7.30E-13 | 6.46E-13 | 8.53E-13 | 1.03E-12 | 5.08E-12 | 8.26E-12 | 4.44E-12 |
| 1,2,3,4,6,7,8-HpCDD | 5.74E-12 | 5.43E-12 | 5.80E-12 | 1.26E-11 | 4.58E-12 | 5.42E-12 | 5.88E-12 | 7.93E-12 | 9.44E-12 | 7.25E-12 | 5.54E-12 | 5.46E-12 | 5.48E-12 | 4.85E-12 | 6.41E-12 | 7.75E-12 | 3.81E-11 | 6.20E-11 | 3.33E-11 |
| 1,2,3,4,6,7,8-HpCDF | 2.79E-12 | 2.64E-12 | 2.81E-12 | 6.12E-12 | 2.22E-12 | 2.63E-12 | 2.85E-12 | 3.85E-12 | 4.58E-12 | 3.52E-12 | 2.69E-12 | 2.65E-12 | 2.66E-12 | 2.35E-12 | 3.11E-12 | 3.76E-12 | 1.85E-11 | 3.01E-11 | 1.62E-11 |
| 1,2,3,4,7,8-HxCDD | 1.60E-12 | 1.51E-12 | 1.61E-12 | 3.51E-12 | 1.28E-12 | 1.51E-12 | 1.64E-12 | 2.21E-12 | 2.63E-12 | 2.02E-12 | 1.54E-12 | 1.52E-12 | 1.53E-12 | 1.35E-12 | 1.79E-12 | 2.16E-12 | 1.06E-11 | 1.73E-11 | 9.29E-12 |
| 1,2,3,4,7,8-HxCDF | 2.42E-12 | 2.29E-12 | 2.45E-12 | 5.32E-12 | 1.93E-12 | 2.29E-12 | 2.48E-12 | 3.35E-12 | 3.99E-12 | 3.06E-12 | 2.34E-12 | 2.31E-12 | 2.31E-12 | 2.05E-12 | 2.71E-12 | 3.27E-12 | 1.61E-11 | 2.62E-11 | 1.41E-11 |
| 1,2,3,4,7,8,9-HpCDF | 7.17E-13 | 6.79E-13 | 7.24E-13 | 1.58E-12 | 5.72E-13 | 6.77E-13 | 7.35E-13 | 9.91E-13 | 1.18E-12 | 9.05E-13 | 6.93E-13 | 6.83E-13 | 6.85E-13 | 6.06E-13 | 8.01E-13 | 9.68E-13 | 4.76E-12 | 7.75E-12 | 4.17E-12 |
| 1,2,3,4,6,7,8,9-OCDD | 1.21E-11 | 1.14E-11 | 1.22E-11 | 2.65E-11 | 9.63E-12 | 1.14E-11 | 1.24E-11 | 1.67E-11 | 1.98E-11 | 1.52E-11 | 1.17E-11 | 1.15E-11 | 1.15E-11 | 1.02E-11 | 1.35E-11 | 1.63E-11 | 8.01E-11 | 1.30E-10 | 7.01E-11 |
| 1,2,3,4,6,7,8,9-OCDF | 2.75E-12 | 2.60E-12 | 2.77E-12 | 6.04E-12 | 2.19E-12 | 2.59E-12 | 2.81E-12 | 3.80E-12 | 4.52E-12 | 3.47E-12 | 2.65E-12 | 2.61E-12 | 2.62E-12 | 2.32E-12 | 3.07E-12 | 3.71E-12 | 1.82E-11 | 2.97E-11 | 1.60E-11 |
| 2,3,7,8-TCDD | 1.38E-12 | 1.31E-12 | 1.40E-12 | 3.04E-12 | 1.10E-12 | 1.31E-12 | 1.42E-12 | 1.91E-12 | 2.28E-12 | 1.75E-12 | 1.34E-12 | 1.32E-12 | 1.32E-12 | 1.17E-12 | 1.54E-12 | 1.87E-12 | 9.19E-12 | 1.50E-11 | 8.04E-12 |
| 2,3,7,8-TCDF | 6.87E-11 | 6.50E-11 | 6.94E-11 | 1.51E-10 | 5.48E-11 | 6.48E-11 | 7.03E-11 | 9.49E-11 | 1.13E-10 | 8.67E-11 | 6.63E-11 | 6.54E-11 | 6.56E-11 | 5.80E-11 | 7.67E-11 | 9.27E-11 | 4.56E-10 | 7.42E-10 | 3.99E-10 |
| 2,3,4,6,7,8-HxCDF | 1.39E-12 | 1.32E-12 | 1.41E-12 | 3.06E-12 | 1.11E-12 | 1.31E-12 | 1.43E-12 | 1.92E-12 | 2.29E-12 | 1.76E-12 | 1.35E-12 | 1.33E-12 | 1.33E-12 | 1.18E-12 | 1.56E-12 | 1.88E-12 | 9.25E-12 | 1.51E-11 | 8.09E-12 |
| 2,3,4,7,8-PeCDF | 1.64E-11 | 1.55E-11 | 1.65E-11 | 3.60E-11 | 1.31E-11 | 1.55E-11 | 1.68E-11 | 2.26E-11 | 2.69E-11 | 2.07E-11 | 1.58E-11 | 1.56E-11 | 1.56E-11 | 1.38E-11 | 1.83E-11 | 2.21E-11 | 1.09E-10 | 1.77E-10 | 9.52E-11 |
| Acetaldehyde | 6.89E-04 | 6.53E-04 | 6.97E-04 | 1.52E-03 | 5.50E-04 | 6.51E-04 | 7.07E-04 | 9.53E-04 | 1.13E-03 | 8.71E-04 | 6.66E-04 | 6.56E-04 | 6.59E-04 | 5.83E-04 | 7.70E-04 | 9.31E-04 | 4.58E-03 | 7.46E-03 | 4.01E-03 |
| Acrolein | 2.68E-05 | 2.53E-05 | 2.70E-05 | 5.88E-05 | 2.14E-05 | 2.53E-05 | 2.74E-05 | 3.70E-05 | 4.41E-05 | 3.38E-05 | 2.59E-05 | 2.55E-05 | 2.56E-05 | 2.26E-05 | 2.99E-05 | 3.62E-05 | 1.78E-04 | 2.90E-04 | 1.56E-04 |
| Arsenic | 2.91E-06 | 2.67E-06 | 2.75E-06 | 4.90E-06 | 3.24E-06 | 3.06E-06 | 3.20E-06 | 4.84E-06 | 6.65E-06 | 3.78E-06 | 2.65E-06 | 2.96E-06 | 2.62E-06 | 2.84E-06 | 2.57E-06 | 2.91E-06 | 3.07E-05 | 3.65E-05 | 1.32E-05 |
| Benz(a)anthracene | 7.81E-09 | 7.39E-09 | 7.89E-09 | 1.72E-08 | 6.23E-09 | 7.37E-09 | 8.00E-09 | 1.08E-08 | 1.28E-08 | 9.86E-09 | 7.54E-09 | 7.43E-09 | 7.46E-09 | 6.60E-09 | 8.72E-09 | 1.05E-08 | 5.19E-08 | 8.44E-08 | 4.54E-08 |
| Benzo(a)pyrene | 1.76E-10 | 1.66E-10 | 1.77E-10 | 3.86E-10 | 1.40E-10 | 1.66E-10 | 1.80E-10 | 2.43E-10 | 2.89E-10 | 2.22E-10 | 1.70E-10 | 1.67E-10 | 1.68E-10 | 1.48E-10 | 1.96E-10 | 2.37E-10 | 1.17E-09 | 1.90E-09 | 1.02E-09 |
| Benzo(b)fluoranthene | 1.12E-09 | 1.06E-09 | 1.13E-09 | 2.46E-09 | 8.92E-10 | 1.06E-09 | 1.15E-09 | 1.55E-09 | 1.84E-09 | 1.41E-09 | 1.08E-09 | 1.06E-09 | 1.07E-09 | 9.45E-10 | 1.25E-09 | 1.51E-09 | 7.43E-09 | 1.21E-08 | 6.50E-09 |
| Benzo(k)fluoranthene | 1.76E-10 | 1.66E-10 | 1.77E-10 | 3.86E-10 | 1.40E-10 | 1.66E-10 | 1.80E-10 | 2.43E-10 | 2.89E-10 | 2.22E-10 | 1.70E-10 | 1.67E-10 | 1.68E-10 | 1.48E-10 | 1.96E-10 | 2.37E-10 | 1.17E-09 | 1.90E-09 | 1.02E-09 |
| Benzene | 5.75E-03 | 5.44E-03 | 5.81E-03 | 1.26E-02 | 4.59E-03 | 5.43E-03 | 5.89E-03 | 7.94E-03 | 9.46E-03 | 7.26E-03 | 5.55E-03 | 5.47E-03 | 5.49E-03 | 4.86E-03 | 6.42E-03 | 7.76E-03 | 3.82E-02 | 6.21E-02 | 3.34E-02 |
| Benzyl chloride | 6.02E-05 | 5.70E-05 | 6.08E-05 | 1.32E-04 | 4.81E-05 | 5.68E-05 | 6.17E-05 | 8.32E-05 | 9.91E-05 | 7.61E-05 | 5.82E-05 | 5.73E-05 | 5.75E-05 | 5.09E-05 | 6.73E-05 | 8.13E-05 | 4.00E-04 | 6.51E-04 | 3.50E-04 |
| Beryllium | 8.62E-07 | 7.88E-07 | 8.24E-07 | 1.50E-06 | 9.32E-07 | 8.99E-07 | 9.42E-07 | 1.42E-06 | 1.94E-06 | 1.12E-06 | 7.93E-07 | 8.74E-07 | 7.76E-07 | 8.29E-07 | 7.74E-07 | 8.92E-07 | 8.04E-06 | 8.94E-06 | 4.20E-06 |
| Cadmium | 1.37E-06 | 1.25E-06 | 1.30E-06 | 2.29E-06 | 1.54E-06 | 1.45E-06 | 1.51E-06 | 2.30E-06 | 3.22E-06 | 1.78E-06 | 1.26E-06 | 1.40E-06 | 1.23E-06 | 1.34E-06 | 1.19E-06 | 1.36E-06 | 1.35E-05 | 1.58E-05 | 6.41E-06 |
| Carbon tetrachloride | 3.67E-05 | 3.47E-05 | 3.71E-05 | 8.06E-05 | 2.93E-05 | 3.46E-05 | 3.76E-05 | 5.07E-05 | 6.04E-05 | 4.63E-05 | 3.54E-05 | 3.49E-05 | 3.50E-05 | 3.10E-05 | 4.10E-05 | 4.95E-05 | 2.44E-04 | 3.97E-04 | 2.13E-04 |
| Chlorobenzene | 3.31E-04 | 3.13E-04 | 3.34E-04 | 7.26E-04 | 2.64E-04 | 3.12E-04 | 3.39E-04 | 4.57E-04 | 5.44E-04 | 4.17E-04 | 3.19E-04 | 3.15E-04 | 3.16E-04 | 2.79E-04 | 3.69E-04 | 4.46E-04 | 2.20E-03 | 3.57E-03 | 1.92E-03 |
| Chloroform | 1.71E-05 | 1.62E-05 | 1.72E-05 | 3.75E-05 | 1.36E-05 | 1.61E-05 | 1.75E-05 | 2.36E-05 | 2.81E-05 | 2.16E-05 | 1.65E-05 | 1.62E-05 | 1.63E-05 | 1.44E-05 | 1.91E-05 | 2.30E-05 | 1.13E-04 | 1.85E-04 | 9.92E-05 |
| Chrysene | 2.30E-08 | 2.18E-08 | 2.33E-08 | 5.07E-08 | 1.84E-08 | 2.18E-08 | 2.36E-08 | 3.19E-08 | 3.79E-08 | 2.91E-08 | 2.23E-08 | 2.19E-08 | 2.20E-08 | 1.95E-08 | 2.57E-08 | 3.11E-08 | 1.53E-07 | 2.49E-07 | 1.34E-07 |
| Copper | 2.24E-05 | 2.02E-05 | 2.11E-05 | 3.65E-05 | 2.56E-05 | 2.38E-05 | 2.47E-05 | 3.80E-05 | 5.36E-05 | 2.90E-05 | 2.04E-05 | 2.30E-05 | 1.98E-05 | 2.20E-05 | 1.90E-05 | 2.16E-05 | 2.26E-04 | 2.62E-04 | 1.02E-04 |
| Chromium VI | 2.60E-06 | 2.48E-06 | 2.43E-06 | 4.58E-06 | 2.89E-06 | 2.72E-06 | 2.86E-06 | 4.30E-06 | 5.47E-06 | 3.57E-06 | 2.26E-06 | 2.60E-06 | 2.41E-06 | 2.66E-06 | 2.32E-06 | 2.58E-06 | 3.21E-05 | 2.95E-05 | 1.23E-05 |
| Dibenz(a,h)anthracene | 1.76E-10 | 1.66E-10 | 1.77E-10 | 3.86E-10 | 1.40E-10 | 1.66E-10 | 1.80E-10 | 2.43E-10 | 2.89E-10 | 2.22E-10 | 1.70E-10 | 1.67E-10 | 1.68E-10 | 1.48E-10 | 1.96E-10 | 2.37E-10 | 1.17E-09 | 1.90E-09 | 1.02E-09 |
| Diesel PM | 8.89E-05 | 8.29E-05 | 8.60E-05 | 1.38E-04 | 1.06E-04 | 1.01E-04 | 8.36E-05 | 1.46E-04 | 2.09E-04 | 1.47E-04 | 7.92E-05 | 7.86E-05 | 8.81E-05 | 1.10E-04 | 7.15E-05 | 8.10E-05 | 9.40E-04 | 3.63E-04 | 5.00E-04 |
| Ethylene dibromide | 3.59E-05 | 3.40E-05 | 3.63E-05 | 7.89E-05 | 2.86E-05 | 3.39E-05 | 3.68E-05 | 4.96E-05 | 5.91E-05 | 4.53E-05 | 3.47E-05 | 3.42E-05 | 3.43E-05 | 3.03E-05 | 4.01E-05 | 4.85E-05 | 2.38E-04 | 3.88E-04 | 2.09E-04 |
| Ethylene dichloride | 1.41E-05 | 1.34E-05 | 1.43E-05 | 3.10E-05 | 1.13E-05 | 1.33E-05 | 1.45E-05 | 1.95E-05 | 2.32E-05 | 1.78E-05 | 1.36E-05 | 1.34E-05 | 1.35E-05 | 1.19E-05 | 1.58E-05 | 1.91E-05 | 9.38E-05 | 1.53E-04 | 8.21E-05 |
| Ethylbenzene | 5.72E-04 | 5.41E-04 | 5.78E-04 | 1.26E-03 | 4.56E-04 | 5.40E-04 | 5.86E-04 | 7.90E-04 | 9.41E-04 | 7.22E-04 | 5.53E-04 | 5.44E-04 | 5.46E-04 | 4.83E-04 | 6.39E-04 | 7.72E-04 | 3.80E-03 | 6.18E-03 | 3.32E-03 |
| Ethyl chloride | 2.30E-05 | 2.18E-05 | 2.33E-05 | 5.07E-05 | 1.84E-05 | 2.18E-05 | 2.36E-05 | 3.19E-05 | 3.79E-05 | 2.91E-05 | 2.23E-05 | 2.19E-05 | 2.20E-05 | 1.95E-05 | 2.57E-05 | 3.11E-05 | 1.53E-04 | 2.49E-04 | 1.34E-04 |
| Formaldehyde | 3.76E-05 | 3.56E-05 | 3.79E-05 | 8.26E-05 | 3.00E-05 | 3.55E-05 | 3.85E-05 | 5.19E-05 | 6.18E-05 | 4.74E-05 | 3.63E-05 | 3.58E-05 | 3.59E-05 | 3.18E-05 | 4.20E-05 | 5.07E-05 | 2.50E-04 | 4.06E-04 | 2.18E-04 |
| Hydrochloric acid | 6.38E-02 | 6.04E-02 | 6.45E-02 | 1.40E-01 | 5.10E-02 | 6.03E-02 | 6.54E-02 | 8.82E-02 | 1.05E-01 | 8.06E-02 | 6.17E-02 | 6.08E-02 | 6.10E-02 | 5.40E-02 | 7.13E-02 | 8.62E-02 | 4.24E-01 | 6.90E-01 | 3.71E-01 |
| Indeno(1,2,3-c,d)pyrene | 1.30E-10 | 1.23E-10 | 1.32E-10 | 2.87E-10 | 1.04E-10 | 1.23E-10 | 1.34E-10 | 1.80E-10 | 2.15E-10 | 1.65E-10 | 1.26E-10 | 1.24E-10 | 1.25E-10 | 1.10E-10 | 1.46E-10 | 1.76E-10 | 8.67E-10 | 1.41E-09 | 7.58E-10 |

**TABLE 8C**
**SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 2.37E-06 | 2.17E-06 | 2.24E-06 | 4.10E-06 | 2.51E-06 | 2.42E-06 | 2.55E-06 | 3.86E-06 | 5.13E-06 | 3.11E-06 | 2.11E-06 | 2.37E-06 | 2.13E-06 | 2.30E-06 | 2.10E-06 | 2.41E-06 | 2.32E-05 | 2.48E-05 | 1.17E-05 |
| Manganese | 2.37E-06 | 2.25E-06 | 2.40E-06 | 5.22E-06 | 1.89E-06 | 2.24E-06 | 2.43E-06 | 3.28E-06 | 3.91E-06 | 3.00E-06 | 2.29E-06 | 2.26E-06 | 2.27E-06 | 2.01E-06 | 2.65E-06 | 3.21E-06 | 1.58E-05 | 2.57E-05 | 1.38E-05 |
| Mercury | 5.36E-04 | 5.07E-04 | 5.41E-04 | 1.18E-03 | 4.28E-04 | 5.06E-04 | 5.49E-04 | 7.41E-04 | 8.82E-04 | 6.77E-04 | 5.18E-04 | 5.10E-04 | 5.12E-04 | 4.53E-04 | 5.98E-04 | 7.24E-04 | 3.56E-03 | 5.80E-03 | 3.11E-03 |
| Mercury (2011) [2] | 2.56E-04 | 2.43E-04 | 2.59E-04 | 5.63E-04 | 2.05E-04 | 2.42E-04 | 2.63E-04 | 3.55E-04 | 4.22E-04 | 3.24E-04 | 2.48E-04 | 2.44E-04 | 2.45E-04 | 2.17E-04 | 2.86E-04 | 3.46E-04 | 1.71E-03 | 2.77E-03 | 1.49E-03 |
| Methyl bromide | 3.73E-04 | 3.53E-04 | 3.76E-04 | 8.19E-04 | 2.97E-04 | 3.52E-04 | 3.82E-04 | 5.15E-04 | 6.13E-04 | 4.71E-04 | 3.60E-04 | 3.55E-04 | 3.56E-04 | 3.15E-04 | 4.16E-04 | 5.03E-04 | 2.48E-03 | 4.03E-03 | 2.17E-03 |
| Methylene chloride | 7.69E-05 | 7.28E-05 | 7.77E-05 | 1.69E-04 | 6.14E-05 | 7.26E-05 | 7.88E-05 | 1.06E-04 | 1.27E-04 | 9.71E-05 | 7.43E-05 | 7.32E-05 | 7.35E-05 | 6.50E-05 | 8.59E-05 | 1.04E-04 | 5.11E-04 | 8.31E-04 | 4.47E-04 |
| Naphthalene | 8.26E-05 | 7.82E-05 | 8.34E-05 | 1.82E-04 | 6.59E-05 | 7.80E-05 | 8.46E-05 | 1.14E-04 | 1.36E-04 | 1.04E-04 | 7.98E-05 | 7.86E-05 | 7.89E-05 | 6.98E-05 | 9.22E-05 | 1.12E-04 | 5.49E-04 | 8.93E-04 | 4.80E-04 |
| Nickel | 6.28E-05 | 5.83E-05 | 6.00E-05 | 1.08E-04 | 6.77E-05 | 6.48E-05 | 6.79E-05 | 1.01E-04 | 1.37E-04 | 8.23E-05 | 5.70E-05 | 6.30E-05 | 5.69E-05 | 6.10E-05 | 5.83E-05 | 6.41E-05 | 6.16E-04 | 6.18E-04 | 2.98E-04 |
| o-Xylene | 8.10E-04 | 7.67E-04 | 8.18E-04 | 1.78E-03 | 6.47E-04 | 7.65E-04 | 8.30E-04 | 1.12E-03 | 1.33E-03 | 1.02E-03 | 7.83E-04 | 7.71E-04 | 7.74E-04 | 6.85E-04 | 9.05E-04 | 1.09E-03 | 5.38E-03 | 8.76E-03 | 4.71E-03 |
| p-Dichlorobenzene | 3.51E-05 | 3.32E-05 | 3.55E-05 | 7.72E-05 | 2.80E-05 | 3.31E-05 | 3.60E-05 | 4.85E-05 | 5.78E-05 | 4.43E-05 | 3.39E-05 | 3.34E-05 | 3.35E-05 | 2.97E-05 | 3.92E-05 | 4.74E-05 | 2.33E-04 | 3.80E-04 | 2.04E-04 |
| Perchloroethylene | 3.17E-05 | 3.00E-05 | 3.20E-05 | 6.96E-05 | 2.53E-05 | 2.99E-05 | 3.25E-05 | 4.38E-05 | 5.21E-05 | 4.00E-05 | 3.06E-05 | 3.02E-05 | 3.03E-05 | 2.68E-05 | 3.54E-05 | 4.28E-05 | 2.10E-04 | 3.43E-04 | 1.84E-04 |
| Selenium | 4.46E-06 | 4.14E-06 | 4.37E-06 | 8.59E-06 | 4.35E-06 | 4.50E-06 | 4.77E-06 | 6.87E-06 | 9.03E-06 | 5.71E-06 | 4.22E-06 | 4.43E-06 | 4.12E-06 | 4.07E-06 | 4.42E-06 | 5.21E-06 | 3.66E-05 | 4.90E-05 | 2.33E-05 |
| Crystalline silica | 2.53E-03 | 2.24E-03 | 2.37E-03 | 3.80E-03 | 3.20E-03 | 2.85E-03 | 2.90E-03 | 4.53E-03 | 6.83E-03 | 3.30E-03 | 2.37E-03 | 2.69E-03 | 2.17E-03 | 2.54E-03 | 1.96E-03 | 2.26E-03 | 2.09E-02 | 1.95E-02 | 1.17E-02 |
| Styrene | 1.44E-04 | 1.36E-04 | 1.46E-04 | 3.17E-04 | 1.15E-04 | 1.36E-04 | 1.48E-04 | 1.99E-04 | 2.37E-04 | 1.82E-04 | 1.39E-04 | 1.37E-04 | 1.38E-04 | 1.22E-04 | 1.61E-04 | 1.95E-04 | 9.58E-04 | 1.56E-03 | 8.38E-04 |
| Trichloroethylene | 2.51E-05 | 2.38E-05 | 2.54E-05 | 5.52E-05 | 2.00E-05 | 2.37E-05 | 2.57E-05 | 3.47E-05 | 4.13E-05 | 3.17E-05 | 2.43E-05 | 2.39E-05 | 2.40E-05 | 2.12E-05 | 2.80E-05 | 3.39E-05 | 1.67E-04 | 2.71E-04 | 1.46E-04 |
| 1,1,2,2-Tetrachloroethane | 2.40E-05 | 2.27E-05 | 2.43E-05 | 5.28E-05 | 1.92E-05 | 2.27E-05 | 2.46E-05 | 3.32E-05 | 3.95E-05 | 3.03E-05 | 2.32E-05 | 2.29E-05 | 2.30E-05 | 2.03E-05 | 2.68E-05 | 3.25E-05 | 1.60E-04 | 2.60E-04 | 1.40E-04 |
| Toluene | 5.15E-03 | 4.87E-03 | 5.20E-03 | 1.13E-02 | 4.11E-03 | 4.86E-03 | 5.28E-03 | 7.12E-03 | 8.47E-03 | 6.50E-03 | 4.98E-03 | 4.90E-03 | 4.92E-03 | 4.35E-03 | 5.75E-03 | 6.95E-03 | 3.42E-02 | 5.57E-02 | 2.99E-02 |
| Vanadium | 1.77E-04 | 1.66E-04 | 1.68E-04 | 3.04E-04 | 1.89E-04 | 1.81E-04 | 1.91E-04 | 2.85E-04 | 3.75E-04 | 2.34E-04 | 1.58E-04 | 1.77E-04 | 1.62E-04 | 1.74E-04 | 1.64E-04 | 1.78E-04 | 1.91E-03 | 1.98E-03 | 8.22E-04 |
| Vinyl chloride | 8.44E-05 | 7.99E-05 | 8.53E-05 | 1.86E-04 | 6.74E-05 | 7.97E-05 | 8.65E-05 | 1.17E-04 | 1.39E-04 | 1.07E-04 | 8.16E-05 | 8.04E-05 | 8.07E-05 | 7.14E-05 | 9.43E-05 | 1.14E-04 | 5.61E-04 | 9.13E-04 | 4.91E-04 |
| Vinylidene chloride | 2.31E-05 | 2.19E-05 | 2.34E-05 | 5.09E-05 | 1.85E-05 | 2.18E-05 | 2.37E-05 | 3.20E-05 | 3.81E-05 | 2.92E-05 | 2.24E-05 | 2.20E-05 | 2.21E-05 | 1.96E-05 | 2.58E-05 | 3.13E-05 | 1.54E-04 | 2.50E-04 | 1.35E-04 |
| Xylenes (mixed) | 4.14E-03 | 3.92E-03 | 4.18E-03 | 9.10E-03 | 3.30E-03 | 3.91E-03 | 4.24E-03 | 5.72E-03 | 6.81E-03 | 5.23E-03 | 4.00E-03 | 3.94E-03 | 3.95E-03 | 3.50E-03 | 4.62E-03 | 5.59E-03 | 2.75E-02 | 4.48E-02 | 2.41E-02 |

Notes

1. Receptor identifier in the HARP model.
2. The ground level concentrations predicted for 2011 Production are the same as 2010 with the exception of mercury.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 9A**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 1.84E-02 | 2.44E-02 | 2.58E-02 | 2.67E-02 | 3.15E-02 | 3.19E-02 | 3.94E-02 | 4.95E-02 | 1.40E-02 | 2.59E-02 | 7.13E-03 | 9.92E-03 | 5.97E-03 | 8.98E-03 | 1.52E-02 | 9.65E-03 | 1.69E-02 | 1.25E-02 | 1.04E-02 | 1.11E-02 | 1.14E-02 | 1.27E-02 |
| 1,1,2-Trichloroethane | 3.07E-02 | 4.07E-02 | 4.31E-02 | 4.45E-02 | 5.24E-02 | 5.31E-02 | 6.57E-02 | 8.25E-02 | 2.34E-02 | 4.31E-02 | 1.19E-02 | 1.65E-02 | 9.95E-03 | 1.50E-02 | 2.53E-02 | 1.61E-02 | 2.82E-02 | 2.09E-02 | 1.73E-02 | 1.85E-02 | 1.90E-02 | 2.12E-02 |
| 1,1-Dichloroethane | 1.14E-02 | 1.51E-02 | 1.59E-02 | 1.65E-02 | 1.94E-02 | 1.97E-02 | 2.43E-02 | 3.05E-02 | 8.66E-03 | 1.60E-02 | 4.40E-03 | 6.12E-03 | 3.69E-03 | 5.54E-03 | 9.37E-03 | 5.96E-03 | 1.04E-02 | 7.73E-03 | 6.41E-03 | 6.84E-03 | 7.04E-03 | 7.85E-03 |
| 1,2-Dichloropropane | 1.56E-02 | 2.07E-02 | 2.19E-02 | 2.26E-02 | 2.67E-02 | 2.70E-02 | 3.34E-02 | 4.19E-02 | 1.19E-02 | 2.19E-02 | 6.04E-03 | 8.41E-03 | 5.06E-03 | 7.61E-03 | 1.29E-02 | 8.18E-03 | 1.43E-02 | 1.06E-02 | 8.80E-03 | 9.40E-03 | 9.66E-03 | 1.08E-02 |
| 1,3-Butadiene | 5.27E-02 | 6.98E-02 | 7.39E-02 | 7.63E-02 | 9.00E-02 | 9.12E-02 | 1.13E-01 | 1.42E-01 | 4.01E-02 | 7.40E-02 | 2.04E-02 | 2.84E-02 | 1.71E-02 | 2.57E-02 | 4.34E-02 | 2.76E-02 | 4.84E-02 | 3.58E-02 | 2.97E-02 | 3.17E-02 | 3.26E-02 | 3.64E-02 |
| 1,3-Dichloropropene | 6.37E-02 | 8.45E-02 | 8.94E-02 | 9.24E-02 | 1.09E-01 | 1.10E-01 | 1.36E-01 | 1.71E-01 | 4.86E-02 | 8.96E-02 | 2.47E-02 | 3.44E-02 | 2.07E-02 | 3.11E-02 | 5.26E-02 | 3.34E-02 | 5.86E-02 | 4.33E-02 | 3.59E-02 | 3.84E-02 | 3.95E-02 | 4.41E-02 |
| 1,2,3,6,7,8-HxCDD | 1.52E-09 | 2.02E-09 | 2.14E-09 | 2.21E-09 | 2.60E-09 | 2.64E-09 | 3.26E-09 | 4.10E-09 | 1.16E-09 | 2.14E-09 | 5.90E-10 | 8.21E-10 | 4.94E-10 | 7.44E-10 | 1.26E-09 | 7.99E-10 | 1.40E-09 | 1.04E-09 | 8.60E-10 | 9.18E-10 | 9.44E-10 | 1.05E-09 |
| 1,2,3,6,7,8-HxCDF | 2.19E-09 | 2.90E-09 | 3.07E-09 | 3.17E-09 | 3.73E-09 | 3.78E-09 | 4.68E-09 | 5.87E-09 | 1.67E-09 | 3.07E-09 | 8.46E-10 | 1.18E-09 | 7.09E-10 | 1.07E-09 | 1.80E-09 | 1.15E-09 | 2.01E-09 | 1.49E-09 | 1.23E-09 | 1.32E-09 | 1.35E-09 | 1.51E-09 |
| 1,2,3,7,8-PeCDD | 1.36E-09 | 1.81E-09 | 1.91E-09 | 1.97E-09 | 2.33E-09 | 2.36E-09 | 2.91E-09 | 3.66E-09 | 1.04E-09 | 1.91E-09 | 5.27E-10 | 7.34E-10 | 4.42E-10 | 6.64E-10 | 1.12E-09 | 7.14E-10 | 1.25E-09 | 9.26E-10 | 7.68E-10 | 8.20E-10 | 8.44E-10 | 9.41E-10 |
| 1,2,3,7,8-PeCDF | 1.05E-08 | 1.40E-08 | 1.48E-08 | 1.53E-08 | 1.80E-08 | 1.82E-08 | 2.25E-08 | 2.83E-08 | 8.02E-09 | 1.48E-08 | 4.08E-09 | 5.68E-09 | 3.42E-09 | 5.14E-09 | 8.68E-09 | 5.52E-09 | 9.68E-09 | 7.16E-09 | 5.94E-09 | 6.34E-09 | 6.52E-09 | 7.28E-09 |
| 1,2,3,7,8,9-HxCDD | 1.58E-09 | 2.09E-09 | 2.21E-09 | 2.28E-09 | 2.69E-09 | 2.73E-09 | 3.37E-09 | 4.23E-09 | 1.20E-09 | 2.21E-09 | 6.10E-10 | 8.49E-10 | 5.11E-10 | 7.69E-10 | 1.30E-09 | 8.26E-10 | 1.45E-09 | 1.07E-09 | 8.89E-10 | 9.49E-10 | 9.76E-10 | 1.09E-09 |
| 1,2,3,7,8,9-HxCDF | 7.36E-10 | 9.76E-10 | 1.03E-09 | 1.07E-09 | 1.26E-09 | 1.28E-09 | 1.58E-09 | 1.98E-09 | 5.61E-10 | 1.03E-09 | 2.85E-10 | 3.97E-10 | 2.39E-10 | 3.59E-10 | 6.07E-10 | 3.86E-10 | 6.77E-10 | 5.01E-10 | 4.15E-10 | 4.44E-10 | 4.56E-10 | 5.09E-10 |
| 1,2,3,4,6,7,8-HpCDD | 5.54E-09 | 7.35E-09 | 7.78E-09 | 8.04E-09 | 9.47E-09 | 9.60E-09 | 1.19E-08 | 1.49E-08 | 4.22E-09 | 7.79E-09 | 2.15E-09 | 2.99E-09 | 1.80E-09 | 2.70E-09 | 4.57E-09 | 2.91E-09 | 5.10E-09 | 3.77E-09 | 3.13E-09 | 3.34E-09 | 3.43E-09 | 3.83E-09 |
| 1,2,3,4,6,7,8-HpCDF | 2.68E-09 | 3.55E-09 | 3.76E-09 | 3.89E-09 | 4.58E-09 | 4.64E-09 | 5.74E-09 | 7.20E-09 | 2.04E-09 | 3.77E-09 | 1.04E-09 | 1.44E-09 | 8.69E-10 | 1.31E-09 | 2.21E-09 | 1.41E-09 | 2.46E-09 | 1.82E-09 | 1.51E-09 | 1.61E-09 | 1.66E-09 | 1.85E-09 |
| 1,2,3,4,7,8-HxCDD | 1.54E-09 | 2.05E-09 | 2.17E-09 | 2.24E-09 | 2.64E-09 | 2.67E-09 | 3.30E-09 | 4.15E-09 | 1.18E-09 | 2.17E-09 | 5.98E-10 | 8.32E-10 | 5.01E-10 | 7.53E-10 | 1.27E-09 | 8.10E-10 | 1.42E-09 | 1.05E-09 | 8.71E-10 | 9.30E-10 | 9.56E-10 | 1.07E-09 |
| 1,2,3,4,7,8-HxCDF | 2.34E-09 | 3.10E-09 | 3.28E-09 | 3.39E-09 | 3.99E-09 | 4.04E-09 | 5.00E-09 | 6.28E-09 | 1.78E-09 | 3.28E-09 | 9.04E-10 | 1.26E-09 | 7.58E-10 | 1.14E-09 | 1.93E-09 | 1.22E-09 | 2.15E-09 | 1.59E-09 | 1.32E-09 | 1.41E-09 | 1.45E-09 | 1.61E-09 |
| 1,2,3,4,7,8,9-HpCDF | 6.93E-10 | 9.18E-10 | 9.72E-10 | 1.00E-09 | 1.18E-09 | 1.20E-09 | 1.48E-09 | 1.86E-09 | 5.28E-10 | 9.74E-10 | 2.68E-10 | 3.73E-10 | 2.25E-10 | 3.38E-10 | 5.71E-10 | 3.63E-10 | 6.37E-10 | 4.71E-10 | 3.91E-10 | 4.17E-10 | 4.29E-10 | 4.79E-10 |
| 1,2,3,4,6,7,8,9-OCDD | 1.16E-08 | 1.53E-08 | 1.62E-08 | 1.68E-08 | 1.98E-08 | 2.00E-08 | 2.47E-08 | 3.11E-08 | 8.81E-09 | 1.62E-08 | 4.47E-09 | 6.23E-09 | 3.75E-09 | 5.64E-09 | 9.53E-09 | 6.06E-09 | 1.06E-08 | 7.86E-09 | 6.52E-09 | 6.96E-09 | 7.16E-09 | 7.99E-09 |
| 1,2,3,4,6,7,8,9-OCDF | 2.65E-09 | 3.51E-09 | 3.72E-09 | 3.84E-09 | 4.53E-09 | 4.59E-09 | 5.67E-09 | 7.12E-09 | 2.02E-09 | 3.72E-09 | 1.03E-09 | 1.43E-09 | 8.59E-10 | 1.29E-09 | 2.18E-09 | 1.39E-09 | 2.44E-09 | 1.80E-09 | 1.49E-09 | 1.60E-09 | 1.64E-09 | 1.83E-09 |
| 2,3,7,8-TCDD | 1.34E-09 | 1.77E-09 | 1.88E-09 | 1.94E-09 | 2.29E-09 | 2.32E-09 | 2.86E-09 | 3.60E-09 | 1.02E-09 | 1.88E-09 | 5.18E-10 | 7.21E-10 | 4.34E-10 | 6.53E-10 | 1.10E-09 | 7.02E-10 | 1.23E-09 | 9.10E-10 | 7.55E-10 | 8.06E-10 | 8.29E-10 | 9.25E-10 |
| 2,3,7,8-TCDF | 6.61E-08 | 8.76E-08 | 9.28E-08 | 9.59E-08 | 1.13E-07 | 1.14E-07 | 1.42E-07 | 1.78E-07 | 5.04E-08 | 9.29E-08 | 2.56E-08 | 3.56E-08 | 2.14E-08 | 3.23E-08 | 5.45E-08 | 3.47E-08 | 6.08E-08 | 4.50E-08 | 3.73E-08 | 3.98E-08 | 4.10E-08 | 4.57E-08 |
| 2,3,4,6,7,8-HxCDF | 1.35E-09 | 1.78E-09 | 1.89E-09 | 1.95E-09 | 2.30E-09 | 2.33E-09 | 2.88E-09 | 3.62E-09 | 1.03E-09 | 1.89E-09 | 5.21E-10 | 7.25E-10 | 4.37E-10 | 6.57E-10 | 1.11E-09 | 7.06E-10 | 1.24E-09 | 9.15E-10 | 7.59E-10 | 8.11E-10 | 8.34E-10 | 9.31E-10 |
| 2,3,4,7,8-PeCDF | 1.58E-08 | 2.09E-08 | 2.21E-08 | 2.28E-08 | 2.69E-08 | 2.73E-08 | 3.37E-08 | 4.23E-08 | 1.20E-08 | 2.21E-08 | 6.10E-09 | 8.49E-09 | 5.11E-09 | 7.69E-09 | 1.30E-08 | 8.26E-09 | 1.45E-08 | 1.07E-08 | 8.89E-09 | 9.49E-09 | 9.76E-09 | 1.09E-08 |
| Acetaldehyde | 6.65E-01 | 8.82E-01 | 9.33E-01 | 9.64E-01 | 1.14E+00 | 1.15E+00 | 1.42E+00 | 1.79E+00 | 5.07E-01 | 9.35E-01 | 2.57E-01 | 3.58E-01 | 2.16E-01 | 3.25E-01 | 5.48E-01 | 3.49E-01 | 6.12E-01 | 4.52E-01 | 3.75E-01 | 4.01E-01 | 4.12E-01 | 4.60E-01 |
| Acrolein | 2.58E-02 | 3.42E-02 | 3.62E-02 | 3.74E-02 | 4.40E-02 | 4.46E-02 | 5.52E-02 | 6.93E-02 | 1.96E-02 | 3.62E-02 | 9.98E-03 | 1.39E-02 | 8.36E-03 | 1.26E-02 | 2.13E-02 | 1.35E-02 | 2.37E-02 | 1.75E-02 | 1.45E-02 | 1.55E-02 | 1.60E-02 | 1.78E-02 |
| Arsenic | 3.30E-03 | 4.04E-03 | 4.17E-03 | 4.00E-03 | 3.94E-03 | 3.87E-03 | 4.61E-03 | 7.72E-03 | 1.76E-03 | 4.24E-03 | 9.88E-04 | 1.51E-03 | 7.40E-04 | 1.32E-03 | 2.03E-03 | 1.47E-03 | 2.23E-03 | 1.24E-03 | 1.16E-03 | 1.07E-03 | 1.53E-03 | 1.36E-03 |
| Benz(a)anthracene | 7.52E-06 | 9.97E-06 | 1.06E-05 | 1.09E-05 | 1.29E-05 | 1.30E-05 | 1.61E-05 | 2.02E-05 | 5.73E-06 | 1.06E-05 | 2.91E-06 | 4.05E-06 | 2.44E-06 | 3.67E-06 | 6.20E-06 | 3.94E-06 | 6.92E-06 | 5.12E-06 | 4.24E-06 | 4.53E-06 | 4.66E-06 | 5.20E-06 |
| Benzo(a)pyrene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzo(b)fluoranthene | 1.07E-06 | 1.42E-06 | 1.51E-06 | 1.56E-06 | 1.83E-06 | 1.86E-06 | 2.30E-06 | 2.88E-06 | 8.18E-07 | 1.51E-06 | 4.15E-07 | 5.78E-07 | 3.48E-07 | 5.23E-07 | 8.85E-07 | 5.63E-07 | 9.87E-07 | 7.30E-07 | 6.05E-07 | 6.46E-07 | 6.65E-07 | 7.42E-07 |
| Benzo(k)fluoranthene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzene | 5.54E+00 | 7.35E+00 | 7.78E+00 | 8.04E+00 | 9.47E+00 | 9.60E+00 | 1.19E+01 | 1.49E+01 | 4.22E+00 | 7.79E+00 | 2.15E+00 | 2.99E+00 | 1.80E+00 | 2.70E+00 | 4.57E+00 | 2.91E+00 | 5.10E+00 | 3.77E+00 | 3.13E+00 | 3.34E+00 | 3.43E+00 | 3.83E+00 |
| Benzyl chloride | 5.82E-02 | 7.71E-02 | 8.17E-02 | 8.44E-02 | 9.95E-02 | 1.01E-01 | 1.25E-01 | 1.56E-01 | 4.43E-02 | 8.18E-02 | 2.25E-02 | 3.14E-02 | 1.89E-02 | 2.84E-02 | 4.80E-02 | 3.05E-02 | 5.35E-02 | 3.96E-02 | 3.28E-02 | 3.51E-02 | 3.60E-02 | 4.02E-02 |
| Beryllium | 8.04E-04 | 1.12E-03 | 1.18E-03 | 1.16E-03 | 1.12E-03 | 1.11E-03 | 1.28E-03 | 1.99E-03 | 4.86E-04 | 1.17E-03 | 2.87E-04 | 4.10E-04 | 2.13E-04 | 3.70E-04 | 5.76E-04 | 4.06E-04 | 6.27E-04 | 3.92E-04 | 3.65E-04 | 3.36E-04 | 4.15E-04 | 3.99E-04 |
| Cadmium | 1.37E-03 | 1.86E-03 | 1.89E-03 | 1.82E-03 | 1.74E-03 | 1.72E-03 | 1.98E-03 | 3.23E-03 | 7.59E-04 | 1.91E-03 | 4.47E-04 | 6.54E-04 | 3.28E-04 | 5.82E-04 | 9.18E-04 | 6.58E-04 | 9.96E-04 | 5.94E-04 | 5.63E-04 | 4.96E-04 | 6.50E-04 | 5.96E-04 |
| Carbon tetrachloride | 3.54E-02 | 4.69E-02 | 4.97E-02 | 5.13E-02 | 6.05E-02 | 6.13E-02 | 7.58E-02 | 9.51E-02 | 2.70E-02 | 4.97E-02 | 1.37E-02 | 1.91E-02 | 1.15E-02 | 1.73E-02 | 2.92E-02 | 1.86E-02 | 3.26E-02 | 2.41E-02 | 2.00E-02 | 2.13E-02 | 2.19E-02 | 2.45E-02 |
| Chlorobenzene | 3.18E-01 | 4.22E-01 | 4.47E-01 | 4.62E-01 | 5.44E-01 | 5.51E-01 | 6.81E-01 | 8.55E-01 | 2.43E-01 | 4.47E-01 | 1.23E-01 | 1.72E-01 | 1.03E-01 | 1.55E-01 | 2.62E-01 | 1.67E-01 | 2.93E-01 | 2.16E-01 | 1.80E-01 | 1.92E-01 | 1.97E-01 | 2.20E-01 |
| Chloroform | 1.65E-02 | 2.18E-02 | 2.31E-02 | 2.39E-02 | 2.81E-02 | 2.85E-02 | 3.52E-02 | 4.43E-02 | 1.26E-02 | 2.31E-02 | 6.37E-03 | 8.88E-03 | 5.34E-03 | 8.04E-03 | 1.36E-02 | 8.64E-03 | 1.51E-02 | 1.12E-02 | 9.29E-03 | 9.92E-03 | 1.02E-02 | 1.14E-02 |
| Chrysene | 2.22E-05 | 2.94E-05 | 3.11E-05 | 3.21E-05 | 3.79E-05 | 3.84E-05 | 4.75E-05 | 5.96E-05 | 1.69E-05 | 3.12E-05 | 8.58E-06 | 1.19E-05 | 7.19E-06 | 1.08E-05 | 1.83E-05 | 1.16E-05 | 2.04E-05 | 1.51E-05 | 1.25E-05 | 1.34E-05 | 1.37E-05 | 1.53E-05 |
| Copper | 2.24E-02 | 2.88E-02 | 2.96E-02 | 2.84E-02 | 2.70E-02 | 2.65E-02 | 3.10E-02 | 5.19E-02 | 1.18E-02 | 3.08E-02 | 6.93E-03 | 1.04E-02 | 4.99E-03 | 9.13E-03 | 1.45E-02 | 1.07E-02 | 1.58E-02 | 9.04E-03 | 8.61E-03 | 7.61E-03 | 1.01E-02 | 9.15E-03 |
| Chromium VI | 2.96E-03 | 3.24E-03 | 3.29E-03 | 3.22E-03 | 3.34E-03 | 3.23E-03 | 3.94E-03 | 7.39E-03 | 1.66E-03 | 3.22E-03 | 9.14E-04 | 1.40E-03 | 6.89E-04 | 1.31E-03 | 1.74E-03 | 1.22E-03 | 1.73E-03 | 8.75E-04 | 8.23E-04 | 8.93E-04 | 1.53E-03 | 1.29E-03 |
| Dibenz(a,h)anthracene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Diesel PM | 6.27E+00 | 1.23E+01 | 1.10E+01 | 1.03E+01 | 1.22E+01 | 1.22E+01 | 1.68E+01 | 2.76E+01 | 4.03E+00 | 2.71E+01 | 3.08E+00 | 4.30E+00 | 2.65E+00 | 4.00E+00 | 1.15E+01 | 5.48E+00 | 1.73E+00 | 4.57E+00 | 4.44E+00 | 3.95E+00 | 4.76E+00 | 5.93E+00 |
| Ethylene dibromide | 3.46E-02 | 4.58E-02 | 4.85E-02 | 5.01E-02 | 5.91E-02 | 5.99E-02 | 7.40E-02 | 9.29E-02 | 2.63E-02 | 4.86E-02 | 1.34E-02 | 1.86E-02 | 1.12E-02 | 1.69E-02 | 2.85E-02 | 1.81E-02 | 3.18E-02 | 2.35E-02 | 1.95E-02 | 2.08E-02 | 2.14E-02 | 2.39E-02 |
| Ethylene dichloride | 1.37E-02 | 1.81E-02 | 1.92E-02 | 1.98E-02 | 2.33E-02 | 2.37E-02 | 2.92E-02 | 3.67E-02 | 1.04E-02 | 1.92E-02 | 5.29E-03 | 7.36E-03 | 4.43E-03 | 6.66E-03 | 1.13E-02 | 7.16E-03 | 1.26E-02 | 9.29E-03 | 7.70E-03 | 8.23E-03 | 8.46E-03 | 9.44E-03 |
| Ethylbenzene | 5.50E-01 | 7.29E-01 | 7.72E-01 | 7.98E-01 | 9.40E-01 | 9.53E-01 | 1.18E+00 | 1.48E+00 | 4.19E-01 | 7.73E-01 | 2.13E-01 | 2.97E-01 | 1.79E-01 | 2.68E-01 | 4.54E-01 | 2.89E-01 | 5.06E-01 | 3.74E-01 | 3.10E-01 | 3.31E-01 | 3.41E-01 | 3.80E-01 |
| Ethyl chloride | 2.22E-02 | 2.95E-02 | 3.12E-02 | 3.23E-02 | 3.80E-02 | 3.85E-02 | 4.76E-02 | 5.98E-02 | 1.70E-02 | 3.13E-02 | 8.61E-03 | 1.20E-02 | 7.22E-03 | 1.09E-02 | 1.83E-02 | 1.17E-02 | 2.05E-02 | 1.51E-02 | 1.25E-02 | 1.34E-02 | 1.38E-02 | 1.54E-02 |
| Formaldehyde | 3.62E-02 | 4.80E-02 | 5.08E-02 | 5.25E-02 | 6.19E-02 | 6.27E-02 | 7.75E-02 | 9.74E-02 | 2.76E-02 | 5.09E-02 | 1.40E-02 | 1.95E-02 | 1.18E-02 | 1.77E-02 | 2.99E-02 | 1.90E-02 | 3.33E-02 | 2.46E-02 | 2.04E-02 | 2.18E-02 | 2.24E-02 | 2.50E-02 |
| Hydrochloric acid | 6.14E+01 | 8.13E+01 | 8.61E+01 | 8.90E+01 | 1.05E+02 | 1.06E+02 | 1.31E+02 | 1.65E+02 | 4.68E+01 | 8.62E+01 | 2.38E+01 | 3.31E+01 | 1.99E+01 | 2.99E+01 | 5.06E+01 | 3.22E+01 | 5.64E+01 | 4.17E+01 | 3.46E+01 | 3.70E+01 | 3.80E+01 | 4.24E+01 |
| Indeno(1,2,3-c,d)pyrene | 1.25E-07 | 1.66E-07 | 1.76E-07 | 1.82E-07 | 2.14E-07 | 2.17E-07 | 2.69E-07 | 3.37E-07 | 9.56E-08 | 1.76E-07 | 4.86E-08 | 6.76E-08 | 4.07E-08 | 6.12E-08 | 1.03E-07 | 6.58E-08 | 1.15E-07 | 8.53E-08 | 7.08E-08 | 7.56E-08 | 7.77E-08 | 8.68E-08 |

**TABLE 9A**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Lead | 2.29E-03 | 3.05E-03 | 3.21E-03 | 3.15E-03 | 3.09E-03 | 3.04E-03 | 3.62E-03 | 5.75E-03 | 1.35E-03 | 3.27E-03 | 7.78E-04 | 1.13E-03 | 5.71E-04 | 1.05E-03 | 1.55E-03 | 1.12E-03 | 1.74E-03 | 9.86E-04 | 9.13E-04 | 8.66E-04 | 1.17E-03 | 1.11E-03 |
| Manganese | 2.29E-03 | 3.04E-03 | 3.22E-03 | 3.32E-03 | 3.92E-03 | 3.97E-03 | 4.91E-03 | 6.16E-03 | 1.75E-03 | 3.22E-03 | 8.87E-04 | 1.24E-03 | 7.44E-04 | 1.12E-03 | 1.89E-03 | 1.20E-03 | 2.11E-03 | 1.56E-03 | 1.29E-03 | 1.38E-03 | 1.42E-03 | 1.58E-03 |
| Mercury | 7.92E-01 | 1.05E+00 | 1.11E+00 | 1.15E+00 | 1.35E+00 | 1.37E+00 | 1.70E+00 | 2.13E+00 | 6.04E-01 | 1.11E+00 | 3.07E-01 | 4.27E-01 | 2.57E-01 | 3.86E-01 | 6.53E-01 | 4.15E-01 | 7.28E-01 | 5.39E-01 | 4.47E-01 | 4.77E-01 | 4.91E-01 | 5.48E-01 |
| Methyl bromide | 3.59E-01 | 4.76E-01 | 5.04E-01 | 5.21E-01 | 6.14E-01 | 6.22E-01 | 7.69E-01 | 9.65E-01 | 2.74E-01 | 5.05E-01 | 1.39E-01 | 1.94E-01 | 1.16E-01 | 1.75E-01 | 2.96E-01 | 1.88E-01 | 3.30E-01 | 2.44E-01 | 2.03E-01 | 2.16E-01 | 2.22E-01 | 2.48E-01 |
| Methylene chloride | 7.40E-02 | 9.81E-02 | 1.04E-01 | 1.07E-01 | 1.27E-01 | 1.28E-01 | 1.58E-01 | 1.99E-01 | 5.64E-02 | 1.04E-01 | 2.87E-02 | 3.99E-02 | 2.40E-02 | 3.61E-02 | 6.11E-02 | 3.88E-02 | 6.81E-02 | 5.03E-02 | 4.18E-02 | 4.46E-02 | 4.59E-02 | 5.12E-02 |
| Naphthalene | 7.96E-02 | 1.05E-01 | 1.12E-01 | 1.15E-01 | 1.36E-01 | 1.38E-01 | 1.70E-01 | 2.14E-01 | 6.06E-02 | 1.12E-01 | 3.08E-02 | 4.29E-02 | 2.58E-02 | 3.88E-02 | 6.56E-02 | 4.17E-02 | 7.32E-02 | 5.41E-02 | 4.49E-02 | 4.79E-02 | 4.93E-02 | 5.50E-02 |
| Nickel | 6.94E-02 | 8.82E-02 | 9.46E-02 | 9.33E-02 | 8.64E-02 | 8.47E-02 | 1.00E-01 | 1.62E-01 | 3.78E-02 | 8.42E-02 | 2.41E-02 | 3.35E-02 | 1.82E-02 | 2.90E-02 | 4.12E-02 | 3.01E-02 | 4.59E-02 | 2.69E-02 | 2.48E-02 | 2.34E-02 | 3.34E-02 | 3.14E-02 |
| o-Xylene | 7.80E-01 | 1.03E+00 | 1.09E+00 | 1.13E+00 | 1.33E+00 | 1.35E+00 | 1.67E+00 | 2.10E+00 | 5.94E-01 | 1.10E+00 | 3.02E-01 | 4.20E-01 | 2.53E-01 | 3.81E-01 | 6.43E-01 | 4.09E-01 | 7.17E-01 | 5.30E-01 | 4.40E-01 | 4.70E-01 | 4.83E-01 | 5.39E-01 |
| p-Dichlorobenzene | 3.38E-02 | 4.48E-02 | 4.74E-02 | 4.90E-02 | 5.78E-02 | 5.85E-02 | 7.24E-02 | 9.09E-02 | 2.58E-02 | 4.75E-02 | 1.31E-02 | 1.82E-02 | 1.10E-02 | 1.65E-02 | 2.79E-02 | 1.77E-02 | 3.11E-02 | 2.30E-02 | 1.91E-02 | 2.04E-02 | 2.09E-02 | 2.34E-02 |
| Perchloroethylene | 3.1E-02 | 4.04E-02 | 4.3E-02 | 4.4E-02 | 5.2E-02 | 5.28E-02 | 6.52E-02 | 8.19E-02 | 2.32E-02 | 4.28E-02 | 1.18E-02 | 1.64E-02 | 9.89E-03 | 1.49E-02 | 2.51E-02 | 1.60E-02 | 2.80E-02 | 2.07E-02 | 1.72E-02 | 1.84E-02 | 1.89E-02 | 2.11E-02 |
| Selenium | 4.29E-03 | 5.79E-03 | 5.98E-03 | 5.92E-03 | 6.37E-03 | 6.37E-03 | 7.59E-03 | 1.08E-02 | 2.83E-03 | 5.93E-03 | 1.55E-03 | 2.21E-03 | 1.23E-03 | 1.97E-03 | 3.23E-03 | 2.16E-03 | 3.49E-03 | 2.41E-03 | 2.12E-03 | 2.09E-03 | 2.36E-03 | 2.42E-03 |
| Crystalline silica | 1.49E+00 | 2.50E+00 | 2.52E+00 | 2.37E+00 | 2.02E+00 | 1.97E+00 | 2.00E+00 | 3.54E+00 | 8.50E-01 | 2.62E+00 | 6.40E-01 | 8.53E-01 | 4.00E-01 | 8.03E-01 | 1.28E+00 | 9.86E-01 | 1.24E+00 | 8.93E-01 | 9.23E-01 | 7.48E-01 | 7.15E-01 | 7.12E-01 |
| Styrene | 1.39E-01 | 1.85E-01 | 1.96E-01 | 2.02E-01 | 2.38E-01 | 2.41E-01 | 2.98E-01 | 3.75E-01 | 1.06E-01 | 1.96E-01 | 5.39E-02 | 7.51E-02 | 4.52E-02 | 6.80E-02 | 1.15E-01 | 7.31E-02 | 1.28E-01 | 9.48E-02 | 7.86E-02 | 8.39E-02 | 8.63E-02 | 9.63E-02 |
| Trichloroethylene | 2.41E-02 | 3.20E-02 | 3.39E-02 | 3.50E-02 | 4.13E-02 | 4.18E-02 | 5.17E-02 | 6.49E-02 | 1.84E-02 | 3.39E-02 | 9.35E-03 | 1.30E-02 | 7.83E-03 | 1.18E-02 | 1.99E-02 | 1.27E-02 | 2.22E-02 | 1.64E-02 | 1.36E-02 | 1.45E-02 | 1.50E-02 | 1.67E-02 |
| 1,1,2,2-Tetrachloroethane | 2.32E-02 | 3.07E-02 | 3.25E-02 | 3.36E-02 | 3.96E-02 | 4.01E-02 | 4.96E-02 | 6.22E-02 | 1.76E-02 | 3.25E-02 | 8.96E-03 | 1.25E-02 | 7.51E-03 | 1.13E-02 | 1.91E-02 | 1.21E-02 | 2.13E-02 | 1.57E-02 | 1.31E-02 | 1.40E-02 | 1.43E-02 | 1.60E-02 |
| Toluene | 4.95E+00 | 6.56E+00 | 6.94E+00 | 7.18E+00 | 8.46E+00 | 8.57E+00 | 1.06E+01 | 1.33E+01 | 3.77E+00 | 6.95E+00 | 1.92E+00 | 2.67E+00 | 1.61E+00 | 2.41E+00 | 4.08E+00 | 2.60E+00 | 4.55E+00 | 3.37E+00 | 2.79E+00 | 2.98E+00 | 3.07E+00 | 3.42E+00 |
| Vanadium | 2.22E-01 | 2.66E-01 | 2.84E-01 | 2.79E-01 | 2.65E-01 | 2.59E-01 | 3.10E-01 | 5.06E-01 | 1.16E-01 | 2.58E-01 | 7.07E-02 | 1.03E-01 | 5.44E-02 | 8.86E-02 | 1.23E-01 | 8.97E-02 | 1.39E-01 | 7.34E-02 | 6.70E-02 | 6.57E-02 | 1.04E-01 | 9.26E-02 |
| Vinyl chloride | 8.15E-02 | 1.08E-01 | 1.14E-01 | 1.18E-01 | 1.39E-01 | 1.41E-01 | 1.75E-01 | 2.19E-01 | 6.21E-02 | 1.15E-01 | 3.16E-02 | 4.40E-02 | 2.65E-02 | 3.98E-02 | 6.73E-02 | 4.28E-02 | 7.50E-02 | 5.55E-02 | 4.60E-02 | 4.91E-02 | 5.05E-02 | 5.64E-02 |
| Vinylidene chloride | 2.23E-02 | 2.96E-02 | 3.13E-02 | 3.24E-02 | 3.82E-02 | 3.87E-02 | 4.78E-02 | 6.00E-02 | 1.70E-02 | 3.14E-02 | 8.64E-03 | 1.20E-02 | 7.24E-03 | 1.09E-02 | 1.84E-02 | 1.17E-02 | 2.05E-02 | 1.52E-02 | 1.26E-02 | 1.35E-02 | 1.38E-02 | 1.54E-02 |
| Xylenes (mixed) | 4.00E+00 | 5.30E+00 | 5.61E+00 | 5.80E+00 | 6.83E+00 | 6.92E+00 | 8.56E+00 | 1.07E+01 | 3.05E+00 | 5.62E+00 | 1.55E+00 | 2.16E+00 | 1.30E+00 | 1.95E+00 | 3.30E+00 | 2.10E+00 | 3.68E+00 | 2.72E+00 | 2.26E+00 | 2.41E+00 | 2.48E+00 | 2.76E+00 |

**TABLE 9A**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 7.69E-03 | 8.43E-03 | 1.08E-02 | 5.54E-03 | 1.02E-02 | 1.04E-02 | 9.64E-03 | 1.32E-02 | 1.53E-02 | 1.59E-02 | 8.80E-03 | 1.15E-02 | 1.24E-02 | 8.98E-03 | 3.68E-03 | 3.74E-03 | 4.03E-02 | 4.64E-02 | 6.55E-02 |
| 1,1,2-Trichloroethane | 1.28E-02 | 1.41E-02 | 1.80E-02 | 9.23E-03 | 1.71E-02 | 1.73E-02 | 1.61E-02 | 2.19E-02 | 2.55E-02 | 2.65E-02 | 1.47E-02 | 1.92E-02 | 2.06E-02 | 1.50E-02 | 6.14E-03 | 6.23E-03 | 6.71E-02 | 7.74E-02 | 1.09E-01 |
| 1,1-Dichloroethane | 4.75E-03 | 5.20E-03 | 6.66E-03 | 3.42E-03 | 6.32E-03 | 6.42E-03 | 5.95E-03 | 8.13E-03 | 9.44E-03 | 9.83E-03 | 5.43E-03 | 7.12E-03 | 7.65E-03 | 5.54E-03 | 2.27E-03 | 2.31E-03 | 2.49E-02 | 2.87E-02 | 4.04E-02 |
| 1,2-Dichloropropane | 6.51E-03 | 7.14E-03 | 9.14E-03 | 4.69E-03 | 8.68E-03 | 8.81E-03 | 8.17E-03 | 1.12E-02 | 1.30E-02 | 1.35E-02 | 7.46E-03 | 9.78E-03 | 1.05E-02 | 7.61E-03 | 3.12E-03 | 3.17E-03 | 3.41E-02 | 3.93E-02 | 5.55E-02 |
| 1,3-Butadiene | 2.20E-02 | 2.41E-02 | 3.08E-02 | 1.58E-02 | 2.93E-02 | 2.97E-02 | 2.76E-02 | 3.77E-02 | 4.38E-02 | 4.56E-02 | 2.52E-02 | 3.30E-02 | 3.54E-02 | 2.57E-02 | 1.05E-02 | 1.07E-02 | 1.15E-01 | 1.33E-01 | 1.87E-01 |
| 1,3-Dichloropropene | 2.66E-02 | 2.92E-02 | 3.73E-02 | 1.92E-02 | 3.55E-02 | 3.60E-02 | 3.34E-02 | 4.56E-02 | 5.30E-02 | 5.52E-02 | 3.05E-02 | 4.00E-02 | 4.29E-02 | 3.11E-02 | 1.27E-02 | 1.30E-02 | 1.39E-01 | 1.61E-01 | 2.27E-01 |
| 1,2,3,6,7,8-HxCDD | 6.37E-10 | 6.98E-10 | 8.93E-10 | 4.59E-10 | 8.48E-10 | 8.61E-10 | 7.98E-10 | 1.09E-09 | 1.27E-09 | 1.32E-09 | 7.29E-10 | 9.56E-10 | 1.03E-09 | 7.43E-10 | 3.05E-10 | 3.10E-10 | 3.33E-09 | 3.84E-09 | 5.42E-09 |
| 1,2,3,6,7,8-HxCDF | 9.13E-10 | 1.00E-09 | 1.28E-09 | 6.58E-10 | 1.22E-09 | 1.23E-09 | 1.14E-09 | 1.56E-09 | 1.82E-09 | 1.89E-09 | 1.04E-09 | 1.37E-09 | 1.47E-09 | 1.07E-09 | 4.37E-10 | 4.44E-10 | 4.78E-09 | 5.51E-09 | 7.77E-09 |
| 1,2,3,7,8-PeCDD | 5.69E-10 | 6.24E-10 | 7.98E-10 | 4.10E-10 | 7.58E-10 | 7.69E-10 | 7.13E-10 | 9.74E-10 | 1.13E-09 | 1.18E-09 | 6.51E-10 | 8.54E-10 | 9.16E-10 | 6.64E-10 | 2.72E-10 | 2.77E-10 | 2.98E-09 | 3.43E-09 | 4.84E-09 |
| 1,2,3,7,8-PeCDF | 4.40E-09 | 4.82E-09 | 6.17E-09 | 3.17E-09 | 5.86E-09 | 5.95E-09 | 5.51E-09 | 7.53E-09 | 8.75E-09 | 9.11E-09 | 5.04E-09 | 6.60E-09 | 7.09E-09 | 5.14E-09 | 2.11E-09 | 2.14E-09 | 2.30E-08 | 2.66E-08 | 3.75E-08 |
| 1,2,3,7,8,9-HxCDD | 6.58E-10 | 7.22E-10 | 9.23E-10 | 4.74E-10 | 8.77E-10 | 8.90E-10 | 8.25E-10 | 1.13E-09 | 1.31E-09 | 1.36E-09 | 7.53E-10 | 9.88E-10 | 1.06E-09 | 7.68E-10 | 3.15E-10 | 3.20E-10 | 3.45E-09 | 3.97E-09 | 5.61E-09 |
| 1,2,3,7,8,9-HxCDF | 3.08E-10 | 3.37E-10 | 4.31E-10 | 2.22E-10 | 4.10E-10 | 4.16E-10 | 3.85E-10 | 5.27E-10 | 6.12E-10 | 6.37E-10 | 3.52E-10 | 4.62E-10 | 4.96E-10 | 3.59E-10 | 1.47E-10 | 1.50E-10 | 1.61E-09 | 1.86E-09 | 2.62E-09 |
| 1,2,3,4,6,7,8-HpCDD | 2.31E-09 | 2.54E-09 | 3.25E-09 | 1.67E-09 | 3.08E-09 | 3.13E-09 | 2.90E-09 | 3.96E-09 | 4.61E-09 | 4.80E-09 | 2.65E-09 | 3.48E-09 | 3.73E-09 | 2.70E-09 | 1.11E-09 | 1.13E-09 | 1.21E-08 | 1.40E-08 | 1.97E-08 |
| 1,2,3,4,6,7,8-HpCDF | 1.12E-09 | 1.23E-09 | 1.57E-09 | 8.07E-10 | 1.49E-09 | 1.51E-09 | 1.40E-09 | 1.92E-09 | 2.23E-09 | 2.32E-09 | 1.28E-09 | 1.68E-09 | 1.80E-09 | 1.31E-09 | 5.36E-10 | 5.45E-10 | 5.86E-09 | 6.76E-09 | 9.53E-09 |
| 1,2,3,4,7,8-HxCDD | 6.45E-10 | 7.07E-10 | 9.05E-10 | 4.65E-10 | 8.59E-10 | 8.72E-10 | 8.08E-10 | 1.10E-09 | 1.28E-09 | 1.34E-09 | 7.38E-10 | 9.68E-10 | 1.04E-09 | 7.53E-10 | 3.09E-10 | 3.14E-10 | 3.38E-09 | 3.89E-09 | 5.49E-09 |
| 1,2,3,4,7,8-HxCDF | 9.76E-10 | 1.07E-09 | 1.37E-09 | 7.03E-10 | 1.30E-09 | 1.32E-09 | 1.22E-09 | 1.67E-09 | 1.94E-09 | 2.02E-09 | 1.12E-09 | 1.46E-09 | 1.57E-09 | 1.14E-09 | 4.67E-10 | 4.75E-10 | 5.11E-09 | 5.89E-09 | 8.31E-09 |
| 1,2,3,4,7,8,9-HpCDF | 2.89E-10 | 3.17E-10 | 4.06E-10 | 2.09E-10 | 3.85E-10 | 3.91E-10 | 3.63E-10 | 4.96E-10 | 5.76E-10 | 5.99E-10 | 3.31E-10 | 4.34E-10 | 4.66E-10 | 3.38E-10 | 1.39E-10 | 1.41E-10 | 1.52E-09 | 1.75E-09 | 2.46E-09 |
| 1,2,3,4,6,7,8,9-OCDD | 4.83E-09 | 5.29E-09 | 6.77E-09 | 3.48E-09 | 6.43E-09 | 6.53E-09 | 6.05E-09 | 8.27E-09 | 9.61E-09 | 1.00E-08 | 5.53E-09 | 7.25E-09 | 7.78E-09 | 5.64E-09 | 2.31E-09 | 2.35E-09 | 2.53E-08 | 2.92E-08 | 4.11E-08 |
| 1,2,3,4,6,7,8,9-OCDF | 1.11E-09 | 1.21E-09 | 1.55E-09 | 7.97E-10 | 1.47E-09 | 1.50E-09 | 1.39E-09 | 1.89E-09 | 2.20E-09 | 2.29E-09 | 1.27E-09 | 1.66E-09 | 1.78E-09 | 1.29E-09 | 5.30E-10 | 5.38E-10 | 5.79E-09 | 6.68E-09 | 9.42E-09 |
| 2,3,7,8-TCDD | 5.59E-10 | 6.13E-10 | 7.84E-10 | 4.03E-10 | 7.44E-10 | 7.56E-10 | 7.00E-10 | 9.57E-10 | 1.11E-09 | 1.16E-09 | 6.40E-10 | 8.39E-10 | 9.00E-10 | 6.53E-10 | 2.68E-10 | 2.72E-10 | 2.93E-09 | 3.37E-09 | 4.76E-09 |
| 2,3,7,8-TCDF | 2.76E-08 | 3.03E-08 | 3.87E-08 | 1.99E-08 | 3.68E-08 | 3.73E-08 | 3.46E-08 | 4.73E-08 | 5.49E-08 | 5.72E-08 | 3.16E-08 | 4.15E-08 | 4.45E-08 | 3.22E-08 | 1.32E-08 | 1.34E-08 | 1.45E-07 | 1.67E-07 | 2.35E-07 |
| 2,3,4,6,7,8-HxCDF | 5.62E-10 | 6.17E-10 | 7.89E-10 | 4.05E-10 | 7.49E-10 | 7.60E-10 | 7.05E-10 | 9.63E-10 | 1.12E-09 | 1.16E-09 | 6.44E-10 | 8.44E-10 | 9.06E-10 | 6.56E-10 | 2.69E-10 | 2.73E-10 | 2.94E-09 | 3.39E-09 | 4.79E-09 |
| 2,3,4,7,8-PeCDF | 6.58E-09 | 7.22E-09 | 9.23E-09 | 4.74E-09 | 8.77E-09 | 8.90E-09 | 8.25E-09 | 1.13E-08 | 1.31E-08 | 1.36E-08 | 7.53E-09 | 9.88E-09 | 1.06E-08 | 7.68E-09 | 3.15E-09 | 3.20E-09 | 3.45E-08 | 3.97E-08 | 5.61E-08 |
| Acetaldehyde | 2.78E-01 | 3.05E-01 | 3.90E-01 | 2.00E-01 | 3.70E-01 | 3.76E-01 | 3.48E-01 | 4.76E-01 | 5.53E-01 | 5.76E-01 | 3.18E-01 | 4.17E-01 | 4.48E-01 | 3.24E-01 | 1.33E-01 | 1.35E-01 | 1.45E+00 | 1.68E+00 | 2.37E+00 |
| Acrolein | 1.08E-02 | 1.18E-02 | 1.51E-02 | 7.76E-03 | 1.43E-02 | 1.46E-02 | 1.35E-02 | 1.84E-02 | 2.14E-02 | 2.23E-02 | 1.23E-02 | 1.62E-02 | 1.73E-02 | 1.26E-02 | 5.15E-03 | 5.24E-03 | 5.64E-02 | 6.50E-02 | 9.17E-02 |
| Arsenic | 9.39E-04 | 1.04E-03 | 1.04E-03 | 1.48E-03 | 1.53E-03 | 1.04E-03 | 1.21E-03 | 1.76E-03 | 2.30E-03 | 1.55E-03 | 9.81E-04 | 1.27E-03 | 1.21E-03 | 1.08E-03 | 8.82E-04 | 8.39E-04 | 7.57E-03 | 6.82E-03 | 6.26E-03 |
| Benz(a)anthracene | 3.14E-06 | 3.45E-06 | 4.41E-06 | 2.26E-06 | 4.18E-06 | 4.25E-06 | 3.94E-06 | 5.38E-06 | 6.25E-06 | 6.51E-06 | 3.60E-06 | 4.72E-06 | 5.06E-06 | 3.67E-06 | 1.50E-06 | 1.53E-06 | 1.65E-05 | 1.90E-05 | 2.68E-05 |
| Benzo(a)pyrene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzo(b)fluoranthene | 4.48E-07 | 4.91E-07 | 6.29E-07 | 3.23E-07 | 5.97E-07 | 6.06E-07 | 5.62E-07 | 7.67E-07 | 8.92E-07 | 9.28E-07 | 5.13E-07 | 6.73E-07 | 7.22E-07 | 5.23E-07 | 2.15E-07 | 2.18E-07 | 2.35E-06 | 2.71E-06 | 3.82E-06 |
| Benzo(k)fluoranthene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzene | 2.31E+00 | 2.54E+00 | 3.25E+00 | 1.67E+00 | 3.08E+00 | 3.13E+00 | 2.90E+00 | 3.96E+00 | 4.61E+00 | 4.80E+00 | 2.65E+00 | 3.48E+00 | 3.73E+00 | 2.70E+00 | 1.11E+00 | 1.13E+00 | 1.21E+01 | 1.40E+01 | 1.97E+01 |
| Benzyl chloride | 2.43E-02 | 2.67E-02 | 3.41E-02 | 1.75E-02 | 3.24E-02 | 3.29E-02 | 3.05E-02 | 4.16E-02 | 4.84E-02 | 5.04E-02 | 2.78E-02 | 3.65E-02 | 3.92E-02 | 2.84E-02 | 1.16E-02 | 1.18E-02 | 1.27E-01 | 1.47E-01 | 2.07E-01 |
| Beryllium | 2.65E-04 | 2.85E-04 | 3.08E-04 | 3.87E-04 | 4.23E-04 | 3.24E-04 | 3.61E-04 | 5.07E-04 | 6.72E-04 | 4.69E-04 | 2.96E-04 | 3.83E-04 | 3.66E-04 | 3.17E-04 | 2.34E-04 | 2.29E-04 | 1.89E-03 | 1.67E-03 | 1.82E-03 |
| Cadmium | 4.08E-04 | 4.42E-04 | 4.59E-04 | 6.47E-04 | 6.83E-04 | 4.82E-04 | 5.62E-04 | 8.06E-04 | 1.09E-03 | 6.97E-04 | 4.49E-04 | 5.86E-04 | 5.47E-04 | 4.86E-04 | 3.89E-04 | 3.78E-04 | 3.15E-03 | 2.83E-03 | 2.72E-03 |
| Carbon tetrachloride | 1.48E-02 | 1.62E-02 | 2.07E-02 | 1.07E-02 | 1.97E-02 | 2.00E-02 | 1.85E-02 | 2.53E-02 | 2.94E-02 | 3.06E-02 | 1.69E-02 | 2.22E-02 | 2.38E-02 | 1.73E-02 | 7.08E-03 | 7.19E-03 | 7.74E-02 | 8.93E-02 | 1.26E-01 |
| Chlorobenzene | 1.33E-01 | 1.46E-01 | 1.86E-01 | 9.58E-02 | 1.77E-01 | 1.80E-01 | 1.67E-01 | 2.28E-01 | 2.65E-01 | 2.75E-01 | 1.52E-01 | 2.00E-01 | 2.14E-01 | 1.55E-01 | 6.37E-02 | 6.47E-02 | 6.96E-01 | 8.03E-01 | 1.13E+00 |
| Chloroform | 6.88E-03 | 7.54E-03 | 9.65E-03 | 4.96E-03 | 9.16E-03 | 9.30E-03 | 8.62E-03 | 1.18E-02 | 1.37E-02 | 1.43E-02 | 7.88E-03 | 1.03E-02 | 1.11E-02 | 8.03E-03 | 3.29E-03 | 3.35E-03 | 3.60E-02 | 4.15E-02 | 5.86E-02 |
| Chrysene | 9.26E-06 | 1.02E-05 | 1.30E-05 | 6.67E-06 | 1.23E-05 | 1.25E-05 | 1.16E-05 | 1.59E-05 | 1.84E-05 | 1.92E-05 | 1.06E-05 | 1.39E-05 | 1.49E-05 | 1.08E-05 | 4.43E-06 | 4.50E-06 | 4.85E-05 | 5.59E-05 | 7.89E-05 |
| Copper | 6.34E-03 | 6.90E-03 | 7.03E-03 | 1.04E-02 | 1.11E-02 | 7.42E-03 | 8.87E-03 | 1.28E-02 | 1.75E-02 | 1.05E-02 | 7.04E-03 | 9.08E-03 | 8.27E-03 | 7.59E-03 | 6.18E-03 | 6.04E-03 | 5.14E-02 | 4.67E-02 | 4.13E-02 |
| Chromium VI | 9.08E-04 | 9.93E-04 | 9.21E-04 | 1.49E-03 | 1.26E-03 | 8.89E-04 | 9.66E-04 | 1.46E-03 | 1.64E-03 | 1.37E-03 | 8.02E-04 | 1.02E-03 | 1.01E-03 | 9.54E-04 | 8.32E-04 | 7.61E-04 | 7.32E-03 | 5.34E-03 | 4.98E-03 |
| Dibenz(a,h)anthracene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Diesel PM | 3.04E+00 | 3.43E+00 | 3.28E+00 | 6.30E+00 | 5.90E+00 | 4.22E+00 | 1.19E+00 | 6.99E+00 | 7.93E+00 | 7.20E+00 | 3.26E+00 | 1.08E+00 | 6.66E+00 | 7.10E+00 | 4.06E+00 | 2.80E+00 | 3.31E+01 | 1.61E+01 | 1.34E+01 |
| Ethylene dibromide | 1.44E-02 | 1.58E-02 | 2.02E-02 | 1.04E-02 | 1.92E-02 | 1.95E-02 | 1.81E-02 | 2.47E-02 | 2.87E-02 | 2.99E-02 | 1.65E-02 | 2.17E-02 | 2.33E-02 | 1.69E-02 | 6.91E-03 | 7.02E-03 | 7.56E-02 | 8.72E-02 | 1.23E-01 |
| Ethylene dichloride | 5.70E-03 | 6.26E-03 | 8.00E-03 | 4.11E-03 | 7.60E-03 | 7.71E-03 | 7.15E-03 | 9.77E-03 | 1.14E-02 | 1.18E-02 | 6.53E-03 | 8.56E-03 | 9.19E-03 | 6.66E-03 | 2.73E-03 | 2.78E-03 | 2.99E-02 | 3.44E-02 | 4.86E-02 |
| Ethylbenzene | 2.30E-01 | 2.52E-01 | 3.22E-01 | 1.66E-01 | 3.06E-01 | 3.11E-01 | 2.88E-01 | 3.94E-01 | 4.57E-01 | 4.76E-01 | 2.63E-01 | 3.45E-01 | 3.70E-01 | 2.68E-01 | 1.10E-01 | 1.12E-01 | 1.20E+00 | 1.39E+00 | 1.96E+00 |
| Ethyl chloride | 9.29E-03 | 1.02E-02 | 1.30E-02 | 6.70E-03 | 1.24E-02 | 1.26E-02 | 1.16E-02 | 1.59E-02 | 1.85E-02 | 1.93E-02 | 1.06E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.45E-03 | 4.52E-03 | 4.87E-02 | 5.61E-02 | 7.91E-02 |
| Formaldehyde | 1.51E-02 | 1.66E-02 | 2.12E-02 | 1.09E-02 | 2.02E-02 | 2.05E-02 | 1.90E-02 | 2.59E-02 | 3.01E-02 | 3.13E-02 | 1.73E-02 | 2.27E-02 | 2.44E-02 | 1.77E-02 | 7.24E-03 | 7.36E-03 | 7.92E-02 | 9.14E-02 | 1.29E-01 |
| Hydrochloric acid | 2.56E+01 | 2.81E+01 | 3.59E+01 | 1.85E+01 | 3.41E+01 | 3.47E+01 | 3.21E+01 | 4.39E+01 | 5.10E+01 | 5.31E+01 | 2.93E+01 | 3.85E+01 | 4.13E+01 | 2.99E+01 | 1.23E+01 | 1.25E+01 | 1.34E+02 | 1.55E+02 | 2.18E+02 |
| Indeno(1,2,3-c,d)pyrene | 5.24E-08 | 5.75E-08 | 7.35E-08 | 3.78E-08 | 6.98E-08 | 7.09E-08 | 6.57E-08 | 8.98E-08 | 1.04E-07 | 1.09E-07 | 6.00E-08 | 7.87E-08 | 8.44E-08 | 6.12E-08 | 2.51E-08 | 2.55E-08 | 2.75E-07 | 3.17E-07 | 4.46E-07 |

**TABLE 9A**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2005 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 7.27E-04 | 7.90E-04 | 8.19E-04 | 1.11E-03 | 1.17E-03 | 8.37E-04 | 9.51E-04 | 1.35E-03 | 1.75E-03 | 1.27E-03 | 7.78E-04 | 1.01E-03 | 9.88E-04 | 8.85E-04 | 6.59E-04 | 6.38E-04 | 5.52E-03 | 4.59E-03 | 4.91E-03 |
| Manganese | 9.57E-04 | 1.05E-03 | 1.34E-03 | 6.90E-04 | 1.28E-03 | 1.29E-03 | 1.20E-03 | 1.64E-03 | 1.90E-03 | 1.98E-03 | 1.10E-03 | 1.44E-03 | 1.54E-03 | 1.12E-03 | 4.58E-04 | 4.66E-04 | 5.01E-03 | 5.78E-03 | 8.15E-03 |
| Mercury | 3.31E-01 | 3.63E-01 | 4.64E-01 | 2.39E-01 | 4.41E-01 | 4.47E-01 | 4.15E-01 | 5.67E-01 | 6.58E-01 | 6.85E-01 | 3.79E-01 | 4.97E-01 | 5.33E-01 | 3.86E-01 | 1.59E-01 | 1.61E-01 | 1.73E+00 | 2.00E+00 | 2.82E+00 |
| Methyl bromide | 1.50E-01 | 1.64E-01 | 2.10E-01 | 1.08E-01 | 2.00E-01 | 2.03E-01 | 1.88E-01 | 2.57E-01 | 2.98E-01 | 3.11E-01 | 1.72E-01 | 2.25E-01 | 2.42E-01 | 1.75E-01 | 7.18E-02 | 7.30E-02 | 7.85E-01 | 9.06E-01 | 1.28E+00 |
| Methylene chloride | 3.09E-02 | 3.39E-02 | 4.34E-02 | 2.23E-02 | 4.12E-02 | 4.18E-02 | 3.88E-02 | 5.30E-02 | 6.15E-02 | 6.41E-02 | 3.54E-02 | 4.64E-02 | 4.98E-02 | 3.61E-02 | 1.48E-02 | 1.50E-02 | 1.62E-01 | 1.87E-01 | 2.63E-01 |
| Naphthalene | 3.32E-02 | 3.64E-02 | 4.66E-02 | 2.39E-02 | 4.43E-02 | 4.49E-02 | 4.17E-02 | 5.69E-02 | 6.61E-02 | 6.89E-02 | 3.81E-02 | 4.99E-02 | 5.35E-02 | 3.88E-02 | 1.59E-02 | 1.62E-02 | 1.74E-01 | 2.01E-01 | 2.83E-01 |
| Nickel | 2.12E-02 | 2.29E-02 | 2.41E-02 | 4.01E-02 | 3.14E-02 | 2.27E-02 | 2.53E-02 | 3.61E-02 | 4.76E-02 | 3.47E-02 | 2.10E-02 | 2.71E-02 | 2.63E-02 | 2.32E-02 | 2.45E-02 | 2.11E-02 | 1.57E-01 | 1.29E-01 | 1.43E-01 |
| o-Xylene | 3.26E-01 | 3.57E-01 | 4.57E-01 | 2.35E-01 | 4.34E-01 | 4.40E-01 | 4.08E-01 | 5.58E-01 | 6.48E-01 | 6.75E-01 | 3.73E-01 | 4.89E-01 | 5.25E-01 | 3.80E-01 | 1.56E-01 | 1.58E-01 | 1.71E+00 | 1.97E+00 | 2.77E+00 |
| p-Dichlorobenzene | 1.41E-02 | 1.55E-02 | 1.98E-02 | 1.02E-02 | 1.88E-02 | 1.91E-02 | 1.77E-02 | 2.42E-02 | 2.81E-02 | 2.93E-02 | 1.62E-02 | 2.12E-02 | 2.28E-02 | 1.65E-02 | 6.76E-03 | 6.87E-03 | 7.40E-02 | 8.53E-02 | 1.20E-01 |
| Perchloroethylene | 1.27E-02 | 1.40E-02 | 1.79E-02 | 9.17E-03 | 1.70E-02 | 1.72E-02 | 1.60E-02 | 2.18E-02 | 2.53E-02 | 2.64E-02 | 1.46E-02 | 1.91E-02 | 2.05E-02 | 1.49E-02 | 6.10E-03 | 6.19E-03 | 6.67E-02 | 7.69E-02 | 1.08E-01 |
| Selenium | 1.55E-03 | 1.68E-03 | 1.99E-03 | 1.70E-03 | 2.27E-03 | 1.99E-03 | 2.02E-03 | 2.83E-03 | 3.53E-03 | 2.95E-03 | 1.74E-03 | 2.28E-03 | 2.29E-03 | 1.79E-03 | 1.07E-03 | 1.05E-03 | 9.63E-03 | 9.79E-03 | 1.18E-02 |
| Crystalline silica | 4.99E-01 | 4.94E-01 | 5.31E-01 | 9.54E-01 | 1.02E+00 | 7.25E-01 | 8.94E-01 | 1.23E+00 | 1.89E+00 | 7.76E-01 | 6.84E-01 | 8.48E-01 | 6.40E-01 | 6.31E-01 | 5.76E-01 | 6.01E-01 | 3.62E+00 | 2.89E+00 | 2.33E+00 |
| Styrene | 5.82E-02 | 6.38E-02 | 8.16E-02 | 4.19E-02 | 7.75E-02 | 7.87E-02 | 7.30E-02 | 9.97E-02 | 1.16E-01 | 1.21E-01 | 6.66E-02 | 8.74E-02 | 9.38E-02 | 6.80E-02 | 2.79E-02 | 2.83E-02 | 3.05E-01 | 3.51E-01 | 4.96E-01 |
| Trichloroethylene | 1.01E-02 | 1.11E-02 | 1.41E-02 | 7.27E-03 | 1.34E-02 | 1.36E-02 | 1.26E-02 | 1.73E-02 | 2.01E-02 | 2.09E-02 | 1.15E-02 | 1.51E-02 | 1.63E-02 | 1.18E-02 | 4.83E-03 | 4.91E-03 | 5.28E-02 | 6.09E-02 | 8.59E-02 |
| 1,1,2,2-Tetrachloroethane | 9.67E-03 | 1.06E-02 | 1.36E-02 | 6.97E-03 | 1.29E-02 | 1.31E-02 | 1.21E-02 | 1.66E-02 | 1.92E-02 | 2.00E-02 | 1.11E-02 | 1.45E-02 | 1.56E-02 | 1.13E-02 | 4.63E-03 | 4.71E-03 | 5.07E-02 | 5.84E-02 | 8.24E-02 |
| Toluene | 2.07E+00 | 2.27E+00 | 2.90E+00 | 1.49E+00 | 2.75E+00 | 2.79E+00 | 2.59E+00 | 3.54E+00 | 4.11E+00 | 4.28E+00 | 2.37E+00 | 3.10E+00 | 3.33E+00 | 2.41E+00 | 9.90E-01 | 1.01E+00 | 1.08E+01 | 1.25E+01 | 1.76E+01 |
| Vanadium | 6.38E-02 | 7.01E-02 | 6.93E-02 | 1.22E-01 | 9.33E-02 | 6.41E-02 | 7.22E-02 | 1.05E-01 | 1.32E-01 | 1.03E-01 | 5.99E-02 | 7.79E-02 | 7.74E-02 | 6.93E-02 | 7.38E-02 | 6.32E-02 | 4.93E-01 | 4.11E-01 | 4.30E-01 |
| Vinyl chloride | 3.41E-02 | 3.74E-02 | 4.78E-02 | 2.45E-02 | 4.54E-02 | 4.61E-02 | 4.27E-02 | 5.83E-02 | 6.78E-02 | 7.06E-02 | 3.90E-02 | 5.11E-02 | 5.49E-02 | 3.98E-02 | 1.63E-02 | 1.66E-02 | 1.78E-01 | 2.06E-01 | 2.90E-01 |
| Vinylidene chloride | 9.33E-03 | 1.02E-02 | 1.31E-02 | 6.72E-03 | 1.24E-02 | 1.26E-02 | 1.17E-02 | 1.60E-02 | 1.86E-02 | 1.93E-02 | 1.07E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.47E-03 | 4.54E-03 | 4.88E-02 | 5.63E-02 | 7.94E-02 |
| Xylenes (mixed) | 1.67E+00 | 1.83E+00 | 2.34E+00 | 1.20E+00 | 2.22E+00 | 2.26E+00 | 2.09E+00 | 2.86E+00 | 3.32E+00 | 3.46E+00 | 1.91E+00 | 2.51E+00 | 2.69E+00 | 1.95E+00 | 8.00E-01 | 8.12E-01 | 8.75E+00 | 1.01E+01 | 1.42E+01 |

Note

1. Receptor identifier in the HARP model.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 9B**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 1.84E-02 | 2.44E-02 | 2.58E-02 | 2.67E-02 | 3.15E-02 | 3.19E-02 | 3.94E-02 | 4.95E-02 | 1.40E-02 | 2.59E-02 | 7.13E-03 | 9.92E-03 | 5.97E-03 | 8.98E-03 | 1.52E-02 | 9.65E-03 | 1.69E-02 | 1.25E-02 | 1.04E-02 | 1.11E-02 | 1.14E-02 | 1.27E-02 |
| 1,1,2-Trichloroethane | 3.07E-02 | 4.07E-02 | 4.31E-02 | 4.45E-02 | 5.24E-02 | 5.31E-02 | 6.57E-02 | 8.25E-02 | 2.34E-02 | 4.31E-02 | 1.19E-02 | 1.65E-02 | 9.95E-03 | 1.50E-02 | 2.53E-02 | 1.61E-02 | 2.82E-02 | 2.09E-02 | 1.73E-02 | 1.85E-02 | 1.90E-02 | 2.12E-02 |
| 1,1-Dichloroethane | 1.14E-02 | 1.51E-02 | 1.59E-02 | 1.65E-02 | 1.94E-02 | 1.97E-02 | 2.43E-02 | 3.05E-02 | 8.66E-03 | 1.60E-02 | 4.40E-03 | 6.12E-03 | 3.69E-03 | 5.54E-03 | 9.37E-03 | 5.96E-03 | 1.04E-02 | 7.73E-03 | 6.41E-03 | 6.84E-03 | 7.04E-03 | 7.85E-03 |
| 1,2-Dichloropropane | 1.56E-02 | 2.07E-02 | 2.19E-02 | 2.26E-02 | 2.67E-02 | 2.70E-02 | 3.34E-02 | 4.19E-02 | 1.19E-02 | 2.19E-02 | 6.04E-03 | 8.41E-03 | 5.06E-03 | 7.61E-03 | 1.29E-02 | 8.18E-03 | 1.43E-02 | 1.06E-02 | 8.80E-03 | 9.40E-03 | 9.66E-03 | 1.08E-02 |
| 1,3-Butadiene | 5.27E-02 | 6.98E-02 | 7.39E-02 | 7.63E-02 | 9.00E-02 | 9.12E-02 | 1.13E-01 | 1.42E-01 | 4.01E-02 | 7.40E-02 | 2.04E-02 | 2.84E-02 | 1.71E-02 | 2.57E-02 | 4.34E-02 | 2.76E-02 | 4.84E-02 | 3.58E-02 | 2.97E-02 | 3.17E-02 | 3.26E-02 | 3.64E-02 |
| 1,3-Dichloropropene | 6.37E-02 | 8.45E-02 | 8.94E-02 | 9.24E-02 | 1.09E-01 | 1.10E-01 | 1.36E-01 | 1.71E-01 | 4.86E-02 | 8.96E-02 | 2.47E-02 | 3.44E-02 | 2.07E-02 | 3.11E-02 | 5.26E-02 | 3.34E-02 | 5.86E-02 | 4.33E-02 | 3.59E-02 | 3.84E-02 | 3.95E-02 | 4.41E-02 |
| 1,2,3,6,7,8-HxCDD | 1.52E-09 | 2.02E-09 | 2.14E-09 | 2.21E-09 | 2.60E-09 | 2.64E-09 | 3.26E-09 | 4.10E-09 | 1.16E-09 | 2.14E-09 | 5.90E-10 | 8.21E-10 | 4.94E-10 | 7.44E-10 | 1.26E-09 | 7.99E-10 | 1.40E-09 | 1.04E-09 | 8.60E-10 | 9.18E-10 | 9.44E-10 | 1.05E-09 |
| 1,2,3,6,7,8-HxCDF | 2.19E-09 | 2.90E-09 | 3.07E-09 | 3.17E-09 | 3.73E-09 | 3.78E-09 | 4.68E-09 | 5.87E-09 | 1.67E-09 | 3.07E-09 | 8.46E-10 | 1.18E-09 | 7.09E-10 | 1.07E-09 | 1.80E-09 | 1.15E-09 | 2.01E-09 | 1.49E-09 | 1.23E-09 | 1.32E-09 | 1.35E-09 | 1.51E-09 |
| 1,2,3,7,8-PeCDD | 1.36E-09 | 1.81E-09 | 1.91E-09 | 1.97E-09 | 2.33E-09 | 2.36E-09 | 2.91E-09 | 3.66E-09 | 1.04E-09 | 1.91E-09 | 5.27E-10 | 7.34E-10 | 4.42E-10 | 6.64E-10 | 1.12E-09 | 7.14E-10 | 1.25E-09 | 9.26E-10 | 7.68E-10 | 8.20E-10 | 8.44E-10 | 9.41E-10 |
| 1,2,3,7,8-PeCDF | 1.05E-08 | 1.40E-08 | 1.48E-08 | 1.53E-08 | 1.80E-08 | 1.82E-08 | 2.25E-08 | 2.83E-08 | 8.02E-09 | 1.48E-08 | 4.08E-09 | 5.68E-09 | 3.42E-09 | 5.14E-09 | 8.68E-09 | 5.52E-09 | 9.68E-09 | 7.16E-09 | 5.94E-09 | 6.34E-09 | 6.52E-09 | 7.28E-09 |
| 1,2,3,7,8,9-HxCDD | 1.58E-09 | 2.09E-09 | 2.21E-09 | 2.28E-09 | 2.69E-09 | 2.73E-09 | 3.37E-09 | 4.23E-09 | 1.20E-09 | 2.21E-09 | 6.10E-10 | 8.49E-10 | 5.11E-10 | 7.69E-10 | 1.30E-09 | 8.26E-10 | 1.45E-09 | 1.07E-09 | 8.89E-10 | 9.49E-10 | 9.76E-10 | 1.09E-09 |
| 1,2,3,7,8,9-HxCDF | 7.36E-10 | 9.76E-10 | 1.03E-09 | 1.07E-09 | 1.26E-09 | 1.28E-09 | 1.58E-09 | 1.98E-09 | 5.61E-10 | 1.03E-09 | 2.85E-10 | 3.97E-10 | 2.39E-10 | 3.59E-10 | 6.07E-10 | 3.86E-10 | 6.77E-10 | 5.01E-10 | 4.15E-10 | 4.44E-10 | 4.56E-10 | 5.09E-10 |
| 1,2,3,4,6,7,8-HpCDD | 5.54E-09 | 7.35E-09 | 7.78E-09 | 8.04E-09 | 9.47E-09 | 9.60E-09 | 1.19E-08 | 1.49E-08 | 4.22E-09 | 7.79E-09 | 2.15E-09 | 2.99E-09 | 1.80E-09 | 2.70E-09 | 4.57E-09 | 2.91E-09 | 5.10E-09 | 3.77E-09 | 3.13E-09 | 3.34E-09 | 3.43E-09 | 3.83E-09 |
| 1,2,3,4,6,7,8-HpCDF | 2.68E-09 | 3.55E-09 | 3.76E-09 | 3.89E-09 | 4.58E-09 | 4.64E-09 | 5.74E-09 | 7.20E-09 | 2.04E-09 | 3.77E-09 | 1.04E-09 | 1.44E-09 | 8.69E-10 | 1.31E-09 | 2.21E-09 | 1.41E-09 | 2.46E-09 | 1.82E-09 | 1.51E-09 | 1.61E-09 | 1.66E-09 | 1.85E-09 |
| 1,2,3,4,7,8-HxCDD | 1.54E-09 | 2.05E-09 | 2.17E-09 | 2.24E-09 | 2.64E-09 | 2.67E-09 | 3.30E-09 | 4.15E-09 | 1.18E-09 | 2.17E-09 | 5.98E-10 | 8.32E-10 | 5.01E-10 | 7.53E-10 | 1.27E-09 | 8.10E-10 | 1.42E-09 | 1.05E-09 | 8.71E-10 | 9.30E-10 | 9.56E-10 | 1.07E-09 |
| 1,2,3,4,7,8-HxCDF | 2.34E-09 | 3.10E-09 | 3.28E-09 | 3.39E-09 | 3.99E-09 | 4.04E-09 | 5.00E-09 | 6.28E-09 | 1.78E-09 | 3.28E-09 | 9.04E-10 | 1.26E-09 | 7.58E-10 | 1.14E-09 | 1.93E-09 | 1.22E-09 | 2.15E-09 | 1.59E-09 | 1.32E-09 | 1.41E-09 | 1.45E-09 | 1.61E-09 |
| 1,2,3,4,7,8,9-HpCDF | 6.93E-10 | 9.18E-10 | 9.72E-10 | 1.00E-09 | 1.18E-09 | 1.20E-09 | 1.48E-09 | 1.86E-09 | 5.28E-10 | 9.74E-10 | 2.68E-10 | 3.73E-10 | 2.25E-10 | 3.38E-10 | 5.71E-10 | 3.63E-10 | 6.37E-10 | 4.71E-10 | 3.91E-10 | 4.17E-10 | 4.29E-10 | 4.79E-10 |
| 1,2,3,4,6,7,8,9-OCDD | 1.16E-08 | 1.53E-08 | 1.62E-08 | 1.68E-08 | 1.98E-08 | 2.00E-08 | 2.47E-08 | 3.11E-08 | 8.81E-09 | 1.62E-08 | 4.47E-09 | 6.23E-09 | 3.75E-09 | 5.64E-09 | 9.53E-09 | 6.06E-09 | 1.06E-08 | 7.86E-09 | 6.52E-09 | 6.96E-09 | 7.16E-09 | 7.99E-09 |
| 1,2,3,4,6,7,8,9-OCDF | 2.65E-09 | 3.51E-09 | 3.72E-09 | 3.84E-09 | 4.53E-09 | 4.59E-09 | 5.67E-09 | 7.12E-09 | 2.02E-09 | 3.72E-09 | 1.03E-09 | 1.43E-09 | 8.59E-10 | 1.29E-09 | 2.18E-09 | 1.39E-09 | 2.44E-09 | 1.80E-09 | 1.49E-09 | 1.60E-09 | 1.64E-09 | 1.83E-09 |
| 2,3,7,8-TCDD | 1.34E-09 | 1.77E-09 | 1.88E-09 | 1.94E-09 | 2.29E-09 | 2.32E-09 | 2.86E-09 | 3.60E-09 | 1.02E-09 | 1.88E-09 | 5.18E-10 | 7.21E-10 | 4.34E-10 | 6.53E-10 | 1.10E-09 | 7.02E-10 | 1.23E-09 | 9.10E-10 | 7.55E-10 | 8.06E-10 | 8.29E-10 | 9.25E-10 |
| 2,3,7,8-TCDF | 6.61E-08 | 8.76E-08 | 9.28E-08 | 9.59E-08 | 1.13E-07 | 1.14E-07 | 1.42E-07 | 1.78E-07 | 5.04E-08 | 9.29E-08 | 2.56E-08 | 3.56E-08 | 2.14E-08 | 3.23E-08 | 5.45E-08 | 3.47E-08 | 6.08E-08 | 4.50E-08 | 3.73E-08 | 3.98E-08 | 4.10E-08 | 4.57E-08 |
| 2,3,4,6,7,8-HxCDF | 1.35E-09 | 1.78E-09 | 1.89E-09 | 1.95E-09 | 2.30E-09 | 2.33E-09 | 2.88E-09 | 3.62E-09 | 1.03E-09 | 1.89E-09 | 5.21E-10 | 7.25E-10 | 4.37E-10 | 6.57E-10 | 1.11E-09 | 7.06E-10 | 1.24E-09 | 9.15E-10 | 7.59E-10 | 8.11E-10 | 8.34E-10 | 9.31E-10 |
| 2,3,4,7,8-PeCDF | 1.58E-08 | 2.09E-08 | 2.21E-08 | 2.28E-08 | 2.69E-08 | 2.73E-08 | 3.37E-08 | 4.23E-08 | 1.20E-08 | 2.21E-08 | 6.10E-09 | 8.49E-09 | 5.11E-09 | 7.69E-09 | 1.30E-08 | 8.26E-09 | 1.45E-08 | 1.07E-08 | 8.89E-09 | 9.49E-09 | 9.76E-09 | 1.09E-08 |
| Acetaldehyde | 6.65E-01 | 8.82E-01 | 9.33E-01 | 9.64E-01 | 1.14E+00 | 1.15E+00 | 1.42E+00 | 1.79E+00 | 5.07E-01 | 9.35E-01 | 2.57E-01 | 3.58E-01 | 2.16E-01 | 3.25E-01 | 5.48E-01 | 3.49E-01 | 6.12E-01 | 4.52E-01 | 3.75E-01 | 4.01E-01 | 4.12E-01 | 4.60E-01 |
| Acrolein | 2.58E-02 | 3.42E-02 | 3.62E-02 | 3.74E-02 | 4.40E-02 | 4.46E-02 | 5.52E-02 | 6.93E-02 | 1.96E-02 | 3.62E-02 | 9.98E-03 | 1.39E-02 | 8.36E-03 | 1.26E-02 | 2.13E-02 | 1.35E-02 | 2.37E-02 | 1.75E-02 | 1.45E-02 | 1.55E-02 | 1.60E-02 | 1.78E-02 |
| Arsenic | 3.30E-03 | 4.04E-03 | 4.17E-03 | 4.00E-03 | 3.94E-03 | 3.87E-03 | 4.61E-03 | 7.72E-03 | 1.76E-03 | 4.24E-03 | 9.88E-04 | 1.51E-03 | 7.40E-04 | 1.32E-03 | 2.03E-03 | 1.47E-03 | 2.23E-03 | 1.24E-03 | 1.16E-03 | 1.07E-03 | 1.53E-03 | 1.36E-03 |
| Benz(a)anthracene | 7.52E-06 | 9.97E-06 | 1.06E-05 | 1.09E-05 | 1.29E-05 | 1.30E-05 | 1.61E-05 | 2.02E-05 | 5.73E-06 | 1.06E-05 | 2.91E-06 | 4.05E-06 | 2.44E-06 | 3.67E-06 | 6.20E-06 | 3.94E-06 | 6.92E-06 | 5.12E-06 | 4.24E-06 | 4.53E-06 | 4.66E-06 | 5.20E-06 |
| Benzo(a)pyrene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzo(b)fluoranthene | 1.07E-06 | 1.42E-06 | 1.51E-06 | 1.56E-06 | 1.83E-06 | 1.86E-06 | 2.30E-06 | 2.88E-06 | 8.18E-07 | 1.51E-06 | 4.15E-07 | 5.78E-07 | 3.48E-07 | 5.23E-07 | 8.85E-07 | 5.63E-07 | 9.87E-07 | 7.30E-07 | 6.05E-07 | 6.46E-07 | 6.65E-07 | 7.42E-07 |
| Benzo(k)fluoranthene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzene | 5.54E+00 | 7.35E+00 | 7.78E+00 | 8.04E+00 | 9.47E+00 | 9.60E+00 | 1.19E+01 | 1.49E+01 | 4.22E+00 | 7.79E+00 | 2.15E+00 | 2.99E+00 | 1.80E+00 | 2.70E+00 | 4.57E+00 | 2.91E+00 | 5.10E+00 | 3.77E+00 | 3.13E+00 | 3.34E+00 | 3.43E+00 | 3.83E+00 |
| Benzyl chloride | 5.82E-02 | 7.71E-02 | 8.17E-02 | 8.44E-02 | 9.95E-02 | 1.01E-01 | 1.25E-01 | 1.56E-01 | 4.43E-02 | 8.18E-02 | 2.25E-02 | 3.14E-02 | 1.89E-02 | 2.84E-02 | 4.80E-02 | 3.05E-02 | 5.35E-02 | 3.96E-02 | 3.28E-02 | 3.51E-02 | 3.60E-02 | 4.02E-02 |
| Beryllium | 8.04E-04 | 1.12E-03 | 1.18E-03 | 1.16E-03 | 1.12E-03 | 1.11E-03 | 1.28E-03 | 1.99E-03 | 4.86E-04 | 1.17E-03 | 2.87E-04 | 4.10E-04 | 2.13E-04 | 3.70E-04 | 5.76E-04 | 4.06E-04 | 6.27E-04 | 3.92E-04 | 3.65E-04 | 3.36E-04 | 4.15E-04 | 3.99E-04 |
| Cadmium | 1.37E-03 | 1.86E-03 | 1.89E-03 | 1.82E-03 | 1.74E-03 | 1.72E-03 | 1.98E-03 | 3.23E-03 | 7.59E-04 | 1.91E-03 | 4.47E-04 | 6.54E-04 | 3.28E-04 | 5.82E-04 | 9.18E-04 | 6.58E-04 | 9.96E-04 | 5.94E-04 | 5.63E-04 | 4.96E-04 | 6.50E-04 | 5.96E-04 |
| Carbon tetrachloride | 3.54E-02 | 4.69E-02 | 4.97E-02 | 5.13E-02 | 6.05E-02 | 6.13E-02 | 7.58E-02 | 9.51E-02 | 2.70E-02 | 4.97E-02 | 1.37E-02 | 1.91E-02 | 1.15E-02 | 1.73E-02 | 2.92E-02 | 1.86E-02 | 3.26E-02 | 2.41E-02 | 2.00E-02 | 2.13E-02 | 2.19E-02 | 2.45E-02 |
| Chlorobenzene | 3.18E-01 | 4.22E-01 | 4.47E-01 | 4.62E-01 | 5.44E-01 | 5.51E-01 | 6.81E-01 | 8.55E-01 | 2.43E-01 | 4.47E-01 | 1.23E-01 | 1.72E-01 | 1.03E-01 | 1.55E-01 | 2.62E-01 | 1.67E-01 | 2.93E-01 | 2.16E-01 | 1.80E-01 | 1.92E-01 | 1.97E-01 | 2.20E-01 |
| Chloroform | 1.65E-02 | 2.18E-02 | 2.31E-02 | 2.39E-02 | 2.81E-02 | 2.85E-02 | 3.52E-02 | 4.43E-02 | 1.26E-02 | 2.31E-02 | 6.37E-03 | 8.88E-03 | 5.34E-03 | 8.04E-03 | 1.36E-02 | 8.64E-03 | 1.51E-02 | 1.12E-02 | 9.29E-03 | 9.92E-03 | 1.02E-02 | 1.14E-02 |
| Chrysene | 2.22E-05 | 2.94E-05 | 3.11E-05 | 3.21E-05 | 3.79E-05 | 3.84E-05 | 4.75E-05 | 5.96E-05 | 1.69E-05 | 3.12E-05 | 8.58E-06 | 1.19E-05 | 7.19E-06 | 1.08E-05 | 1.83E-05 | 1.16E-05 | 2.04E-05 | 1.51E-05 | 1.25E-05 | 1.34E-05 | 1.37E-05 | 1.53E-05 |
| Copper | 2.24E-02 | 2.88E-02 | 2.96E-02 | 2.84E-02 | 2.70E-02 | 2.65E-02 | 3.10E-02 | 5.19E-02 | 1.18E-02 | 3.08E-02 | 6.93E-03 | 1.04E-02 | 4.99E-03 | 9.13E-03 | 1.45E-02 | 1.07E-02 | 1.58E-02 | 9.04E-03 | 8.61E-03 | 7.61E-03 | 1.01E-02 | 9.15E-03 |
| Chromium VI | 2.96E-03 | 3.24E-03 | 3.29E-03 | 3.22E-03 | 3.34E-03 | 3.23E-03 | 3.94E-03 | 7.39E-03 | 1.66E-03 | 3.22E-03 | 9.14E-04 | 1.40E-03 | 6.89E-04 | 1.31E-03 | 1.74E-03 | 1.22E-03 | 1.73E-03 | 8.75E-04 | 8.23E-04 | 8.93E-04 | 1.53E-03 | 1.29E-03 |
| Dibenz(a,h)anthracene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Diesel PM | 6.27E+00 | 1.23E+01 | 1.10E+01 | 1.03E+01 | 1.22E+01 | 1.22E+01 | 1.68E+01 | 2.76E+01 | 4.03E+00 | 2.71E+01 | 3.08E+00 | 4.30E+00 | 2.65E+00 | 4.00E+00 | 1.15E+01 | 5.48E+00 | 1.73E+00 | 4.57E+00 | 4.44E+00 | 3.95E+00 | 4.76E+00 | 5.93E+00 |
| Ethylene dibromide | 3.46E-02 | 4.58E-02 | 4.85E-02 | 5.01E-02 | 5.91E-02 | 5.99E-02 | 7.40E-02 | 9.29E-02 | 2.63E-02 | 4.86E-02 | 1.34E-02 | 1.86E-02 | 1.12E-02 | 1.69E-02 | 2.85E-02 | 1.81E-02 | 3.18E-02 | 2.35E-02 | 1.95E-02 | 2.08E-02 | 2.14E-02 | 2.39E-02 |
| Ethylene dichloride | 1.37E-02 | 1.81E-02 | 1.92E-02 | 1.98E-02 | 2.33E-02 | 2.37E-02 | 2.92E-02 | 3.67E-02 | 1.04E-02 | 1.92E-02 | 5.29E-03 | 7.36E-03 | 4.43E-03 | 6.66E-03 | 1.13E-02 | 7.16E-03 | 1.26E-02 | 9.29E-03 | 7.70E-03 | 8.23E-03 | 8.46E-03 | 9.44E-03 |
| Ethylbenzene | 5.50E-01 | 7.29E-01 | 7.72E-01 | 7.98E-01 | 9.40E-01 | 9.53E-01 | 1.18E+00 | 1.48E+00 | 4.19E-01 | 7.73E-01 | 2.13E-01 | 2.97E-01 | 1.79E-01 | 2.68E-01 | 4.54E-01 | 2.89E-01 | 5.06E-01 | 3.74E-01 | 3.10E-01 | 3.31E-01 | 3.41E-01 | 3.80E-01 |
| Ethyl chloride | 2.22E-02 | 2.95E-02 | 3.12E-02 | 3.23E-02 | 3.80E-02 | 3.85E-02 | 4.76E-02 | 5.98E-02 | 1.70E-02 | 3.13E-02 | 8.61E-03 | 1.20E-02 | 7.22E-03 | 1.09E-02 | 1.83E-02 | 1.17E-02 | 2.05E-02 | 1.51E-02 | 1.25E-02 | 1.34E-02 | 1.38E-02 | 1.54E-02 |
| Formaldehyde | 3.62E-02 | 4.80E-02 | 5.08E-02 | 5.25E-02 | 6.19E-02 | 6.27E-02 | 7.75E-02 | 9.74E-02 | 2.76E-02 | 5.09E-02 | 1.40E-02 | 1.95E-02 | 1.18E-02 | 1.77E-02 | 2.99E-02 | 1.90E-02 | 3.33E-02 | 2.46E-02 | 2.04E-02 | 2.18E-02 | 2.24E-02 | 2.50E-02 |
| Hydrochloric acid | 6.14E+01 | 8.13E+01 | 8.61E+01 | 8.90E+01 | 1.05E+02 | 1.06E+02 | 1.31E+02 | 1.65E+02 | 4.68E+01 | 8.62E+01 | 2.38E+01 | 3.31E+01 | 1.99E+01 | 2.99E+01 | 5.06E+01 | 3.22E+01 | 5.64E+01 | 4.17E+01 | 3.46E+01 | 3.70E+01 | 3.80E+01 | 4.24E+01 |
| Indeno(1,2,3-c,d)pyrene | 1.25E-07 | 1.66E-07 | 1.76E-07 | 1.82E-07 | 2.14E-07 | 2.17E-07 | 2.69E-07 | 3.37E-07 | 9.56E-08 | 1.76E-07 | 4.86E-08 | 6.76E-08 | 4.07E-08 | 6.12E-08 | 1.03E-07 | 6.58E-08 | 1.15E-07 | 8.53E-08 | 7.08E-08 | 7.56E-08 | 7.77E-08 | 8.68E-08 |

**TABLE 9B**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter (ug/m$^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Lead | 2.29E-03 | 3.05E-03 | 3.21E-03 | 3.15E-03 | 3.09E-03 | 3.04E-03 | 3.62E-03 | 5.75E-03 | 1.35E-03 | 3.27E-03 | 7.78E-04 | 1.13E-03 | 5.71E-04 | 1.05E-03 | 1.55E-03 | 1.12E-03 | 1.74E-03 | 9.86E-04 | 9.13E-04 | 8.66E-04 | 1.17E-03 | 1.11E-03 |
| Manganese | 2.29E-03 | 3.04E-03 | 3.22E-03 | 3.32E-03 | 3.92E-03 | 3.97E-03 | 4.91E-03 | 6.16E-03 | 1.75E-03 | 3.22E-03 | 8.87E-04 | 1.24E-03 | 7.44E-04 | 1.12E-03 | 1.89E-03 | 1.20E-03 | 2.11E-03 | 1.56E-03 | 1.29E-03 | 1.38E-03 | 1.42E-03 | 1.58E-03 |
| Mercury | 7.29E-01 | 9.66E-01 | 1.02E+00 | 1.06E+00 | 1.25E+00 | 1.26E+00 | 1.56E+00 | 1.96E+00 | 5.55E-01 | 1.02E+00 | 2.82E-01 | 3.93E-01 | 2.36E-01 | 3.56E-01 | 6.01E-01 | 3.82E-01 | 6.70E-01 | 4.96E-01 | 4.11E-01 | 4.39E-01 | 4.51E-01 | 5.04E-01 |
| Methyl bromide | 3.59E-01 | 4.76E-01 | 5.04E-01 | 5.21E-01 | 6.14E-01 | 6.22E-01 | 7.69E-01 | 9.65E-01 | 2.74E-01 | 5.05E-01 | 1.39E-01 | 1.94E-01 | 1.16E-01 | 1.75E-01 | 2.96E-01 | 1.88E-01 | 3.30E-01 | 2.44E-01 | 2.03E-01 | 2.16E-01 | 2.22E-01 | 2.48E-01 |
| Methylene chloride | 7.40E-02 | 9.81E-02 | 1.04E-01 | 1.07E-01 | 1.27E-01 | 1.28E-01 | 1.58E-01 | 1.99E-01 | 5.64E-02 | 1.04E-01 | 2.87E-02 | 3.99E-02 | 2.40E-02 | 3.61E-02 | 6.11E-02 | 3.88E-02 | 6.81E-02 | 5.03E-02 | 4.18E-02 | 4.46E-02 | 4.59E-02 | 5.12E-02 |
| Naphthalene | 7.96E-02 | 1.05E-01 | 1.12E-01 | 1.15E-01 | 1.36E-01 | 1.38E-01 | 1.70E-01 | 2.14E-01 | 6.06E-02 | 1.12E-01 | 3.08E-02 | 4.29E-02 | 2.58E-02 | 3.88E-02 | 6.56E-02 | 4.17E-02 | 7.32E-02 | 5.41E-02 | 4.49E-02 | 4.79E-02 | 4.93E-02 | 5.50E-02 |
| Nickel | 6.94E-02 | 8.82E-02 | 9.46E-02 | 9.33E-02 | 8.64E-02 | 8.47E-02 | 1.00E-01 | 1.62E-01 | 3.78E-02 | 8.42E-02 | 2.41E-02 | 3.35E-02 | 1.82E-02 | 2.90E-02 | 4.12E-02 | 3.01E-02 | 4.59E-02 | 2.69E-02 | 2.48E-02 | 2.34E-02 | 3.34E-02 | 3.14E-02 |
| o-Xylene | 7.80E-01 | 1.03E+00 | 1.09E+00 | 1.13E+00 | 1.33E+00 | 1.35E+00 | 1.67E+00 | 2.10E+00 | 5.94E-01 | 1.10E+00 | 3.02E-01 | 4.20E-01 | 2.53E-01 | 3.81E-01 | 6.43E-01 | 4.09E-01 | 7.17E-01 | 5.30E-01 | 4.40E-01 | 4.70E-01 | 4.83E-01 | 5.39E-01 |
| p-Dichlorobenzene | 3.38E-02 | 4.48E-02 | 4.74E-02 | 4.90E-02 | 5.78E-02 | 5.85E-02 | 7.24E-02 | 9.09E-02 | 2.58E-02 | 4.75E-02 | 1.31E-02 | 1.82E-02 | 1.10E-02 | 1.65E-02 | 2.79E-02 | 1.77E-02 | 3.11E-02 | 2.30E-02 | 1.91E-02 | 2.04E-02 | 2.09E-02 | 2.34E-02 |
| Perchloroethylene | 3.1E-02 | 4.04E-02 | 4.3E-02 | 4.4E-02 | 5.2E-02 | 5.28E-02 | 6.52E-02 | 8.19E-02 | 2.32E-02 | 4.28E-02 | 1.18E-02 | 1.64E-02 | 9.89E-03 | 1.49E-02 | 2.51E-02 | 1.60E-02 | 2.80E-02 | 2.07E-02 | 1.72E-02 | 1.84E-02 | 1.89E-02 | 2.11E-02 |
| Selenium | 4.29E-03 | 5.79E-03 | 5.98E-03 | 5.92E-03 | 6.37E-03 | 6.37E-03 | 7.59E-03 | 1.08E-02 | 2.83E-03 | 5.93E-03 | 1.55E-03 | 2.21E-03 | 1.23E-03 | 1.97E-03 | 3.23E-03 | 2.16E-03 | 3.49E-03 | 2.41E-03 | 2.12E-03 | 2.09E-03 | 2.36E-03 | 2.42E-03 |
| Crystalline silica | 1.49E+00 | 2.50E+00 | 2.52E+00 | 2.37E+00 | 2.02E+00 | 1.97E+00 | 2.00E+00 | 3.54E+00 | 8.50E-01 | 2.62E+00 | 6.40E-01 | 8.53E-01 | 4.00E-01 | 8.03E-01 | 1.28E+00 | 9.86E-01 | 1.24E+00 | 8.93E-01 | 9.23E-01 | 7.48E-01 | 7.15E-01 | 7.12E-01 |
| Styrene | 1.39E-01 | 1.85E-01 | 1.96E-01 | 2.02E-01 | 2.38E-01 | 2.41E-01 | 2.98E-01 | 3.75E-01 | 1.06E-01 | 1.96E-01 | 5.39E-02 | 7.51E-02 | 4.52E-02 | 6.80E-02 | 1.15E-01 | 7.31E-02 | 1.28E-01 | 9.48E-02 | 7.86E-02 | 8.39E-02 | 8.63E-02 | 9.63E-02 |
| Trichloroethylene | 2.41E-02 | 3.20E-02 | 3.39E-02 | 3.50E-02 | 4.13E-02 | 4.18E-02 | 5.17E-02 | 6.49E-02 | 1.84E-02 | 3.39E-02 | 9.35E-03 | 1.30E-02 | 7.83E-03 | 1.18E-02 | 1.99E-02 | 1.27E-02 | 2.22E-02 | 1.64E-02 | 1.36E-02 | 1.45E-02 | 1.50E-02 | 1.67E-02 |
| 1,1,2,2-Tetrachloroethane | 2.32E-02 | 3.07E-02 | 3.25E-02 | 3.36E-02 | 3.96E-02 | 4.01E-02 | 4.96E-02 | 6.22E-02 | 1.76E-02 | 3.25E-02 | 8.96E-03 | 1.25E-02 | 7.51E-03 | 1.13E-02 | 1.91E-02 | 1.21E-02 | 2.13E-02 | 1.57E-02 | 1.31E-02 | 1.40E-02 | 1.43E-02 | 1.60E-02 |
| Toluene | 4.95E+00 | 6.56E+00 | 6.94E+00 | 7.18E+00 | 8.46E+00 | 8.57E+00 | 1.06E+01 | 1.33E+01 | 3.77E+00 | 6.95E+00 | 1.92E+00 | 2.67E+00 | 1.61E+00 | 2.41E+00 | 4.08E+00 | 2.60E+00 | 4.55E+00 | 3.37E+00 | 2.79E+00 | 2.98E+00 | 3.07E+00 | 3.42E+00 |
| Vanadium | 2.22E-01 | 2.66E-01 | 2.84E-01 | 2.79E-01 | 2.65E-01 | 2.59E-01 | 3.10E-01 | 5.06E-01 | 1.16E-01 | 2.58E-01 | 7.07E-02 | 1.03E-01 | 5.44E-02 | 8.86E-02 | 1.23E-01 | 8.97E-02 | 1.39E-01 | 7.34E-02 | 6.70E-02 | 6.57E-02 | 1.04E-01 | 9.26E-02 |
| Vinyl chloride | 8.15E-02 | 1.08E-01 | 1.14E-01 | 1.18E-01 | 1.39E-01 | 1.41E-01 | 1.75E-01 | 2.19E-01 | 6.21E-02 | 1.15E-01 | 3.16E-02 | 4.40E-02 | 2.65E-02 | 3.98E-02 | 6.73E-02 | 4.28E-02 | 7.50E-02 | 5.55E-02 | 4.60E-02 | 4.91E-02 | 5.05E-02 | 5.64E-02 |
| Vinylidene chloride | 2.23E-02 | 2.96E-02 | 3.13E-02 | 3.24E-02 | 3.82E-02 | 3.87E-02 | 4.78E-02 | 6.00E-02 | 1.70E-02 | 3.14E-02 | 8.64E-03 | 1.20E-02 | 7.24E-03 | 1.09E-02 | 1.84E-02 | 1.17E-02 | 2.05E-02 | 1.52E-02 | 1.26E-02 | 1.35E-02 | 1.38E-02 | 1.54E-02 |
| Xylenes (mixed) | 4.00E+00 | 5.30E+00 | 5.61E+00 | 5.80E+00 | 6.83E+00 | 6.92E+00 | 8.56E+00 | 1.07E+01 | 3.05E+00 | 5.62E+00 | 1.55E+00 | 2.16E+00 | 1.30E+00 | 1.95E+00 | 3.30E+00 | 2.10E+00 | 3.68E+00 | 2.72E+00 | 2.26E+00 | 2.41E+00 | 2.48E+00 | 2.76E+00 |

**TABLE 9B**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 7.69E-03 | 8.43E-03 | 1.08E-02 | 5.54E-03 | 1.02E-02 | 1.04E-02 | 9.64E-03 | 1.32E-02 | 1.53E-02 | 1.59E-02 | 8.80E-03 | 1.15E-02 | 1.24E-02 | 8.98E-03 | 3.68E-03 | 3.74E-03 | 4.03E-02 | 4.64E-02 | 6.55E-02 |
| 1,1,2-Trichloroethane | 1.28E-02 | 1.41E-02 | 1.80E-02 | 9.23E-03 | 1.71E-02 | 1.73E-02 | 1.61E-02 | 2.19E-02 | 2.55E-02 | 2.65E-02 | 1.47E-02 | 1.92E-02 | 2.06E-02 | 1.50E-02 | 6.14E-03 | 6.23E-03 | 6.71E-02 | 7.74E-02 | 1.09E-01 |
| 1,1-Dichloroethane | 4.75E-03 | 5.20E-03 | 6.66E-03 | 3.42E-03 | 6.32E-03 | 6.42E-03 | 5.95E-03 | 8.13E-03 | 9.44E-03 | 9.83E-03 | 5.43E-03 | 7.12E-03 | 7.65E-03 | 5.54E-03 | 2.27E-03 | 2.31E-03 | 2.49E-02 | 2.87E-02 | 4.04E-02 |
| 1,2-Dichloropropane | 6.51E-03 | 7.14E-03 | 9.14E-03 | 4.69E-03 | 8.68E-03 | 8.81E-03 | 8.17E-03 | 1.12E-02 | 1.30E-02 | 1.35E-02 | 7.46E-03 | 9.78E-03 | 1.05E-02 | 7.61E-03 | 3.12E-03 | 3.17E-03 | 3.41E-02 | 3.93E-02 | 5.55E-02 |
| 1,3-Butadiene | 2.20E-02 | 2.41E-02 | 3.08E-02 | 1.58E-02 | 2.93E-02 | 2.97E-02 | 2.76E-02 | 3.77E-02 | 4.38E-02 | 4.56E-02 | 2.52E-02 | 3.30E-02 | 3.54E-02 | 2.57E-02 | 1.05E-02 | 1.07E-02 | 1.15E-01 | 1.33E-01 | 1.87E-01 |
| 1,3-Dichloropropene | 2.66E-02 | 2.92E-02 | 3.73E-02 | 1.92E-02 | 3.55E-02 | 3.60E-02 | 3.34E-02 | 4.56E-02 | 5.30E-02 | 5.52E-02 | 3.05E-02 | 4.00E-02 | 4.29E-02 | 3.11E-02 | 1.27E-02 | 1.30E-02 | 1.39E-01 | 1.61E-01 | 2.27E-01 |
| 1,2,3,6,7,8-HxCDD | 6.37E-10 | 6.98E-10 | 8.93E-10 | 4.59E-10 | 8.48E-10 | 8.61E-10 | 7.98E-10 | 1.09E-09 | 1.27E-09 | 1.32E-09 | 7.29E-10 | 9.56E-10 | 1.03E-09 | 7.43E-10 | 3.05E-10 | 3.10E-10 | 3.33E-09 | 3.84E-09 | 5.42E-09 |
| 1,2,3,6,7,8-HxCDF | 9.13E-10 | 1.00E-09 | 1.28E-09 | 6.58E-10 | 1.22E-09 | 1.23E-09 | 1.14E-09 | 1.56E-09 | 1.82E-09 | 1.89E-09 | 1.04E-09 | 1.37E-09 | 1.47E-09 | 1.07E-09 | 4.37E-10 | 4.44E-10 | 4.78E-09 | 5.51E-09 | 7.77E-09 |
| 1,2,3,7,8-PeCDD | 5.69E-10 | 6.24E-10 | 7.98E-10 | 4.10E-10 | 7.58E-10 | 7.69E-10 | 7.13E-10 | 9.74E-10 | 1.13E-09 | 1.18E-09 | 6.51E-10 | 8.54E-10 | 9.16E-10 | 6.64E-10 | 2.72E-10 | 2.77E-10 | 2.98E-09 | 3.43E-09 | 4.84E-09 |
| 1,2,3,7,8-PeCDF | 4.40E-09 | 4.82E-09 | 6.17E-09 | 3.17E-09 | 5.86E-09 | 5.95E-09 | 5.51E-09 | 7.53E-09 | 8.75E-09 | 9.11E-09 | 5.04E-09 | 6.60E-09 | 7.09E-09 | 5.14E-09 | 2.11E-09 | 2.14E-09 | 2.30E-08 | 2.66E-08 | 3.75E-08 |
| 1,2,3,7,8,9-HxCDD | 6.58E-10 | 7.22E-10 | 9.23E-10 | 4.74E-10 | 8.77E-10 | 8.90E-10 | 8.25E-10 | 1.13E-09 | 1.31E-09 | 1.36E-09 | 7.53E-10 | 9.88E-10 | 1.06E-09 | 7.68E-10 | 3.15E-10 | 3.20E-10 | 3.45E-09 | 3.97E-09 | 5.61E-09 |
| 1,2,3,7,8,9-HxCDF | 3.08E-10 | 3.37E-10 | 4.31E-10 | 2.22E-10 | 4.10E-10 | 4.16E-10 | 3.85E-10 | 5.27E-10 | 6.12E-10 | 6.37E-10 | 3.52E-10 | 4.62E-10 | 4.96E-10 | 3.59E-10 | 1.47E-10 | 1.50E-10 | 1.61E-09 | 1.86E-09 | 2.62E-09 |
| 1,2,3,4,6,7,8-HpCDD | 2.31E-09 | 2.54E-09 | 3.25E-09 | 1.67E-09 | 3.08E-09 | 3.13E-09 | 2.90E-09 | 3.96E-09 | 4.61E-09 | 4.80E-09 | 2.65E-09 | 3.48E-09 | 3.73E-09 | 2.70E-09 | 1.11E-09 | 1.13E-09 | 1.21E-08 | 1.40E-08 | 1.97E-08 |
| 1,2,3,4,6,7,8-HpCDF | 1.12E-09 | 1.23E-09 | 1.57E-09 | 8.07E-10 | 1.49E-09 | 1.51E-09 | 1.40E-09 | 1.92E-09 | 2.23E-09 | 2.32E-09 | 1.28E-09 | 1.68E-09 | 1.80E-09 | 1.31E-09 | 5.36E-10 | 5.45E-10 | 5.86E-09 | 6.76E-09 | 9.53E-09 |
| 1,2,3,4,7,8-HxCDD | 6.45E-10 | 7.07E-10 | 9.05E-10 | 4.65E-10 | 8.59E-10 | 8.72E-10 | 8.08E-10 | 1.10E-09 | 1.28E-09 | 1.34E-09 | 7.38E-10 | 9.68E-10 | 1.04E-09 | 7.53E-10 | 3.09E-10 | 3.14E-10 | 3.38E-09 | 3.89E-09 | 5.49E-09 |
| 1,2,3,4,7,8-HxCDF | 9.76E-10 | 1.07E-09 | 1.37E-09 | 7.03E-10 | 1.30E-09 | 1.32E-09 | 1.22E-09 | 1.67E-09 | 1.94E-09 | 2.02E-09 | 1.12E-09 | 1.46E-09 | 1.57E-09 | 1.14E-09 | 4.67E-10 | 4.75E-10 | 5.11E-09 | 5.89E-09 | 8.31E-09 |
| 1,2,3,4,7,8,9-HpCDF | 2.89E-10 | 3.17E-10 | 4.06E-10 | 2.09E-10 | 3.85E-10 | 3.91E-10 | 3.63E-10 | 4.96E-10 | 5.76E-10 | 5.99E-10 | 3.31E-10 | 4.34E-10 | 4.66E-10 | 3.38E-10 | 1.39E-10 | 1.41E-10 | 1.52E-09 | 1.75E-09 | 2.46E-09 |
| 1,2,3,4,6,7,8,9-OCDD | 4.83E-09 | 5.29E-09 | 6.77E-09 | 3.48E-09 | 6.43E-09 | 6.53E-09 | 6.05E-09 | 8.27E-09 | 9.61E-09 | 1.00E-08 | 5.53E-09 | 7.25E-09 | 7.78E-09 | 5.64E-09 | 2.31E-09 | 2.35E-09 | 2.53E-08 | 2.92E-08 | 4.11E-08 |
| 1,2,3,4,6,7,8,9-OCDF | 1.11E-09 | 1.21E-09 | 1.55E-09 | 7.97E-10 | 1.47E-09 | 1.50E-09 | 1.39E-09 | 1.89E-09 | 2.20E-09 | 2.29E-09 | 1.27E-09 | 1.66E-09 | 1.78E-09 | 1.29E-09 | 5.30E-10 | 5.38E-10 | 5.79E-09 | 6.68E-09 | 9.42E-09 |
| 2,3,7,8-TCDD | 5.59E-10 | 6.13E-10 | 7.84E-10 | 4.03E-10 | 7.44E-10 | 7.56E-10 | 7.00E-10 | 9.57E-10 | 1.11E-09 | 1.16E-09 | 6.40E-10 | 8.39E-10 | 9.00E-10 | 6.53E-10 | 2.68E-10 | 2.72E-10 | 2.93E-09 | 3.37E-09 | 4.76E-09 |
| 2,3,7,8-TCDF | 2.76E-08 | 3.03E-08 | 3.87E-08 | 1.99E-08 | 3.68E-08 | 3.73E-08 | 3.46E-08 | 4.73E-08 | 5.49E-08 | 5.72E-08 | 3.16E-08 | 4.15E-08 | 4.45E-08 | 3.22E-08 | 1.32E-08 | 1.34E-08 | 1.45E-07 | 1.67E-07 | 2.35E-07 |
| 2,3,4,6,7,8-HxCDF | 5.62E-10 | 6.17E-10 | 7.89E-10 | 4.05E-10 | 7.49E-10 | 7.60E-10 | 7.05E-10 | 9.63E-10 | 1.12E-09 | 1.16E-09 | 6.44E-10 | 8.44E-10 | 9.06E-10 | 6.56E-10 | 2.69E-10 | 2.73E-10 | 2.94E-09 | 3.39E-09 | 4.79E-09 |
| 2,3,4,7,8-PeCDF | 6.58E-09 | 7.22E-09 | 9.23E-09 | 4.74E-09 | 8.77E-09 | 8.90E-09 | 8.25E-09 | 1.13E-08 | 1.31E-08 | 1.36E-08 | 7.53E-09 | 9.88E-09 | 1.06E-08 | 7.68E-09 | 3.15E-09 | 3.20E-09 | 3.45E-08 | 3.97E-08 | 5.61E-08 |
| Acetaldehyde | 2.78E-01 | 3.05E-01 | 3.90E-01 | 2.00E-01 | 3.70E-01 | 3.76E-01 | 3.48E-01 | 4.76E-01 | 5.53E-01 | 5.76E-01 | 3.18E-01 | 4.17E-01 | 4.48E-01 | 3.24E-01 | 1.33E-01 | 1.35E-01 | 1.45E+00 | 1.68E+00 | 2.37E+00 |
| Acrolein | 1.08E-02 | 1.18E-02 | 1.51E-02 | 7.76E-03 | 1.43E-02 | 1.46E-02 | 1.35E-02 | 1.84E-02 | 2.14E-02 | 2.23E-02 | 1.23E-02 | 1.62E-02 | 1.73E-02 | 1.26E-02 | 5.15E-03 | 5.24E-03 | 5.64E-02 | 6.50E-02 | 9.17E-02 |
| Arsenic | 9.39E-04 | 1.04E-03 | 1.04E-03 | 1.48E-03 | 1.53E-03 | 1.04E-03 | 1.21E-03 | 1.76E-03 | 2.30E-03 | 1.55E-03 | 9.81E-04 | 1.27E-03 | 1.21E-03 | 1.08E-03 | 8.82E-04 | 8.39E-04 | 7.57E-03 | 6.82E-03 | 6.26E-03 |
| Benz(a)anthracene | 3.14E-06 | 3.45E-06 | 4.41E-06 | 2.26E-06 | 4.18E-06 | 4.25E-06 | 3.94E-06 | 5.38E-06 | 6.25E-06 | 6.51E-06 | 3.60E-06 | 4.72E-06 | 5.06E-06 | 3.67E-06 | 1.50E-06 | 1.53E-06 | 1.65E-05 | 1.90E-05 | 2.68E-05 |
| Benzo(a)pyrene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzo(b)fluoranthene | 4.48E-07 | 4.91E-07 | 6.29E-07 | 3.23E-07 | 5.97E-07 | 6.06E-07 | 5.62E-07 | 7.67E-07 | 8.92E-07 | 9.28E-07 | 5.13E-07 | 6.73E-07 | 7.22E-07 | 5.23E-07 | 2.15E-07 | 2.18E-07 | 2.35E-06 | 2.71E-06 | 3.82E-06 |
| Benzo(k)fluoranthene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzene | 2.31E+00 | 2.54E+00 | 3.25E+00 | 1.67E+00 | 3.08E+00 | 3.13E+00 | 2.90E+00 | 3.96E+00 | 4.61E+00 | 4.80E+00 | 2.65E+00 | 3.48E+00 | 3.73E+00 | 2.70E+00 | 1.11E+00 | 1.13E+00 | 1.21E+01 | 1.40E+01 | 1.97E+01 |
| Benzyl chloride | 2.43E-02 | 2.67E-02 | 3.41E-02 | 1.75E-02 | 3.24E-02 | 3.29E-02 | 3.05E-02 | 4.16E-02 | 4.84E-02 | 5.04E-02 | 2.78E-02 | 3.65E-02 | 3.92E-02 | 2.84E-02 | 1.16E-02 | 1.18E-02 | 1.27E-01 | 1.47E-01 | 2.07E-01 |
| Beryllium | 2.65E-04 | 2.85E-04 | 3.08E-04 | 3.87E-04 | 4.23E-04 | 3.24E-04 | 3.61E-04 | 5.07E-04 | 6.72E-04 | 4.69E-04 | 2.96E-04 | 3.83E-04 | 3.66E-04 | 3.17E-04 | 2.34E-04 | 2.29E-04 | 1.89E-03 | 1.67E-03 | 1.82E-03 |
| Cadmium | 4.08E-04 | 4.42E-04 | 4.59E-04 | 6.47E-04 | 6.83E-04 | 4.82E-04 | 5.62E-04 | 8.06E-04 | 1.09E-03 | 6.97E-04 | 4.49E-04 | 5.86E-04 | 5.47E-04 | 4.86E-04 | 3.89E-04 | 3.78E-04 | 3.15E-03 | 2.83E-03 | 2.72E-03 |
| Carbon tetrachloride | 1.48E-02 | 1.62E-02 | 2.07E-02 | 1.07E-02 | 1.97E-02 | 2.00E-02 | 1.85E-02 | 2.53E-02 | 2.94E-02 | 3.06E-02 | 1.69E-02 | 2.22E-02 | 2.38E-02 | 1.73E-02 | 7.08E-03 | 7.19E-03 | 7.74E-02 | 8.93E-02 | 1.26E-01 |
| Chlorobenzene | 1.33E-01 | 1.46E-01 | 1.86E-01 | 9.58E-02 | 1.77E-01 | 1.80E-01 | 1.67E-01 | 2.28E-01 | 2.65E-01 | 2.75E-01 | 1.52E-01 | 2.00E-01 | 2.14E-01 | 1.55E-01 | 6.37E-02 | 6.47E-02 | 6.96E-01 | 8.03E-01 | 1.13E+00 |
| Chloroform | 6.88E-03 | 7.54E-03 | 9.65E-03 | 4.96E-03 | 9.16E-03 | 9.30E-03 | 8.62E-03 | 1.18E-02 | 1.37E-02 | 1.43E-02 | 7.88E-03 | 1.03E-02 | 1.11E-02 | 8.03E-03 | 3.29E-03 | 3.35E-03 | 3.60E-02 | 4.15E-02 | 5.86E-02 |
| Chrysene | 9.26E-06 | 1.02E-05 | 1.30E-05 | 6.67E-06 | 1.23E-05 | 1.25E-05 | 1.16E-05 | 1.59E-05 | 1.84E-05 | 1.92E-05 | 1.06E-05 | 1.39E-05 | 1.49E-05 | 1.08E-05 | 4.43E-06 | 4.50E-06 | 4.85E-05 | 5.59E-05 | 7.89E-05 |
| Copper | 6.34E-03 | 6.90E-03 | 7.03E-03 | 1.04E-02 | 1.11E-02 | 7.42E-03 | 8.87E-03 | 1.28E-02 | 1.75E-02 | 1.05E-02 | 7.04E-03 | 9.08E-03 | 8.27E-03 | 7.59E-03 | 6.18E-03 | 6.04E-03 | 5.14E-02 | 4.67E-02 | 4.13E-02 |
| Chromium VI | 9.08E-04 | 9.93E-04 | 9.21E-04 | 1.49E-03 | 1.26E-03 | 8.89E-04 | 9.66E-04 | 1.46E-03 | 1.64E-03 | 1.37E-03 | 8.02E-04 | 1.02E-03 | 1.01E-03 | 9.54E-04 | 8.32E-04 | 7.61E-04 | 7.32E-03 | 5.34E-03 | 4.98E-03 |
| Dibenz(a,h)anthracene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Diesel PM | 3.04E+00 | 3.43E+00 | 3.28E+00 | 6.30E+00 | 5.90E+00 | 4.22E+00 | 1.19E+00 | 6.99E+00 | 7.93E+00 | 7.20E+00 | 3.26E+00 | 1.08E+00 | 6.66E+00 | 7.10E+00 | 4.06E+00 | 2.80E+00 | 3.31E+01 | 1.61E+01 | 1.34E+01 |
| Ethylene dibromide | 1.44E-02 | 1.58E-02 | 2.02E-02 | 1.04E-02 | 1.92E-02 | 1.95E-02 | 1.81E-02 | 2.47E-02 | 2.87E-02 | 2.99E-02 | 1.65E-02 | 2.17E-02 | 2.33E-02 | 1.69E-02 | 6.91E-03 | 7.02E-03 | 7.56E-02 | 8.72E-02 | 1.23E-01 |
| Ethylene dichloride | 5.70E-03 | 6.26E-03 | 8.00E-03 | 4.11E-03 | 7.60E-03 | 7.71E-03 | 7.15E-03 | 9.77E-03 | 1.14E-02 | 1.18E-02 | 6.53E-03 | 8.56E-03 | 9.19E-03 | 6.66E-03 | 2.73E-03 | 2.78E-03 | 2.99E-02 | 3.44E-02 | 4.86E-02 |
| Ethylbenzene | 2.30E-01 | 2.52E-01 | 3.22E-01 | 1.66E-01 | 3.06E-01 | 3.11E-01 | 2.88E-01 | 3.94E-01 | 4.57E-01 | 4.76E-01 | 2.63E-01 | 3.45E-01 | 3.70E-01 | 2.68E-01 | 1.10E-01 | 1.12E-01 | 1.20E+00 | 1.39E+00 | 1.96E+00 |
| Ethyl chloride | 9.29E-03 | 1.02E-02 | 1.30E-02 | 6.70E-03 | 1.24E-02 | 1.26E-02 | 1.16E-02 | 1.59E-02 | 1.85E-02 | 1.93E-02 | 1.06E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.45E-03 | 4.52E-03 | 4.87E-02 | 5.61E-02 | 7.91E-02 |
| Formaldehyde | 1.51E-02 | 1.66E-02 | 2.12E-02 | 1.09E-02 | 2.02E-02 | 2.05E-02 | 1.90E-02 | 2.59E-02 | 3.01E-02 | 3.13E-02 | 1.73E-02 | 2.27E-02 | 2.44E-02 | 1.77E-02 | 7.24E-03 | 7.36E-03 | 7.92E-02 | 9.14E-02 | 1.29E-01 |
| Hydrochloric acid | 2.56E+01 | 2.81E+01 | 3.59E+01 | 1.85E+01 | 3.41E+01 | 3.47E+01 | 3.21E+01 | 4.39E+01 | 5.10E+01 | 5.31E+01 | 2.93E+01 | 3.85E+01 | 4.13E+01 | 2.99E+01 | 1.23E+01 | 1.25E+01 | 1.34E+02 | 1.55E+02 | 2.18E+02 |
| Indeno(1,2,3-c,d)pyrene | 5.24E-08 | 5.75E-08 | 7.35E-08 | 3.78E-08 | 6.98E-08 | 7.09E-08 | 6.57E-08 | 8.98E-08 | 1.04E-07 | 1.09E-07 | 6.00E-08 | 7.87E-08 | 8.44E-08 | 6.12E-08 | 2.51E-08 | 2.55E-08 | 2.75E-07 | 3.17E-07 | 4.46E-07 |

**TABLE 9B**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2008/2009 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 7.27E-04 | 7.90E-04 | 8.19E-04 | 1.11E-03 | 1.17E-03 | 8.37E-04 | 9.51E-04 | 1.35E-03 | 1.75E-03 | 1.27E-03 | 7.78E-04 | 1.01E-03 | 9.88E-04 | 8.85E-04 | 6.59E-04 | 6.38E-04 | 5.52E-03 | 4.59E-03 | 4.91E-03 |
| Manganese | 9.57E-04 | 1.05E-03 | 1.34E-03 | 6.90E-04 | 1.28E-03 | 1.29E-03 | 1.20E-03 | 1.64E-03 | 1.90E-03 | 1.98E-03 | 1.10E-03 | 1.44E-03 | 1.54E-03 | 1.12E-03 | 4.58E-04 | 4.66E-04 | 5.01E-03 | 5.78E-03 | 8.15E-03 |
| Mercury | 3.04E-01 | 3.34E-01 | 4.27E-01 | 2.19E-01 | 4.05E-01 | 4.12E-01 | 3.81E-01 | 5.21E-01 | 6.06E-01 | 6.31E-01 | 3.48E-01 | 4.57E-01 | 4.90E-01 | 3.55E-01 | 1.46E-01 | 1.48E-01 | 1.59E+00 | 1.84E+00 | 2.59E+00 |
| Methyl bromide | 1.50E-01 | 1.64E-01 | 2.10E-01 | 1.08E-01 | 2.00E-01 | 2.03E-01 | 1.88E-01 | 2.57E-01 | 2.98E-01 | 3.11E-01 | 1.72E-01 | 2.25E-01 | 2.42E-01 | 1.75E-01 | 7.18E-02 | 7.30E-02 | 7.85E-01 | 9.06E-01 | 1.28E+00 |
| Methylene chloride | 3.09E-02 | 3.39E-02 | 4.34E-02 | 2.23E-02 | 4.12E-02 | 4.18E-02 | 3.88E-02 | 5.30E-02 | 6.15E-02 | 6.41E-02 | 3.54E-02 | 4.64E-02 | 4.98E-02 | 3.61E-02 | 1.48E-02 | 1.50E-02 | 1.62E-01 | 1.87E-01 | 2.63E-01 |
| Naphthalene | 3.32E-02 | 3.64E-02 | 4.66E-02 | 2.39E-02 | 4.43E-02 | 4.49E-02 | 4.17E-02 | 5.69E-02 | 6.61E-02 | 6.89E-02 | 3.81E-02 | 4.99E-02 | 5.35E-02 | 3.88E-02 | 1.59E-02 | 1.62E-02 | 1.74E-01 | 2.01E-01 | 2.83E-01 |
| Nickel | 2.12E-02 | 2.29E-02 | 2.41E-02 | 4.01E-02 | 3.14E-02 | 2.27E-02 | 2.53E-02 | 3.61E-02 | 4.76E-02 | 3.47E-02 | 2.10E-02 | 2.71E-02 | 2.63E-02 | 2.32E-02 | 2.45E-02 | 2.11E-02 | 1.57E-01 | 1.29E-01 | 1.43E-01 |
| o-Xylene | 3.26E-01 | 3.57E-01 | 4.57E-01 | 2.35E-01 | 4.34E-01 | 4.40E-01 | 4.08E-01 | 5.58E-01 | 6.48E-01 | 6.75E-01 | 3.73E-01 | 4.89E-01 | 5.25E-01 | 3.80E-01 | 1.56E-01 | 1.58E-01 | 1.71E+00 | 1.97E+00 | 2.77E+00 |
| p-Dichlorobenzene | 1.41E-02 | 1.55E-02 | 1.98E-02 | 1.02E-02 | 1.88E-02 | 1.91E-02 | 1.77E-02 | 2.42E-02 | 2.81E-02 | 2.93E-02 | 1.62E-02 | 2.12E-02 | 2.28E-02 | 1.65E-02 | 6.76E-03 | 6.87E-03 | 7.40E-02 | 8.53E-02 | 1.20E-01 |
| Perchloroethylene | 1.27E-02 | 1.40E-02 | 1.79E-02 | 9.17E-03 | 1.70E-02 | 1.72E-02 | 1.60E-02 | 2.18E-02 | 2.53E-02 | 2.64E-02 | 1.46E-02 | 1.91E-02 | 2.05E-02 | 1.49E-02 | 6.10E-03 | 6.19E-03 | 6.67E-02 | 7.69E-02 | 1.08E-01 |
| Selenium | 1.55E-03 | 1.68E-03 | 1.99E-03 | 1.70E-03 | 2.27E-03 | 1.99E-03 | 2.02E-03 | 2.83E-03 | 3.53E-03 | 2.95E-03 | 1.74E-03 | 2.28E-03 | 2.29E-03 | 1.79E-03 | 1.07E-03 | 1.05E-03 | 9.63E-03 | 9.79E-03 | 1.18E-02 |
| Crystalline silica | 4.99E-01 | 4.94E-01 | 5.31E-01 | 9.54E-01 | 1.02E+00 | 7.25E-01 | 8.94E-01 | 1.23E+00 | 1.89E+00 | 7.76E-01 | 6.84E-01 | 8.48E-01 | 6.40E-01 | 6.31E-01 | 5.76E-01 | 6.01E-01 | 3.62E+00 | 2.89E+00 | 2.33E+00 |
| Styrene | 5.82E-02 | 6.38E-02 | 8.16E-02 | 4.19E-02 | 7.75E-02 | 7.87E-02 | 7.30E-02 | 9.97E-02 | 1.16E-01 | 1.21E-01 | 6.66E-02 | 8.74E-02 | 9.38E-02 | 6.80E-02 | 2.79E-02 | 2.83E-02 | 3.05E-01 | 3.51E-01 | 4.96E-01 |
| Trichloroethylene | 1.01E-02 | 1.11E-02 | 1.41E-02 | 7.27E-03 | 1.34E-02 | 1.36E-02 | 1.26E-02 | 1.73E-02 | 2.01E-02 | 2.09E-02 | 1.15E-02 | 1.51E-02 | 1.63E-02 | 1.18E-02 | 4.83E-03 | 4.91E-03 | 5.28E-02 | 6.09E-02 | 8.59E-02 |
| 1,1,2,2-Tetrachloroethane | 9.67E-03 | 1.06E-02 | 1.36E-02 | 6.97E-03 | 1.29E-02 | 1.31E-02 | 1.21E-02 | 1.66E-02 | 1.92E-02 | 2.00E-02 | 1.11E-02 | 1.45E-02 | 1.56E-02 | 1.13E-02 | 4.63E-03 | 4.71E-03 | 5.07E-02 | 5.84E-02 | 8.24E-02 |
| Toluene | 2.07E+00 | 2.27E+00 | 2.90E+00 | 1.49E+00 | 2.75E+00 | 2.79E+00 | 2.59E+00 | 3.54E+00 | 4.11E+00 | 4.28E+00 | 2.37E+00 | 3.10E+00 | 3.33E+00 | 2.41E+00 | 9.90E-01 | 1.01E+00 | 1.08E+01 | 1.25E+01 | 1.76E+01 |
| Vanadium | 6.38E-02 | 7.01E-02 | 6.93E-02 | 1.22E-01 | 9.33E-02 | 6.41E-02 | 7.22E-02 | 1.05E-01 | 1.32E-01 | 1.03E-01 | 5.99E-02 | 7.79E-02 | 7.74E-02 | 6.93E-02 | 7.38E-02 | 6.32E-02 | 4.93E-01 | 4.11E-01 | 4.30E-01 |
| Vinyl chloride | 3.41E-02 | 3.74E-02 | 4.78E-02 | 2.45E-02 | 4.54E-02 | 4.61E-02 | 4.27E-02 | 5.83E-02 | 6.78E-02 | 7.06E-02 | 3.90E-02 | 5.11E-02 | 5.49E-02 | 3.98E-02 | 1.63E-02 | 1.66E-02 | 1.78E-01 | 2.06E-01 | 2.90E-01 |
| Vinylidene chloride | 9.33E-03 | 1.02E-02 | 1.31E-02 | 6.72E-03 | 1.24E-02 | 1.26E-02 | 1.17E-02 | 1.60E-02 | 1.86E-02 | 1.93E-02 | 1.07E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.47E-03 | 4.54E-03 | 4.88E-02 | 5.63E-02 | 7.94E-02 |
| Xylenes (mixed) | 1.67E+00 | 1.83E+00 | 2.34E+00 | 1.20E+00 | 2.22E+00 | 2.26E+00 | 2.09E+00 | 2.86E+00 | 3.32E+00 | 3.46E+00 | 1.91E+00 | 2.51E+00 | 2.69E+00 | 1.95E+00 | 8.00E-01 | 8.12E-01 | 8.75E+00 | 1.01E+01 | 1.42E+01 |

Note

1. Receptor identifier in the HARP model.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 9C**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Methyl chloroform | 1.84E-02 | 2.44E-02 | 2.58E-02 | 2.67E-02 | 3.15E-02 | 3.19E-02 | 3.94E-02 | 4.95E-02 | 1.40E-02 | 2.59E-02 | 7.13E-03 | 9.92E-03 | 5.97E-03 | 8.98E-03 | 1.52E-02 | 9.65E-03 | 1.69E-02 | 1.25E-02 | 1.04E-02 | 1.11E-02 | 1.14E-02 | 1.27E-02 |
| 1,1,2-Trichloroethane | 3.07E-02 | 4.07E-02 | 4.31E-02 | 4.45E-02 | 5.24E-02 | 5.31E-02 | 6.57E-02 | 8.25E-02 | 2.34E-02 | 4.31E-02 | 1.19E-02 | 1.65E-02 | 9.95E-03 | 1.50E-02 | 2.53E-02 | 1.61E-02 | 2.82E-02 | 2.09E-02 | 1.73E-02 | 1.85E-02 | 1.90E-02 | 2.12E-02 |
| 1,1-Dichloroethane | 1.14E-02 | 1.51E-02 | 1.59E-02 | 1.65E-02 | 1.94E-02 | 1.97E-02 | 2.43E-02 | 3.05E-02 | 8.66E-03 | 1.60E-02 | 4.40E-03 | 6.12E-03 | 3.69E-03 | 5.54E-03 | 9.37E-03 | 5.96E-03 | 1.04E-02 | 7.73E-03 | 6.41E-03 | 6.84E-03 | 7.04E-03 | 7.85E-03 |
| 1,2-Dichloropropane | 1.56E-02 | 2.07E-02 | 2.19E-02 | 2.26E-02 | 2.67E-02 | 2.70E-02 | 3.34E-02 | 4.19E-02 | 1.19E-02 | 2.19E-02 | 6.04E-03 | 8.41E-03 | 5.06E-03 | 7.61E-03 | 1.29E-02 | 8.18E-03 | 1.43E-02 | 1.06E-02 | 8.80E-03 | 9.40E-03 | 9.66E-03 | 1.08E-02 |
| 1,3-Butadiene | 5.27E-02 | 6.98E-02 | 7.39E-02 | 7.63E-02 | 9.00E-02 | 9.12E-02 | 1.13E-01 | 1.42E-01 | 4.01E-02 | 7.40E-02 | 2.04E-02 | 2.84E-02 | 1.71E-02 | 2.57E-02 | 4.34E-02 | 2.76E-02 | 4.84E-02 | 3.58E-02 | 2.97E-02 | 3.17E-02 | 3.26E-02 | 3.64E-02 |
| 1,3-Dichloropropene | 6.37E-02 | 8.45E-02 | 8.94E-02 | 9.24E-02 | 1.09E-01 | 1.10E-01 | 1.36E-01 | 1.71E-01 | 4.86E-02 | 8.96E-02 | 2.47E-02 | 3.44E-02 | 2.07E-02 | 3.11E-02 | 5.26E-02 | 3.34E-02 | 5.86E-02 | 4.33E-02 | 3.59E-02 | 3.84E-02 | 3.95E-02 | 4.41E-02 |
| 1,2,3,6,7,8-HxCDD | 1.52E-09 | 2.02E-09 | 2.14E-09 | 2.21E-09 | 2.60E-09 | 2.64E-09 | 3.26E-09 | 4.10E-09 | 1.16E-09 | 2.14E-09 | 5.90E-10 | 8.21E-10 | 4.94E-10 | 7.44E-10 | 1.26E-09 | 7.99E-10 | 1.40E-09 | 1.04E-09 | 8.60E-10 | 9.18E-10 | 9.44E-10 | 1.05E-09 |
| 1,2,3,6,7,8-HxCDF | 2.19E-09 | 2.90E-09 | 3.07E-09 | 3.17E-09 | 3.73E-09 | 3.78E-09 | 4.68E-09 | 5.87E-09 | 1.67E-09 | 3.07E-09 | 8.46E-10 | 1.18E-09 | 7.09E-10 | 1.07E-09 | 1.80E-09 | 1.15E-09 | 2.01E-09 | 1.49E-09 | 1.23E-09 | 1.32E-09 | 1.35E-09 | 1.51E-09 |
| 1,2,3,7,8-PeCDD | 1.36E-09 | 1.81E-09 | 1.91E-09 | 1.97E-09 | 2.33E-09 | 2.36E-09 | 2.91E-09 | 3.66E-09 | 1.04E-09 | 1.91E-09 | 5.27E-10 | 7.34E-10 | 4.42E-10 | 6.64E-10 | 1.12E-09 | 7.14E-10 | 1.25E-09 | 9.26E-10 | 7.68E-10 | 8.20E-10 | 8.44E-10 | 9.41E-10 |
| 1,2,3,7,8-PeCDF | 1.05E-08 | 1.40E-08 | 1.48E-08 | 1.53E-08 | 1.80E-08 | 1.82E-08 | 2.25E-08 | 2.83E-08 | 8.02E-09 | 1.48E-08 | 4.08E-09 | 5.68E-09 | 3.42E-09 | 5.14E-09 | 8.68E-09 | 5.52E-09 | 9.68E-09 | 7.16E-09 | 5.94E-09 | 6.34E-09 | 6.52E-09 | 7.28E-09 |
| 1,2,3,7,8,9-HxCDD | 1.58E-09 | 2.09E-09 | 2.21E-09 | 2.28E-09 | 2.69E-09 | 2.73E-09 | 3.37E-09 | 4.23E-09 | 1.20E-09 | 2.21E-09 | 6.10E-10 | 8.49E-10 | 5.11E-10 | 7.69E-10 | 1.30E-09 | 8.26E-10 | 1.45E-09 | 1.07E-09 | 8.89E-10 | 9.49E-10 | 9.76E-10 | 1.09E-09 |
| 1,2,3,7,8,9-HxCDF | 7.36E-10 | 9.76E-10 | 1.03E-09 | 1.07E-09 | 1.26E-09 | 1.28E-09 | 1.58E-09 | 1.98E-09 | 5.61E-10 | 1.03E-09 | 2.85E-10 | 3.97E-10 | 2.39E-10 | 3.59E-10 | 6.07E-10 | 3.86E-10 | 6.77E-10 | 5.01E-10 | 4.15E-10 | 4.44E-10 | 4.56E-10 | 5.09E-10 |
| 1,2,3,4,6,7,8-HpCDD | 5.54E-09 | 7.35E-09 | 7.78E-09 | 8.04E-09 | 9.47E-09 | 9.60E-09 | 1.19E-08 | 1.49E-08 | 4.22E-09 | 7.79E-09 | 2.15E-09 | 2.99E-09 | 1.80E-09 | 2.70E-09 | 4.57E-09 | 2.91E-09 | 5.10E-09 | 3.77E-09 | 3.13E-09 | 3.34E-09 | 3.43E-09 | 3.83E-09 |
| 1,2,3,4,6,7,8-HpCDF | 2.68E-09 | 3.55E-09 | 3.76E-09 | 3.89E-09 | 4.58E-09 | 4.64E-09 | 5.74E-09 | 7.20E-09 | 2.04E-09 | 3.77E-09 | 1.04E-09 | 1.44E-09 | 8.69E-10 | 1.31E-09 | 2.21E-09 | 1.41E-09 | 2.46E-09 | 1.82E-09 | 1.51E-09 | 1.61E-09 | 1.66E-09 | 1.85E-09 |
| 1,2,3,4,7,8-HxCDD | 1.54E-09 | 2.05E-09 | 2.17E-09 | 2.24E-09 | 2.64E-09 | 2.67E-09 | 3.30E-09 | 4.15E-09 | 1.18E-09 | 2.17E-09 | 5.98E-10 | 8.32E-10 | 5.01E-10 | 7.53E-10 | 1.27E-09 | 8.10E-10 | 1.42E-09 | 1.05E-09 | 8.71E-10 | 9.30E-10 | 9.56E-10 | 1.07E-09 |
| 1,2,3,4,7,8-HxCDF | 2.34E-09 | 3.10E-09 | 3.28E-09 | 3.39E-09 | 3.99E-09 | 4.04E-09 | 5.00E-09 | 6.28E-09 | 1.78E-09 | 3.28E-09 | 9.04E-10 | 1.26E-09 | 7.58E-10 | 1.14E-09 | 1.93E-09 | 1.22E-09 | 2.15E-09 | 1.59E-09 | 1.32E-09 | 1.41E-09 | 1.45E-09 | 1.61E-09 |
| 1,2,3,4,7,8,9-HpCDF | 6.93E-10 | 9.18E-10 | 9.72E-10 | 1.00E-09 | 1.18E-09 | 1.20E-09 | 1.48E-09 | 1.86E-09 | 5.28E-10 | 9.74E-10 | 2.68E-10 | 3.73E-10 | 2.25E-10 | 3.38E-10 | 5.71E-10 | 3.63E-10 | 6.37E-10 | 4.71E-10 | 3.91E-10 | 4.17E-10 | 4.29E-10 | 4.79E-10 |
| 1,2,3,4,6,7,8,9-OCDD | 1.16E-08 | 1.53E-08 | 1.62E-08 | 1.68E-08 | 1.98E-08 | 2.00E-08 | 2.47E-08 | 3.11E-08 | 8.81E-09 | 1.62E-08 | 4.47E-09 | 6.23E-09 | 3.75E-09 | 5.64E-09 | 9.53E-09 | 6.06E-09 | 1.06E-08 | 7.86E-09 | 6.52E-09 | 6.96E-09 | 7.16E-09 | 7.99E-09 |
| 1,2,3,4,6,7,8,9-OCDF | 2.65E-09 | 3.51E-09 | 3.72E-09 | 3.84E-09 | 4.53E-09 | 4.59E-09 | 5.67E-09 | 7.12E-09 | 2.02E-09 | 3.72E-09 | 1.03E-09 | 1.43E-09 | 8.59E-10 | 1.29E-09 | 2.18E-09 | 1.39E-09 | 2.44E-09 | 1.80E-09 | 1.49E-09 | 1.60E-09 | 1.64E-09 | 1.83E-09 |
| 2,3,7,8-TCDD | 1.34E-09 | 1.77E-09 | 1.88E-09 | 1.94E-09 | 2.29E-09 | 2.32E-09 | 2.86E-09 | 3.60E-09 | 1.02E-09 | 1.88E-09 | 5.18E-10 | 7.21E-10 | 4.34E-10 | 6.53E-10 | 1.10E-09 | 7.02E-10 | 1.23E-09 | 9.10E-10 | 7.55E-10 | 8.06E-10 | 8.29E-10 | 9.25E-10 |
| 2,3,7,8-TCDF | 6.61E-08 | 8.76E-08 | 9.28E-08 | 9.59E-08 | 1.13E-07 | 1.14E-07 | 1.42E-07 | 1.78E-07 | 5.04E-08 | 9.29E-08 | 2.56E-08 | 3.56E-08 | 2.14E-08 | 3.23E-08 | 5.45E-08 | 3.47E-08 | 6.08E-08 | 4.50E-08 | 3.73E-08 | 3.98E-08 | 4.10E-08 | 4.57E-08 |
| 2,3,4,6,7,8-HxCDF | 1.35E-09 | 1.78E-09 | 1.89E-09 | 1.95E-09 | 2.30E-09 | 2.33E-09 | 2.88E-09 | 3.62E-09 | 1.03E-09 | 1.89E-09 | 5.21E-10 | 7.25E-10 | 4.37E-10 | 6.57E-10 | 1.11E-09 | 7.06E-10 | 1.24E-09 | 9.15E-10 | 7.59E-10 | 8.11E-10 | 8.34E-10 | 9.31E-10 |
| 2,3,4,7,8-PeCDF | 1.58E-08 | 2.09E-08 | 2.21E-08 | 2.28E-08 | 2.69E-08 | 2.73E-08 | 3.37E-08 | 4.23E-08 | 1.20E-08 | 2.21E-08 | 6.10E-09 | 8.49E-09 | 5.11E-09 | 7.69E-09 | 1.30E-08 | 8.26E-09 | 1.45E-08 | 1.07E-08 | 8.89E-09 | 9.49E-09 | 9.76E-09 | 1.09E-08 |
| Acetaldehyde | 6.65E-01 | 8.82E-01 | 9.33E-01 | 9.64E-01 | 1.14E+00 | 1.15E+00 | 1.42E+00 | 1.79E+00 | 5.07E-01 | 9.35E-01 | 2.57E-01 | 3.58E-01 | 2.16E-01 | 3.25E-01 | 5.48E-01 | 3.49E-01 | 6.12E-01 | 4.52E-01 | 3.75E-01 | 4.01E-01 | 4.12E-01 | 4.60E-01 |
| Acrolein | 2.58E-02 | 3.42E-02 | 3.62E-02 | 3.74E-02 | 4.40E-02 | 4.46E-02 | 5.52E-02 | 6.93E-02 | 1.96E-02 | 3.62E-02 | 9.98E-03 | 1.39E-02 | 8.36E-03 | 1.26E-02 | 2.13E-02 | 1.35E-02 | 2.37E-02 | 1.75E-02 | 1.45E-02 | 1.55E-02 | 1.60E-02 | 1.78E-02 |
| Arsenic | 3.30E-03 | 4.04E-03 | 4.17E-03 | 4.00E-03 | 3.94E-03 | 3.87E-03 | 4.61E-03 | 7.72E-03 | 1.76E-03 | 4.24E-03 | 9.88E-04 | 1.51E-03 | 7.40E-04 | 1.32E-03 | 2.03E-03 | 1.47E-03 | 2.23E-03 | 1.24E-03 | 1.16E-03 | 1.07E-03 | 1.53E-03 | 1.36E-03 |
| Benz(a)anthracene | 7.52E-06 | 9.97E-06 | 1.06E-05 | 1.09E-05 | 1.29E-05 | 1.30E-05 | 1.61E-05 | 2.02E-05 | 5.73E-06 | 1.06E-05 | 2.91E-06 | 4.05E-06 | 2.44E-06 | 3.67E-06 | 6.20E-06 | 3.94E-06 | 6.92E-06 | 5.12E-06 | 4.24E-06 | 4.53E-06 | 4.66E-06 | 5.20E-06 |
| Benzo(a)pyrene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzo(b)fluoranthene | 1.07E-06 | 1.42E-06 | 1.51E-06 | 1.56E-06 | 1.83E-06 | 1.86E-06 | 2.30E-06 | 2.88E-06 | 8.18E-07 | 1.51E-06 | 4.15E-07 | 5.78E-07 | 3.48E-07 | 5.23E-07 | 8.85E-07 | 5.63E-07 | 9.87E-07 | 7.30E-07 | 6.05E-07 | 6.46E-07 | 6.65E-07 | 7.42E-07 |
| Benzo(k)fluoranthene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Benzene | 5.54E+00 | 7.35E+00 | 7.78E+00 | 8.04E+00 | 9.47E+00 | 9.60E+00 | 1.19E+01 | 1.49E+01 | 4.22E+00 | 7.79E+00 | 2.15E+00 | 2.99E+00 | 1.80E+00 | 2.70E+00 | 4.57E+00 | 2.91E+00 | 5.10E+00 | 3.77E+00 | 3.13E+00 | 3.34E+00 | 3.43E+00 | 3.83E+00 |
| Benzyl chloride | 5.82E-02 | 7.71E-02 | 8.17E-02 | 8.44E-02 | 9.95E-02 | 1.01E-01 | 1.25E-01 | 1.56E-01 | 4.43E-02 | 8.18E-02 | 2.25E-02 | 3.14E-02 | 1.89E-02 | 2.84E-02 | 4.80E-02 | 3.05E-02 | 5.35E-02 | 3.96E-02 | 3.28E-02 | 3.51E-02 | 3.60E-02 | 4.02E-02 |
| Beryllium | 8.04E-04 | 1.12E-03 | 1.18E-03 | 1.16E-03 | 1.12E-03 | 1.11E-03 | 1.28E-03 | 1.99E-03 | 4.86E-04 | 1.17E-03 | 2.87E-04 | 4.10E-04 | 2.13E-04 | 3.70E-04 | 5.76E-04 | 4.06E-04 | 6.27E-04 | 3.92E-04 | 3.65E-04 | 3.36E-04 | 4.15E-04 | 3.99E-04 |
| Cadmium | 1.37E-03 | 1.86E-03 | 1.89E-03 | 1.82E-03 | 1.74E-03 | 1.72E-03 | 1.98E-03 | 3.23E-03 | 7.59E-04 | 1.91E-03 | 4.47E-04 | 6.54E-04 | 3.28E-04 | 5.82E-04 | 9.18E-04 | 6.58E-04 | 9.96E-04 | 5.94E-04 | 5.63E-04 | 4.96E-04 | 6.50E-04 | 5.96E-04 |
| Carbon tetrachloride | 3.54E-02 | 4.69E-02 | 4.97E-02 | 5.13E-02 | 6.05E-02 | 6.13E-02 | 7.58E-02 | 9.51E-02 | 2.70E-02 | 4.97E-02 | 1.37E-02 | 1.91E-02 | 1.15E-02 | 1.73E-02 | 2.92E-02 | 1.86E-02 | 3.26E-02 | 2.41E-02 | 2.00E-02 | 2.13E-02 | 2.19E-02 | 2.45E-02 |
| Chlorobenzene | 3.18E-01 | 4.22E-01 | 4.47E-01 | 4.62E-01 | 5.44E-01 | 5.51E-01 | 6.81E-01 | 8.55E-01 | 2.43E-01 | 4.47E-01 | 1.23E-01 | 1.72E-01 | 1.03E-01 | 1.55E-01 | 2.62E-01 | 1.67E-01 | 2.93E-01 | 2.16E-01 | 1.80E-01 | 1.92E-01 | 1.97E-01 | 2.20E-01 |
| Chloroform | 1.65E-02 | 2.18E-02 | 2.31E-02 | 2.39E-02 | 2.81E-02 | 2.85E-02 | 3.52E-02 | 4.43E-02 | 1.26E-02 | 2.31E-02 | 6.37E-03 | 8.88E-03 | 5.34E-03 | 8.04E-03 | 1.36E-02 | 8.64E-03 | 1.51E-02 | 1.12E-02 | 9.29E-03 | 9.92E-03 | 1.02E-02 | 1.14E-02 |
| Chrysene | 2.22E-05 | 2.94E-05 | 3.11E-05 | 3.21E-05 | 3.79E-05 | 3.84E-05 | 4.75E-05 | 5.96E-05 | 1.69E-05 | 3.12E-05 | 8.58E-06 | 1.19E-05 | 7.19E-06 | 1.08E-05 | 1.83E-05 | 1.16E-05 | 2.04E-05 | 1.51E-05 | 1.25E-05 | 1.34E-05 | 1.37E-05 | 1.53E-05 |
| Copper | 2.24E-02 | 2.88E-02 | 2.96E-02 | 2.84E-02 | 2.70E-02 | 2.65E-02 | 3.10E-02 | 5.19E-02 | 1.18E-02 | 3.08E-02 | 6.93E-03 | 1.04E-02 | 4.99E-03 | 9.13E-03 | 1.45E-02 | 1.07E-02 | 1.58E-02 | 9.04E-03 | 8.61E-03 | 7.61E-03 | 1.01E-02 | 9.15E-03 |
| Chromium VI | 2.96E-03 | 3.24E-03 | 3.29E-03 | 3.22E-03 | 3.34E-03 | 3.23E-03 | 3.94E-03 | 7.39E-03 | 1.66E-03 | 3.22E-03 | 9.14E-04 | 1.40E-03 | 6.89E-04 | 1.31E-03 | 1.74E-03 | 1.22E-03 | 1.73E-03 | 8.75E-04 | 8.23E-04 | 8.93E-04 | 1.53E-03 | 1.29E-03 |
| Dibenz(a,h)anthracene | 1.69E-07 | 2.24E-07 | 2.37E-07 | 2.45E-07 | 2.89E-07 | 2.93E-07 | 3.62E-07 | 4.54E-07 | 1.29E-07 | 2.38E-07 | 6.54E-08 | 9.11E-08 | 5.48E-08 | 8.25E-08 | 1.39E-07 | 8.86E-08 | 1.55E-07 | 1.15E-07 | 9.53E-08 | 1.02E-07 | 1.05E-07 | 1.17E-07 |
| Diesel PM | 6.27E+00 | 1.23E+01 | 1.10E+01 | 1.03E+01 | 1.22E+01 | 1.22E+01 | 1.68E+01 | 2.76E+01 | 4.03E+00 | 2.71E+01 | 3.08E+00 | 4.30E+00 | 2.65E+00 | 4.00E+00 | 1.15E+01 | 5.48E+00 | 1.73E+00 | 4.57E+00 | 4.44E+00 | 3.95E+00 | 4.76E+00 | 5.93E+00 |
| Ethylene dibromide | 3.46E-02 | 4.58E-02 | 4.85E-02 | 5.01E-02 | 5.91E-02 | 5.99E-02 | 7.40E-02 | 9.29E-02 | 2.63E-02 | 4.86E-02 | 1.34E-02 | 1.86E-02 | 1.12E-02 | 1.69E-02 | 2.85E-02 | 1.81E-02 | 3.18E-02 | 2.35E-02 | 1.95E-02 | 2.08E-02 | 2.14E-02 | 2.39E-02 |
| Ethylene dichloride | 1.37E-02 | 1.81E-02 | 1.92E-02 | 1.98E-02 | 2.33E-02 | 2.37E-02 | 2.92E-02 | 3.67E-02 | 1.04E-02 | 1.92E-02 | 5.29E-03 | 7.36E-03 | 4.43E-03 | 6.66E-03 | 1.13E-02 | 7.16E-03 | 1.26E-02 | 9.29E-03 | 7.70E-03 | 8.23E-03 | 8.46E-03 | 9.44E-03 |
| Ethylbenzene | 5.50E-01 | 7.29E-01 | 7.72E-01 | 7.98E-01 | 9.40E-01 | 9.53E-01 | 1.18E+00 | 1.48E+00 | 4.19E-01 | 7.73E-01 | 2.13E-01 | 2.97E-01 | 1.79E-01 | 2.68E-01 | 4.54E-01 | 2.89E-01 | 5.06E-01 | 3.74E-01 | 3.10E-01 | 3.31E-01 | 3.41E-01 | 3.80E-01 |
| Ethyl chloride | 2.22E-02 | 2.95E-02 | 3.12E-02 | 3.23E-02 | 3.80E-02 | 3.85E-02 | 4.76E-02 | 5.98E-02 | 1.70E-02 | 3.13E-02 | 8.61E-03 | 1.20E-02 | 7.22E-03 | 1.09E-02 | 1.83E-02 | 1.17E-02 | 2.05E-02 | 1.51E-02 | 1.25E-02 | 1.34E-02 | 1.38E-02 | 1.54E-02 |
| Formaldehyde | 3.62E-02 | 4.80E-02 | 5.08E-02 | 5.25E-02 | 6.19E-02 | 6.27E-02 | 7.75E-02 | 9.74E-02 | 2.76E-02 | 5.09E-02 | 1.40E-02 | 1.95E-02 | 1.18E-02 | 1.77E-02 | 2.99E-02 | 1.90E-02 | 3.33E-02 | 2.46E-02 | 2.04E-02 | 2.18E-02 | 2.24E-02 | 2.50E-02 |
| Hydrochloric acid | 6.14E+01 | 8.13E+01 | 8.61E+01 | 8.90E+01 | 1.05E+02 | 1.06E+02 | 1.31E+02 | 1.65E+02 | 4.68E+01 | 8.62E+01 | 2.38E+01 | 3.31E+01 | 1.99E+01 | 2.99E+01 | 5.06E+01 | 3.22E+01 | 5.64E+01 | 4.17E+01 | 3.46E+01 | 3.70E+01 | 3.80E+01 | 4.24E+01 |
| Indeno(1,2,3-c,d)pyrene | 1.25E-07 | 1.66E-07 | 1.76E-07 | 1.82E-07 | 2.14E-07 | 2.17E-07 | 2.69E-07 | 3.37E-07 | 9.56E-08 | 1.76E-07 | 4.86E-08 | 6.76E-08 | 4.07E-08 | 6.12E-08 | 1.03E-07 | 6.58E-08 | 1.15E-07 | 8.53E-08 | 7.08E-08 | 7.56E-08 | 7.77E-08 | 8.68E-08 |

**TABLE 9C**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2037 [1] | 2040 | 2041 | 2042 | 3700 | 3701 | 5076 | 6363 | 10576 | 10581 | 10598 | 10599 | 10600 | 10601 | 10603 | 10604 | 10605 | 10606 | 10607 | 10643 | 10645 | 10646 |
| **Chemical** | PMI | MEIR - Chronic (Others) | MEIR - Acute (2013) | MEIR - Cancer | MEIR - Chronic (2013) | MEIR - Acute (Others) | MEIW | PMI | School | MEIW - Chronic (2013) | School | School | Daycare | Preschool | School | Preschool | Preschool | Preschool | Preschool | School | School | School |
| Lead | 2.29E-03 | 3.05E-03 | 3.21E-03 | 3.15E-03 | 3.09E-03 | 3.04E-03 | 3.62E-03 | 5.75E-03 | 1.35E-03 | 3.27E-03 | 7.78E-04 | 1.13E-03 | 5.71E-04 | 1.05E-03 | 1.55E-03 | 1.12E-03 | 1.74E-03 | 9.86E-04 | 9.13E-04 | 8.66E-04 | 1.17E-03 | 1.11E-03 |
| Manganese | 2.29E-03 | 3.04E-03 | 3.22E-03 | 3.32E-03 | 3.92E-03 | 3.97E-03 | 4.91E-03 | 6.16E-03 | 1.75E-03 | 3.22E-03 | 8.87E-04 | 1.24E-03 | 7.44E-04 | 1.12E-03 | 1.89E-03 | 1.20E-03 | 2.11E-03 | 1.56E-03 | 1.29E-03 | 1.38E-03 | 1.42E-03 | 1.58E-03 |
| Mercury | 5.11E-01 | 6.77E-01 | 7.17E-01 | 7.41E-01 | 8.73E-01 | 8.85E-01 | 1.09E+00 | 1.37E+00 | 3.89E-01 | 7.18E-01 | 1.98E-01 | 2.75E-01 | 1.66E-01 | 2.49E-01 | 4.21E-01 | 2.68E-01 | 4.70E-01 | 3.47E-01 | 2.88E-01 | 3.08E-01 | 3.17E-01 | 3.53E-01 |
| Mercury (2011) [2] | 2.54E-01 | 3.36E-01 | 3.56E-01 | 3.68E-01 | 4.34E-01 | 4.39E-01 | 5.43E-01 | 6.82E-01 | 1.93E-01 | 3.57E-01 | 9.82E-02 | 1.37E-01 | 8.23E-02 | 1.24E-01 | 2.09E-01 | 1.33E-01 | 2.33E-01 | 1.72E-01 | 1.43E-01 | 1.53E-01 | 1.57E-01 | 1.75E-01 |
| Methyl bromide | 3.59E-01 | 4.76E-01 | 5.04E-01 | 5.21E-01 | 6.14E-01 | 6.22E-01 | 7.69E-01 | 9.65E-01 | 2.74E-01 | 5.05E-01 | 1.39E-01 | 1.94E-01 | 1.16E-01 | 1.75E-01 | 2.96E-01 | 1.88E-01 | 3.30E-01 | 2.44E-01 | 2.03E-01 | 2.16E-01 | 2.22E-01 | 2.48E-01 |
| Methylene chloride | 7.40E-02 | 9.81E-02 | 1.04E-01 | 1.07E-01 | 1.27E-01 | 1.28E-01 | 1.58E-01 | 1.99E-01 | 5.64E-02 | 1.04E-01 | 2.87E-02 | 3.99E-02 | 2.40E-02 | 3.61E-02 | 6.11E-02 | 3.88E-02 | 6.81E-02 | 5.03E-02 | 4.18E-02 | 4.46E-02 | 4.59E-02 | 5.12E-02 |
| Naphthalene | 7.96E-02 | 1.05E-01 | 1.12E-01 | 1.15E-01 | 1.36E-01 | 1.38E-01 | 1.70E-01 | 2.14E-01 | 6.06E-02 | 1.12E-01 | 3.08E-02 | 4.29E-02 | 2.58E-02 | 3.88E-02 | 6.56E-02 | 4.17E-02 | 7.32E-02 | 5.41E-02 | 4.49E-02 | 4.79E-02 | 4.93E-02 | 5.50E-02 |
| Nickel | 6.94E-02 | 8.82E-02 | 9.46E-02 | 9.33E-02 | 8.64E-02 | 8.47E-02 | 1.00E-01 | 1.62E-01 | 3.78E-02 | 8.42E-02 | 2.41E-02 | 3.35E-02 | 1.82E-02 | 2.90E-02 | 4.12E-02 | 3.01E-02 | 4.59E-02 | 2.69E-02 | 2.48E-02 | 2.34E-02 | 3.34E-02 | 3.14E-02 |
| o-Xylene | 7.80E-01 | 1.03E+00 | 1.09E+00 | 1.13E+00 | 1.33E+00 | 1.35E+00 | 1.67E+00 | 2.10E+00 | 5.94E-01 | 1.10E+00 | 3.02E-01 | 4.20E-01 | 2.53E-01 | 3.81E-01 | 6.43E-01 | 4.09E-01 | 7.17E-01 | 5.30E-01 | 4.40E-01 | 4.70E-01 | 4.83E-01 | 5.39E-01 |
| p-Dichlorobenzene | 3.38E-02 | 4.48E-02 | 4.74E-02 | 4.90E-02 | 5.78E-02 | 5.85E-02 | 7.24E-02 | 9.09E-02 | 2.58E-02 | 4.75E-02 | 1.31E-02 | 1.82E-02 | 1.10E-02 | 1.65E-02 | 2.79E-02 | 1.77E-02 | 3.11E-02 | 2.30E-02 | 1.91E-02 | 2.04E-02 | 2.09E-02 | 2.34E-02 |
| Perchloroethylene | 3.1E-02 | 4.04E-02 | 4.3E-02 | 4.4E-02 | 5.2E-02 | 5.28E-02 | 6.52E-02 | 8.19E-02 | 2.32E-02 | 4.28E-02 | 1.18E-02 | 1.64E-02 | 9.89E-03 | 1.49E-02 | 2.51E-02 | 1.60E-02 | 2.80E-02 | 2.07E-02 | 1.72E-02 | 1.84E-02 | 1.89E-02 | 2.11E-02 |
| Selenium | 4.29E-03 | 5.79E-03 | 5.98E-03 | 5.92E-03 | 6.37E-03 | 6.37E-03 | 7.59E-03 | 1.08E-02 | 2.83E-03 | 5.93E-03 | 1.55E-03 | 2.21E-03 | 1.23E-03 | 1.97E-03 | 3.23E-03 | 2.16E-03 | 3.49E-03 | 2.41E-03 | 2.12E-03 | 2.09E-03 | 2.36E-03 | 2.42E-03 |
| Crystalline silica | 1.49E+00 | 2.50E+00 | 2.52E+00 | 2.37E+00 | 2.02E+00 | 1.97E+00 | 2.00E+00 | 3.54E+00 | 8.50E-01 | 2.62E+00 | 6.40E-01 | 8.53E-01 | 4.00E-01 | 8.03E-01 | 1.28E+00 | 9.86E-01 | 1.24E+00 | 8.93E-01 | 9.23E-01 | 7.48E-01 | 7.15E-01 | 7.12E-01 |
| Styrene | 1.39E-01 | 1.85E-01 | 1.96E-01 | 2.02E-01 | 2.38E-01 | 2.41E-01 | 2.98E-01 | 3.75E-01 | 1.06E-01 | 1.96E-01 | 5.39E-02 | 7.51E-02 | 4.52E-02 | 6.80E-02 | 1.15E-01 | 7.31E-02 | 1.28E-01 | 9.48E-02 | 7.86E-02 | 8.39E-02 | 8.63E-02 | 9.63E-02 |
| Trichloroethylene | 2.41E-02 | 3.20E-02 | 3.39E-02 | 3.50E-02 | 4.13E-02 | 4.18E-02 | 5.17E-02 | 6.49E-02 | 1.84E-02 | 3.39E-02 | 9.35E-03 | 1.30E-02 | 7.83E-03 | 1.18E-02 | 1.99E-02 | 1.27E-02 | 2.22E-02 | 1.64E-02 | 1.36E-02 | 1.45E-02 | 1.50E-02 | 1.67E-02 |
| 1,1,2,2-Tetrachloroethane | 2.32E-02 | 3.07E-02 | 3.25E-02 | 3.36E-02 | 3.96E-02 | 4.01E-02 | 4.96E-02 | 6.22E-02 | 1.76E-02 | 3.25E-02 | 8.96E-03 | 1.25E-02 | 7.51E-03 | 1.13E-02 | 1.91E-02 | 1.21E-02 | 2.13E-02 | 1.57E-02 | 1.31E-02 | 1.40E-02 | 1.43E-02 | 1.60E-02 |
| Toluene | 4.95E+00 | 6.56E+00 | 6.94E+00 | 7.18E+00 | 8.46E+00 | 8.57E+00 | 1.06E+01 | 1.33E+01 | 3.77E+00 | 6.95E+00 | 1.92E+00 | 2.67E+00 | 1.61E+00 | 2.41E+00 | 4.08E+00 | 2.60E+00 | 4.55E+00 | 3.37E+00 | 2.79E+00 | 2.98E+00 | 3.07E+00 | 3.42E+00 |
| Vanadium | 2.22E-01 | 2.66E-01 | 2.84E-01 | 2.79E-01 | 2.65E-01 | 2.59E-01 | 3.10E-01 | 5.06E-01 | 1.16E-01 | 2.58E-01 | 7.07E-02 | 1.03E-01 | 5.44E-02 | 8.86E-02 | 1.23E-01 | 8.97E-02 | 1.39E-01 | 7.34E-02 | 6.70E-02 | 6.57E-02 | 1.04E-01 | 9.26E-02 |
| Vinyl chloride | 8.15E-02 | 1.08E-01 | 1.14E-01 | 1.18E-01 | 1.39E-01 | 1.41E-01 | 1.75E-01 | 2.19E-01 | 6.21E-02 | 1.15E-01 | 3.16E-02 | 4.40E-02 | 2.65E-02 | 3.98E-02 | 6.73E-02 | 4.28E-02 | 7.50E-02 | 5.55E-02 | 4.60E-02 | 4.91E-02 | 5.05E-02 | 5.64E-02 |
| Vinylidene chloride | 2.23E-02 | 2.96E-02 | 3.13E-02 | 3.24E-02 | 3.82E-02 | 3.87E-02 | 4.78E-02 | 6.00E-02 | 1.70E-02 | 3.14E-02 | 8.64E-03 | 1.20E-02 | 7.24E-03 | 1.09E-02 | 1.84E-02 | 1.17E-02 | 2.05E-02 | 1.52E-02 | 1.26E-02 | 1.35E-02 | 1.38E-02 | 1.54E-02 |
| Xylenes (mixed) | 4.00E+00 | 5.30E+00 | 5.61E+00 | 5.80E+00 | 6.83E+00 | 6.92E+00 | 8.56E+00 | 1.07E+01 | 3.05E+00 | 5.62E+00 | 1.55E+00 | 2.16E+00 | 1.30E+00 | 1.95E+00 | 3.30E+00 | 2.10E+00 | 3.68E+00 | 2.72E+00 | 2.26E+00 | 2.41E+00 | 2.48E+00 | 2.76E+00 |

**TABLE 9C**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Methyl chloroform | 7.69E-03 | 8.43E-03 | 1.08E-02 | 5.54E-03 | 1.02E-02 | 1.04E-02 | 9.64E-03 | 1.32E-02 | 1.53E-02 | 1.59E-02 | 8.80E-03 | 1.15E-02 | 1.24E-02 | 8.98E-03 | 3.68E-03 | 3.74E-03 | 4.03E-02 | 4.64E-02 | 6.55E-02 |
| 1,1,2-Trichloroethane | 1.28E-02 | 1.41E-02 | 1.80E-02 | 9.23E-03 | 1.71E-02 | 1.73E-02 | 1.61E-02 | 2.19E-02 | 2.55E-02 | 2.65E-02 | 1.47E-02 | 1.92E-02 | 2.06E-02 | 1.50E-02 | 6.14E-03 | 6.23E-03 | 6.71E-02 | 7.74E-02 | 1.09E-01 |
| 1,1-Dichloroethane | 4.75E-03 | 5.20E-03 | 6.66E-03 | 3.42E-03 | 6.32E-03 | 6.42E-03 | 5.95E-03 | 8.13E-03 | 9.44E-03 | 9.83E-03 | 5.43E-03 | 7.12E-03 | 7.65E-03 | 5.54E-03 | 2.27E-03 | 2.31E-03 | 2.49E-02 | 2.87E-02 | 4.04E-02 |
| 1,2-Dichloropropane | 6.51E-03 | 7.14E-03 | 9.14E-03 | 4.69E-03 | 8.68E-03 | 8.81E-03 | 8.17E-03 | 1.12E-02 | 1.30E-02 | 1.35E-02 | 7.46E-03 | 9.78E-03 | 1.05E-02 | 7.61E-03 | 3.12E-03 | 3.17E-03 | 3.41E-02 | 3.93E-02 | 5.55E-02 |
| 1,3-Butadiene | 2.20E-02 | 2.41E-02 | 3.08E-02 | 1.58E-02 | 2.93E-02 | 2.97E-02 | 2.76E-02 | 3.77E-02 | 4.38E-02 | 4.56E-02 | 2.52E-02 | 3.30E-02 | 3.54E-02 | 2.57E-02 | 1.05E-02 | 1.07E-02 | 1.15E-01 | 1.33E-01 | 1.87E-01 |
| 1,3-Dichloropropene | 2.66E-02 | 2.92E-02 | 3.73E-02 | 1.92E-02 | 3.55E-02 | 3.60E-02 | 3.34E-02 | 4.56E-02 | 5.30E-02 | 5.52E-02 | 3.05E-02 | 4.00E-02 | 4.29E-02 | 3.11E-02 | 1.27E-02 | 1.30E-02 | 1.39E-01 | 1.61E-01 | 2.27E-01 |
| 1,2,3,6,7,8-HxCDD | 6.37E-10 | 6.98E-10 | 8.93E-10 | 4.59E-10 | 8.48E-10 | 8.61E-10 | 7.98E-10 | 1.09E-09 | 1.27E-09 | 1.32E-09 | 7.29E-10 | 9.56E-10 | 1.03E-09 | 7.43E-10 | 3.05E-10 | 3.10E-10 | 3.33E-09 | 3.84E-09 | 5.42E-09 |
| 1,2,3,6,7,8-HxCDF | 9.13E-10 | 1.00E-09 | 1.28E-09 | 6.58E-10 | 1.22E-09 | 1.23E-09 | 1.14E-09 | 1.56E-09 | 1.82E-09 | 1.89E-09 | 1.04E-09 | 1.37E-09 | 1.47E-09 | 1.07E-09 | 4.37E-10 | 4.44E-10 | 4.78E-09 | 5.51E-09 | 7.77E-09 |
| 1,2,3,7,8-PeCDD | 5.69E-10 | 6.24E-10 | 7.98E-10 | 4.10E-10 | 7.58E-10 | 7.69E-10 | 7.13E-10 | 9.74E-10 | 1.13E-09 | 1.18E-09 | 6.51E-10 | 8.54E-10 | 9.16E-10 | 6.64E-10 | 2.72E-10 | 2.77E-10 | 2.98E-09 | 3.43E-09 | 4.84E-09 |
| 1,2,3,7,8-PeCDF | 4.40E-09 | 4.82E-09 | 6.17E-09 | 3.17E-09 | 5.86E-09 | 5.95E-09 | 5.51E-09 | 7.53E-09 | 8.75E-09 | 9.11E-09 | 5.04E-09 | 6.60E-09 | 7.09E-09 | 5.14E-09 | 2.11E-09 | 2.14E-09 | 2.30E-08 | 2.66E-08 | 3.75E-08 |
| 1,2,3,7,8,9-HxCDD | 6.58E-10 | 7.22E-10 | 9.23E-10 | 4.74E-10 | 8.77E-10 | 8.90E-10 | 8.25E-10 | 1.13E-09 | 1.31E-09 | 1.36E-09 | 7.53E-10 | 9.88E-10 | 1.06E-09 | 7.68E-10 | 3.15E-10 | 3.20E-10 | 3.45E-09 | 3.97E-09 | 5.61E-09 |
| 1,2,3,7,8,9-HxCDF | 3.08E-10 | 3.37E-10 | 4.31E-10 | 2.22E-10 | 4.10E-10 | 4.16E-10 | 3.85E-10 | 5.27E-10 | 6.12E-10 | 6.37E-10 | 3.52E-10 | 4.62E-10 | 4.96E-10 | 3.59E-10 | 1.47E-10 | 1.50E-10 | 1.61E-09 | 1.86E-09 | 2.62E-09 |
| 1,2,3,4,6,7,8-HpCDD | 2.31E-09 | 2.54E-09 | 3.25E-09 | 1.67E-09 | 3.08E-09 | 3.13E-09 | 2.90E-09 | 3.96E-09 | 4.61E-09 | 4.80E-09 | 2.65E-09 | 3.48E-09 | 3.73E-09 | 2.70E-09 | 1.11E-09 | 1.13E-09 | 1.21E-08 | 1.40E-08 | 1.97E-08 |
| 1,2,3,4,6,7,8-HpCDF | 1.12E-09 | 1.23E-09 | 1.57E-09 | 8.07E-10 | 1.49E-09 | 1.51E-09 | 1.40E-09 | 1.92E-09 | 2.23E-09 | 2.32E-09 | 1.28E-09 | 1.68E-09 | 1.80E-09 | 1.31E-09 | 5.36E-10 | 5.45E-10 | 5.86E-09 | 6.76E-09 | 9.53E-09 |
| 1,2,3,4,7,8-HxCDD | 6.45E-10 | 7.07E-10 | 9.05E-10 | 4.65E-10 | 8.59E-10 | 8.72E-10 | 8.08E-10 | 1.10E-09 | 1.28E-09 | 1.34E-09 | 7.38E-10 | 9.68E-10 | 1.04E-09 | 7.53E-10 | 3.09E-10 | 3.14E-10 | 3.38E-09 | 3.89E-09 | 5.49E-09 |
| 1,2,3,4,7,8-HxCDF | 9.76E-10 | 1.07E-09 | 1.37E-09 | 7.03E-10 | 1.30E-09 | 1.32E-09 | 1.22E-09 | 1.67E-09 | 1.94E-09 | 2.02E-09 | 1.12E-09 | 1.46E-09 | 1.57E-09 | 1.14E-09 | 4.67E-10 | 4.75E-10 | 5.11E-09 | 5.89E-09 | 8.31E-09 |
| 1,2,3,4,7,8,9-HpCDF | 2.89E-10 | 3.17E-10 | 4.06E-10 | 2.09E-10 | 3.85E-10 | 3.91E-10 | 3.63E-10 | 4.96E-10 | 5.76E-10 | 5.99E-10 | 3.31E-10 | 4.34E-10 | 4.66E-10 | 3.38E-10 | 1.39E-10 | 1.41E-10 | 1.52E-09 | 1.75E-09 | 2.46E-09 |
| 1,2,3,4,6,7,8,9-OCDD | 4.83E-09 | 5.29E-09 | 6.77E-09 | 3.48E-09 | 6.43E-09 | 6.53E-09 | 6.05E-09 | 8.27E-09 | 9.61E-09 | 1.00E-08 | 5.53E-09 | 7.25E-09 | 7.78E-09 | 5.64E-09 | 2.31E-09 | 2.35E-09 | 2.53E-08 | 2.92E-08 | 4.11E-08 |
| 1,2,3,4,6,7,8,9-OCDF | 1.11E-09 | 1.21E-09 | 1.55E-09 | 7.97E-10 | 1.47E-09 | 1.50E-09 | 1.39E-09 | 1.89E-09 | 2.20E-09 | 2.29E-09 | 1.27E-09 | 1.66E-09 | 1.78E-09 | 1.29E-09 | 5.30E-10 | 5.38E-10 | 5.79E-09 | 6.68E-09 | 9.42E-09 |
| 2,3,7,8-TCDD | 5.59E-10 | 6.13E-10 | 7.84E-10 | 4.03E-10 | 7.44E-10 | 7.56E-10 | 7.00E-10 | 9.57E-10 | 1.11E-09 | 1.16E-09 | 6.40E-10 | 8.39E-10 | 9.00E-10 | 6.53E-10 | 2.68E-10 | 2.72E-10 | 2.93E-09 | 3.37E-09 | 4.76E-09 |
| 2,3,7,8-TCDF | 2.76E-08 | 3.03E-08 | 3.87E-08 | 1.99E-08 | 3.68E-08 | 3.73E-08 | 3.46E-08 | 4.73E-08 | 5.49E-08 | 5.72E-08 | 3.16E-08 | 4.15E-08 | 4.45E-08 | 3.22E-08 | 1.32E-08 | 1.34E-08 | 1.45E-07 | 1.67E-07 | 2.35E-07 |
| 2,3,4,6,7,8-HxCDF | 5.62E-10 | 6.17E-10 | 7.89E-10 | 4.05E-10 | 7.49E-10 | 7.60E-10 | 7.05E-10 | 9.63E-10 | 1.12E-09 | 1.16E-09 | 6.44E-10 | 8.44E-10 | 9.06E-10 | 6.56E-10 | 2.69E-10 | 2.73E-10 | 2.94E-09 | 3.39E-09 | 4.79E-09 |
| 2,3,4,7,8-PeCDF | 6.58E-09 | 7.22E-09 | 9.23E-09 | 4.74E-09 | 8.77E-09 | 8.90E-09 | 8.25E-09 | 1.13E-08 | 1.31E-08 | 1.36E-08 | 7.53E-09 | 9.88E-09 | 1.06E-08 | 7.68E-09 | 3.15E-09 | 3.20E-09 | 3.45E-08 | 3.97E-08 | 5.61E-08 |
| Acetaldehyde | 2.78E-01 | 3.05E-01 | 3.90E-01 | 2.00E-01 | 3.70E-01 | 3.76E-01 | 3.48E-01 | 4.76E-01 | 5.53E-01 | 5.76E-01 | 3.18E-01 | 4.17E-01 | 4.48E-01 | 3.24E-01 | 1.33E-01 | 1.35E-01 | 1.45E+00 | 1.68E+00 | 2.37E+00 |
| Acrolein | 1.08E-02 | 1.18E-02 | 1.51E-02 | 7.76E-03 | 1.43E-02 | 1.46E-02 | 1.35E-02 | 1.84E-02 | 2.14E-02 | 2.23E-02 | 1.23E-02 | 1.62E-02 | 1.73E-02 | 1.26E-02 | 5.15E-03 | 5.24E-03 | 5.64E-02 | 6.50E-02 | 9.17E-02 |
| Arsenic | 9.39E-04 | 1.04E-03 | 1.04E-03 | 1.48E-03 | 1.53E-03 | 1.04E-03 | 1.21E-03 | 1.76E-03 | 2.30E-03 | 1.55E-03 | 9.81E-04 | 1.27E-03 | 1.21E-03 | 1.08E-03 | 8.82E-04 | 8.39E-04 | 7.57E-03 | 6.82E-03 | 6.26E-03 |
| Benz(a)anthracene | 3.14E-06 | 3.45E-06 | 4.41E-06 | 2.26E-06 | 4.18E-06 | 4.25E-06 | 3.94E-06 | 5.38E-06 | 6.25E-06 | 6.51E-06 | 3.60E-06 | 4.72E-06 | 5.06E-06 | 3.67E-06 | 1.50E-06 | 1.53E-06 | 1.65E-05 | 1.90E-05 | 2.68E-05 |
| Benzo(a)pyrene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzo(b)fluoranthene | 4.48E-07 | 4.91E-07 | 6.29E-07 | 3.23E-07 | 5.97E-07 | 6.06E-07 | 5.62E-07 | 7.67E-07 | 8.92E-07 | 9.28E-07 | 5.13E-07 | 6.73E-07 | 7.22E-07 | 5.23E-07 | 2.15E-07 | 2.18E-07 | 2.35E-06 | 2.71E-06 | 3.82E-06 |
| Benzo(k)fluoranthene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Benzene | 2.31E+00 | 2.54E+00 | 3.25E+00 | 1.67E+00 | 3.08E+00 | 3.13E+00 | 2.90E+00 | 3.96E+00 | 4.61E+00 | 4.80E+00 | 2.65E+00 | 3.48E+00 | 3.73E+00 | 2.70E+00 | 1.11E+00 | 1.13E+00 | 1.21E+01 | 1.40E+01 | 1.97E+01 |
| Benzyl chloride | 2.43E-02 | 2.67E-02 | 3.41E-02 | 1.75E-02 | 3.24E-02 | 3.29E-02 | 3.05E-02 | 4.16E-02 | 4.84E-02 | 5.04E-02 | 2.78E-02 | 3.65E-02 | 3.92E-02 | 2.84E-02 | 1.16E-02 | 1.18E-02 | 1.27E-01 | 1.47E-01 | 2.07E-01 |
| Beryllium | 2.65E-04 | 2.85E-04 | 3.08E-04 | 3.87E-04 | 4.23E-04 | 3.24E-04 | 3.61E-04 | 5.07E-04 | 6.72E-04 | 4.69E-04 | 2.96E-04 | 3.83E-04 | 3.66E-04 | 3.17E-04 | 2.34E-04 | 2.29E-04 | 1.89E-03 | 1.67E-03 | 1.82E-03 |
| Cadmium | 4.08E-04 | 4.42E-04 | 4.59E-04 | 6.47E-04 | 6.83E-04 | 4.82E-04 | 5.62E-04 | 8.06E-04 | 1.09E-03 | 6.97E-04 | 4.49E-04 | 5.86E-04 | 5.47E-04 | 4.86E-04 | 3.89E-04 | 3.78E-04 | 3.15E-03 | 2.83E-03 | 2.72E-03 |
| Carbon tetrachloride | 1.48E-02 | 1.62E-02 | 2.07E-02 | 1.07E-02 | 1.97E-02 | 2.00E-02 | 1.85E-02 | 2.53E-02 | 2.94E-02 | 3.06E-02 | 1.69E-02 | 2.22E-02 | 2.38E-02 | 1.73E-02 | 7.08E-03 | 7.19E-03 | 7.74E-02 | 8.93E-02 | 1.26E-01 |
| Chlorobenzene | 1.33E-01 | 1.46E-01 | 1.86E-01 | 9.58E-02 | 1.77E-01 | 1.80E-01 | 1.67E-01 | 2.28E-01 | 2.65E-01 | 2.75E-01 | 1.52E-01 | 2.00E-01 | 2.14E-01 | 1.55E-01 | 6.37E-02 | 6.47E-02 | 6.96E-01 | 8.03E-01 | 1.13E+00 |
| Chloroform | 6.88E-03 | 7.54E-03 | 9.65E-03 | 4.96E-03 | 9.16E-03 | 9.30E-03 | 8.62E-03 | 1.18E-02 | 1.37E-02 | 1.43E-02 | 7.88E-03 | 1.03E-02 | 1.11E-02 | 8.03E-03 | 3.29E-03 | 3.35E-03 | 3.60E-02 | 4.15E-02 | 5.86E-02 |
| Chrysene | 9.26E-06 | 1.02E-05 | 1.30E-05 | 6.67E-06 | 1.23E-05 | 1.25E-05 | 1.16E-05 | 1.59E-05 | 1.84E-05 | 1.92E-05 | 1.06E-05 | 1.39E-05 | 1.49E-05 | 1.08E-05 | 4.43E-06 | 4.50E-06 | 4.85E-05 | 5.59E-05 | 7.89E-05 |
| Copper | 6.34E-03 | 6.90E-03 | 7.03E-03 | 1.04E-02 | 1.11E-02 | 7.42E-03 | 8.87E-03 | 1.28E-02 | 1.75E-02 | 1.05E-02 | 7.04E-03 | 9.08E-03 | 8.27E-03 | 7.59E-03 | 6.18E-03 | 6.04E-03 | 5.14E-02 | 4.67E-02 | 4.13E-02 |
| Chromium VI | 9.08E-04 | 9.93E-04 | 9.21E-04 | 1.49E-03 | 1.26E-03 | 8.89E-04 | 9.66E-04 | 1.46E-03 | 1.64E-03 | 1.37E-03 | 8.02E-04 | 1.02E-03 | 1.01E-03 | 9.54E-04 | 8.32E-04 | 7.61E-04 | 7.32E-03 | 5.34E-03 | 4.98E-03 |
| Dibenz(a,h)anthracene | 7.06E-08 | 7.74E-08 | 9.90E-08 | 5.09E-08 | 9.40E-08 | 9.55E-08 | 8.85E-08 | 1.21E-07 | 1.40E-07 | 1.46E-07 | 8.08E-08 | 1.06E-07 | 1.14E-07 | 8.24E-08 | 3.38E-08 | 3.43E-08 | 3.70E-07 | 4.26E-07 | 6.01E-07 |
| Diesel PM | 3.04E+00 | 3.43E+00 | 3.28E+00 | 6.30E+00 | 5.90E+00 | 4.22E+00 | 1.19E+00 | 6.99E+00 | 7.93E+00 | 7.20E+00 | 3.26E+00 | 1.08E+00 | 6.66E+00 | 7.10E+00 | 4.06E+00 | 2.80E+00 | 3.31E+01 | 1.61E+01 | 1.34E+01 |
| Ethylene dibromide | 1.44E-02 | 1.58E-02 | 2.02E-02 | 1.04E-02 | 1.92E-02 | 1.95E-02 | 1.81E-02 | 2.47E-02 | 2.87E-02 | 2.99E-02 | 1.65E-02 | 2.17E-02 | 2.33E-02 | 1.69E-02 | 6.91E-03 | 7.02E-03 | 7.56E-02 | 8.72E-02 | 1.23E-01 |
| Ethylene dichloride | 5.70E-03 | 6.26E-03 | 8.00E-03 | 4.11E-03 | 7.60E-03 | 7.71E-03 | 7.15E-03 | 9.77E-03 | 1.14E-02 | 1.18E-02 | 6.53E-03 | 8.56E-03 | 9.19E-03 | 6.66E-03 | 2.73E-03 | 2.78E-03 | 2.99E-02 | 3.44E-02 | 4.86E-02 |
| Ethylbenzene | 2.30E-01 | 2.52E-01 | 3.22E-01 | 1.66E-01 | 3.06E-01 | 3.11E-01 | 2.88E-01 | 3.94E-01 | 4.57E-01 | 4.76E-01 | 2.63E-01 | 3.45E-01 | 3.70E-01 | 2.68E-01 | 1.10E-01 | 1.12E-01 | 1.20E+00 | 1.39E+00 | 1.96E+00 |
| Ethyl chloride | 9.29E-03 | 1.02E-02 | 1.30E-02 | 6.70E-03 | 1.24E-02 | 1.26E-02 | 1.16E-02 | 1.59E-02 | 1.85E-02 | 1.93E-02 | 1.06E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.45E-03 | 4.52E-03 | 4.87E-02 | 5.61E-02 | 7.91E-02 |
| Formaldehyde | 1.51E-02 | 1.66E-02 | 2.12E-02 | 1.09E-02 | 2.02E-02 | 2.05E-02 | 1.90E-02 | 2.59E-02 | 3.01E-02 | 3.13E-02 | 1.73E-02 | 2.27E-02 | 2.44E-02 | 1.77E-02 | 7.24E-03 | 7.36E-03 | 7.92E-02 | 9.14E-02 | 1.29E-01 |
| Hydrochloric acid | 2.56E+01 | 2.81E+01 | 3.59E+01 | 1.85E+01 | 3.41E+01 | 3.47E+01 | 3.21E+01 | 4.39E+01 | 5.10E+01 | 5.31E+01 | 2.93E+01 | 3.85E+01 | 4.13E+01 | 2.99E+01 | 1.23E+01 | 1.25E+01 | 1.34E+02 | 1.55E+02 | 2.18E+02 |
| Indeno(1,2,3-c,d)pyrene | 5.24E-08 | 5.75E-08 | 7.35E-08 | 3.78E-08 | 6.98E-08 | 7.09E-08 | 6.57E-08 | 8.98E-08 | 1.04E-07 | 1.09E-07 | 6.00E-08 | 7.87E-08 | 8.44E-08 | 6.12E-08 | 2.51E-08 | 2.55E-08 | 2.75E-07 | 3.17E-07 | 4.46E-07 |

**TABLE 9C**
**SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in micrograms per cubic meter ($ug/m^3$)

| | Key Receptors | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10647 | 10650 | 10651 | 10652 | 10654 | 10656 | 10659 | 10661 | 10663 | 10664 | 10672 | 10679 | 10680 | 10682 | 10688 | 10690 | 12476 | 12506 | 13156 |
| **Chemical** | Daycare | School | School | School | School | School | School | School | School | School | School | School | School | School | School | School-Age Care | PMI | PMI | PMI |
| Lead | 7.27E-04 | 7.90E-04 | 8.19E-04 | 1.11E-03 | 1.17E-03 | 8.37E-04 | 9.51E-04 | 1.35E-03 | 1.75E-03 | 1.27E-03 | 7.78E-04 | 1.01E-03 | 9.88E-04 | 8.85E-04 | 6.59E-04 | 6.38E-04 | 5.52E-03 | 4.59E-03 | 4.91E-03 |
| Manganese | 9.57E-04 | 1.05E-03 | 1.34E-03 | 6.90E-04 | 1.28E-03 | 1.29E-03 | 1.20E-03 | 1.64E-03 | 1.90E-03 | 1.98E-03 | 1.10E-03 | 1.44E-03 | 1.54E-03 | 1.12E-03 | 4.58E-04 | 4.66E-04 | 5.01E-03 | 5.78E-03 | 8.15E-03 |
| Mercury | 2.13E-01 | 2.34E-01 | 2.99E-01 | 1.54E-01 | 2.84E-01 | 2.89E-01 | 2.68E-01 | 3.66E-01 | 4.25E-01 | 4.42E-01 | 2.44E-01 | 3.20E-01 | 3.44E-01 | 2.49E-01 | 1.02E-01 | 1.04E-01 | 1.12E+00 | 1.29E+00 | 1.82E+00 |
| Mercury (2011) [2] | 1.06E-01 | 1.16E-01 | 1.49E-01 | 7.65E-02 | 1.41E-01 | 1.43E-01 | 1.33E-01 | 1.81E-01 | 2.11E-01 | 2.19E-01 | 1.21E-01 | 1.59E-01 | 1.71E-01 | 1.24E-01 | 5.08E-02 | 5.16E-02 | 5.55E-01 | 6.40E-01 | 9.02E-01 |
| Methyl bromide | 1.50E-01 | 1.64E-01 | 2.10E-01 | 1.08E-01 | 2.00E-01 | 2.03E-01 | 1.88E-01 | 2.57E-01 | 2.98E-01 | 3.11E-01 | 1.72E-01 | 2.25E-01 | 2.42E-01 | 1.75E-01 | 7.18E-02 | 7.30E-02 | 7.85E-01 | 9.06E-01 | 1.28E+00 |
| Methylene chloride | 3.09E-02 | 3.39E-02 | 4.34E-02 | 2.23E-02 | 4.12E-02 | 4.18E-02 | 3.88E-02 | 5.30E-02 | 6.15E-02 | 6.41E-02 | 3.54E-02 | 4.64E-02 | 4.98E-02 | 3.61E-02 | 1.48E-02 | 1.50E-02 | 1.62E-01 | 1.87E-01 | 2.63E-01 |
| Naphthalene | 3.32E-02 | 3.64E-02 | 4.66E-02 | 2.39E-02 | 4.43E-02 | 4.49E-02 | 4.17E-02 | 5.69E-02 | 6.61E-02 | 6.89E-02 | 3.81E-02 | 4.99E-02 | 5.35E-02 | 3.88E-02 | 1.59E-02 | 1.62E-02 | 1.74E-01 | 2.01E-01 | 2.83E-01 |
| Nickel | 2.12E-02 | 2.29E-02 | 2.41E-02 | 4.01E-02 | 3.14E-02 | 2.27E-02 | 2.53E-02 | 3.61E-02 | 4.76E-02 | 3.47E-02 | 2.10E-02 | 2.71E-02 | 2.63E-02 | 2.32E-02 | 2.45E-02 | 2.11E-02 | 1.57E-01 | 1.29E-01 | 1.43E-01 |
| o-Xylene | 3.26E-01 | 3.57E-01 | 4.57E-01 | 2.35E-01 | 4.34E-01 | 4.40E-01 | 4.08E-01 | 5.58E-01 | 6.48E-01 | 6.75E-01 | 3.73E-01 | 4.89E-01 | 5.25E-01 | 3.80E-01 | 1.56E-01 | 1.58E-01 | 1.71E+00 | 1.97E+00 | 2.77E+00 |
| p-Dichlorobenzene | 1.41E-02 | 1.55E-02 | 1.98E-02 | 1.02E-02 | 1.88E-02 | 1.91E-02 | 1.77E-02 | 2.42E-02 | 2.81E-02 | 2.93E-02 | 1.62E-02 | 2.12E-02 | 2.28E-02 | 1.65E-02 | 6.76E-03 | 6.87E-03 | 7.40E-02 | 8.53E-02 | 1.20E-01 |
| Perchloroethylene | 1.27E-02 | 1.40E-02 | 1.79E-02 | 9.17E-03 | 1.70E-02 | 1.72E-02 | 1.60E-02 | 2.18E-02 | 2.53E-02 | 2.64E-02 | 1.46E-02 | 1.91E-02 | 2.05E-02 | 1.49E-02 | 6.10E-03 | 6.19E-03 | 6.67E-02 | 7.69E-02 | 1.08E-01 |
| Selenium | 1.55E-03 | 1.68E-03 | 1.99E-03 | 1.70E-03 | 2.27E-03 | 1.99E-03 | 2.02E-03 | 2.83E-03 | 3.53E-03 | 2.95E-03 | 1.74E-03 | 2.28E-03 | 2.29E-03 | 1.79E-03 | 1.07E-03 | 1.05E-03 | 9.63E-03 | 9.79E-03 | 1.18E-02 |
| Crystalline silica | 4.99E-01 | 4.94E-01 | 5.31E-01 | 9.54E-01 | 1.02E+00 | 7.25E-01 | 8.94E-01 | 1.23E+00 | 1.89E+00 | 7.76E-01 | 6.84E-01 | 8.48E-01 | 6.40E-01 | 6.31E-01 | 5.76E-01 | 6.01E-01 | 3.62E+00 | 2.89E+00 | 2.33E+00 |
| Styrene | 5.82E-02 | 6.38E-02 | 8.16E-02 | 4.19E-02 | 7.75E-02 | 7.87E-02 | 7.30E-02 | 9.97E-02 | 1.16E-01 | 1.21E-01 | 6.66E-02 | 8.74E-02 | 9.38E-02 | 6.80E-02 | 2.79E-02 | 2.83E-02 | 3.05E-01 | 3.51E-01 | 4.96E-01 |
| Trichloroethylene | 1.01E-02 | 1.11E-02 | 1.41E-02 | 7.27E-03 | 1.34E-02 | 1.36E-02 | 1.26E-02 | 1.73E-02 | 2.01E-02 | 2.09E-02 | 1.15E-02 | 1.51E-02 | 1.63E-02 | 1.18E-02 | 4.83E-03 | 4.91E-03 | 5.28E-02 | 6.09E-02 | 8.59E-02 |
| 1,1,2,2-Tetrachloroethane | 9.67E-03 | 1.06E-02 | 1.36E-02 | 6.97E-03 | 1.29E-02 | 1.31E-02 | 1.21E-02 | 1.66E-02 | 1.92E-02 | 2.00E-02 | 1.11E-02 | 1.45E-02 | 1.56E-02 | 1.13E-02 | 4.63E-03 | 4.71E-03 | 5.07E-02 | 5.84E-02 | 8.24E-02 |
| Toluene | 2.07E+00 | 2.27E+00 | 2.90E+00 | 1.49E+00 | 2.75E+00 | 2.79E+00 | 2.59E+00 | 3.54E+00 | 4.11E+00 | 4.28E+00 | 2.37E+00 | 3.10E+00 | 3.33E+00 | 2.41E+00 | 9.90E-01 | 1.01E+00 | 1.08E+01 | 1.25E+01 | 1.76E+01 |
| Vanadium | 6.38E-02 | 7.01E-02 | 6.93E-02 | 1.22E-01 | 9.33E-02 | 6.41E-02 | 7.22E-02 | 1.05E-01 | 1.32E-01 | 1.03E-01 | 5.99E-02 | 7.79E-02 | 7.74E-02 | 6.93E-02 | 7.38E-02 | 6.32E-02 | 4.93E-01 | 4.11E-01 | 4.30E-01 |
| Vinyl chloride | 3.41E-02 | 3.74E-02 | 4.78E-02 | 2.45E-02 | 4.54E-02 | 4.61E-02 | 4.27E-02 | 5.83E-02 | 6.78E-02 | 7.06E-02 | 3.90E-02 | 5.11E-02 | 5.49E-02 | 3.98E-02 | 1.63E-02 | 1.66E-02 | 1.78E-01 | 2.06E-01 | 2.90E-01 |
| Vinylidene chloride | 9.33E-03 | 1.02E-02 | 1.31E-02 | 6.72E-03 | 1.24E-02 | 1.26E-02 | 1.17E-02 | 1.60E-02 | 1.86E-02 | 1.93E-02 | 1.07E-02 | 1.40E-02 | 1.50E-02 | 1.09E-02 | 4.47E-03 | 4.54E-03 | 4.88E-02 | 5.63E-02 | 7.94E-02 |
| Xylenes (mixed) | 1.67E+00 | 1.83E+00 | 2.34E+00 | 1.20E+00 | 2.22E+00 | 2.26E+00 | 2.09E+00 | 2.86E+00 | 3.32E+00 | 3.46E+00 | 1.91E+00 | 2.51E+00 | 2.69E+00 | 1.95E+00 | 8.00E-01 | 8.12E-01 | 8.75E+00 | 1.01E+01 | 1.42E+01 |

Notes

1. Receptor identifier in the HARP model.
2. The ground level concentrations predicted for 2011 Production are the same as 2010 with the exception of mercury.

Abbreviations

MEIR = Maximum Exposed Individual Resident
MEIW = Maximum Exposed Individual Worker
PMI = Point of Maximum Impact
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran

**TABLE 10**

**HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 75070 | Acetaldehyde | Kiln | • | • | •[3] |
| 107028 | Acrolein | Kiln | | • | • |
| 7440382 | Arsenic | Raw material | • | • | • |
| 56553 | Benz[a]anthracene | Kiln | • | | |
| 71432 | Benzene | Kiln | • | • | • |
| 50328 | Benzo[a]pyrene | Kiln | • | | |
| 205992 | Benzo[b]fluoranthene | Kiln | • | | |
| 207089 | Benzo[k]fluoranthene | Kiln | • | | |
| 100447 | Benzyl chloride | Kiln | • | | • |
| 7440417 | Beryllium | Raw material | • | • | |
| 106990 | 1,3-Butadiene | Kiln | • | • | |
| 7440439 | Cadmium | Raw material | • | • | |
| 56235 | Carbon tetrachloride | Kiln | • | • | • |
| 108907 | Chlorobenzene | Kiln | | • | |
| 67663 | Chloroform | Kiln | • | • | • |
| 18540299 | Chromium VI | Byproduct of manufacturing | • | • | |
| 218019 | Chrysene | Kiln | • | | |
| 7440508 | Copper | Raw material | | | • |
| 1175 | Crystalline silica | Raw material | | • | |
| 53703 | Dibenz[a,h]anthracene | Kiln | • | | |
| 106467 | p-Dichlorobenzene | Kiln | • | • | |
| 75343 | 1,1-Dichloroethane | Kiln | • | | |
| 78875 | 1,2-Dichloropropane | Kiln | • | | |
| 542756 | 1,3-Dichloropropene | Kiln | • | | |
| 9901 | Diesel PM | Stationary sources | • | • | |
| 75003 | Ethyl chloride | Kiln | | • | |
| 100414 | Ethylbenzene | Kiln | • | • | |
| 106934 | Ethylene dibromide | Kiln | • | • | |
| 107062 | Ethylene dichloride | Kiln | • | • | |
| 50000 | Formaldehyde | Kiln | • | • | • |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | Kiln | • | • | |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | Kiln | • | • | |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | Kiln | • | • | |

**TABLE 10**

**HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 39227286 | 1,2,3,4,7,8-HxCDD | Kiln | • | • | |
| 57653857 | 1,2,3,6,7,8-HxCDD | Kiln | • | • | |
| 19408743 | 1,2,3,7,8,9-HxCDD | Kiln | • | • | |
| 70648269 | 1,2,3,4,7,8-HxCDF | Kiln | • | • | |
| 57117449 | 1,2,3,6,7,8-HxCDF | Kiln | • | • | |
| 72918219 | 1,2,3,7,8,9-HxCDF | Kiln | • | • | |
| 60851345 | 2,3,4,6,7,8-HxCDF | Kiln | • | • | |
| 7647010 | Hydrochloric acid | Kiln | | • | • |
| 193395 | Indeno[1,2,3-c,d]pyrene | Kiln | • | | |
| 7439921 | Lead | Raw material | • | | |
| 7439965 | Manganese | Raw material | | • | |
| 7439976 | Mercury | Raw material | | • | • |
| 74839 | Methyl bromide | Kiln | | • | • |
| 71556 | Methyl chloroform | Kiln | | • | • |
| 75092 | Methylene chloride | Kiln | • | • | • |
| 91203 | Naphthalene | Kiln | • | • | |
| 7440020 | Nickel | Raw material | • | • | • |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | Kiln | • | • | |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | Kiln | • | • | |
| 40321764 | 1,2,3,7,8-PeCDD | Kiln | • | • | |
| 57117416 | 1,2,3,7,8-PeCDF | Kiln | • | • | |
| 57117314 | 2,3,4,7,8-PeCDF | Kiln | • | • | |
| 127184 | Perchloroethylene | Kiln | • | • | • |
| 7782492 | Selenium | Raw material | | • | |
| 100425 | Styrene | Kiln | | • | • |
| 1746016 | 2,3,7,8-TCDD | Kiln | • | • | |
| 51207319 | 2,3,7,8-TCDF | Kiln | • | • | |
| 79345 | 1,1,2,2-Tetrachloroethane | Kiln | • | | |
| 108883 | Toluene | Kiln | | • | • |
| 79005 | 1,1,2-Trichloroethane | Kiln | • | | |
| 79016 | Trichloroethylene | Kiln | • | • | |
| 1314621 | Vanadium | Raw material | | | • |
| 75014 | Vinyl chloride | Kiln | • | | • |

**TABLE 10**

**HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Primary Emission Category[2] | Carcinogenic Risk | Chronic Noncarcinogenic Effects | Acute Noncarcinogenic Effects |
|---|---|---|---|---|---|
| 75354 | Vinylidene chloride | Kiln | | • | |
| 95476 | o-Xylene | Kiln | | • | • |
| 1330207 | Xylenes (mixed) | Kiln | | • | • |

Notes

1. Categories designated by the Office of Environmental Health Hazard Assessment (OEHHA) for each chemical.
2. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.

   Kiln - A byproduct of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emissions occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welding equipment.
3. Acetaldehyde was not evaluated for acute effects in 2005. The toxicity criteria (reference exposure levels (RELs)) for acute health effects was added by OEHHA in December 2008.

Abbreviations

HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran
TCDD = Tetrachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran

**TABLE 11**

**TOXICITY CRITERIA FOR CHEMICALS EMITTED FROM THE FACILITY**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS Number | CHEMICAL | Primary Emission Category[1] | Multiple Pathway[2] | Inhalation Cancer Unit Risk Value $(\mu g/m^3)^{-1}$ | Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Oral Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Inhalation Chronic REL[3] $ug/m^3$ | Oral Chronic REL[3] mg/kg-d | Acute REL[3] $ug/m^3$ |
|---|---|---|---|---|---|---|---|---|---|
| 75070 | Acetaldehyde | Kiln | | 2.70E-06 | 1.00E-02 | * | 1.40E+02 | * | 4.70E+02 |
| 107028 | Acrolein | Kiln | | * | * | * | 3.50E-01 | * | 2.50E+00 |
| 7440382 | Arsenic | Raw material | X | 3.30E-03 | 1.20E+01 | 1.50E+00 | 1.50E-02 | 3.50E-06 | 2.00E-01 |
| 56553 | Benz[a]anthracene | Kiln | X | 1.10E-04 | 3.90E-01 | 1.20E+00 | * | * | * |
| 71432 | Benzene | Kiln | | 2.90E-05 | 1.00E-01 | * | 6.00E+01 | * | 1.30E+03 |
| 50328 | Benzo[a]pyrene | Kiln | X | 1.10E-03 | 3.90E+00 | 1.20E+01 | * | * | * |
| 205992 | Benzo[b]fluoranthene | Kiln | X | 1.10E-04 | 3.90E-01 | 1.20E+00 | * | * | * |
| 207089 | Benzo[k]fluoranthene | Kiln | X | 1.10E-04 | 3.90E-01 | 1.20E+00 | * | * | * |
| 100447 | Benzyl chloride | Kiln | | 4.90E-05 | 1.70E-01 | * | * | * | 2.40E+02 |
| 7440417 | Beryllium | Raw material | X | 2.40E-03 | 8.40E+00 | * | 7.00E-03 | 2.00E-03 | * |
| 106990 | 1,3-Butadiene | Kiln | | 1.70E-04 | 6.00E-01 | * | 2.00E+01 | * | * |
| 7440439 | Cadmium | Raw material | X | 4.20E-03 | 1.50E+01 | * | 2.00E-02 | 5.00E-04 | * |
| 56235 | Carbon tetrachloride | Kiln | | 4.20E-05 | 1.50E-01 | * | 4.00E+01 | * | 1.90E+03 |
| 108907 | Chlorobenzene | Kiln | | * | * | * | 1.00E+03 | * | * |
| 67663 | Chloroform | Kiln | | 5.30E-06 | 1.90E-02 | * | 3.00E+02 | * | 1.50E+02 |
| 18540299 | Chromium, hexavalent (& compounds) | Byproduct of manufacturing | X | 1.50E-01 | 5.10E+02 | * | 2.00E-01 | 2.00E-02 | * |
| 218019 | Chrysene | Kiln | X | 1.10E-05 | 3.90E-02 | 1.20E-01 | * | * | * |
| 7440508 | Copper | Raw material | | * | * | * | * | * | 1.00E+02 |
| 1175 | Crystalline silica (respirable) | Raw material | | * | * | * | 3.00E+00 | * | * |
| 53703 | Dibenz[a,h]anthracene | Kiln | X | 1.20E-03 | 4.10E+00 | 4.10E+00 | * | * | * |
| 106467 | p-Dichlorobenzene | Kiln | | 1.10E-05 | 4.00E-02 | * | 8.00E+02 | * | * |
| 75343 | 1,1-Dichloroethane | Kiln | | 1.60E-06 | 5.70E-03 | * | * | * | * |
| 78875 | 1,2-Dichloropropane | Kiln | | 1.80E-05 | 6.30E-02 | * | * | * | * |
| 542756 | 1,3-Dichloropropene | Kiln | | 1.60E-05 | 5.50E-02 | * | * | * | * |
| 9901 | Diesel engine exhaust, particulate matter (Diesel PM) | Stationary sources | | 3.00E-04 | 1.10E+00 | * | 5.00E+00 | * | * |
| 75003 | Ethyl chloride (Chloroethane) | Kiln | | * | * | * | 3.00E+04 | * | * |

**TABLE 11**

**TOXICITY CRITERIA FOR CHEMICALS EMITTED FROM THE FACILITY**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS Number | CHEMICAL | Primary Emission Category[1] | Multiple Pathway[2] | Inhalation Cancer Unit Risk Value $(\mu g/m^3)^{-1}$ | Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Oral Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Inhalation Chronic REL[3] $ug/m^3$ | Oral Chronic REL[3] mg/kg-d | Acute REL[3] $ug/m^3$ |
|---|---|---|---|---|---|---|---|---|---|
| 100414 | Ethyl benzene | Kiln | | 2.50E-06 | 8.70E-03 | * | 2.00E+03 | * | * |
| 106934 | Ethylene dibromide (EDB) | Kiln | | 7.10E-05 | 2.50E-01 | * | 8.00E-01 | * | * |
| 107062 | Ethylene dichloride (EDC) | Kiln | | 2.10E-05 | 7.20E-02 | * | 4.00E+02 | * | * |
| 50000 | Formaldehyde | Kiln | | 6.00E-06 | 2.10E-02 | * | 9.00E+00 | * | 5.50E+01 |
| 35822469 | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | Kiln | X | 3.80E-01 | 1.30E+03 | 1.30E+03 | 4.00E-03 | 1.00E-06 | * |
| 67562394 | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | Kiln | X | 3.80E-01 | 1.30E+03 | 1.30E+03 | 4.00E-03 | 1.00E-06 | * |
| 55673897 | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | Kiln | X | 3.80E-01 | 1.30E+03 | 1.30E+03 | 4.00E-03 | 1.00E-06 | * |
| 39227286 | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 57653857 | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 19408743 | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 70648269 | 1,2,3,4,7,8-Hexachlorodibenzofuran | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 57117449 | 1,2,3,6,7,8-Hexachlorodibenzofuran | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 72918219 | 1,2,3,7,8,9-Hexachlorodibenzofuran | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 60851345 | 2,3,4,6,7,8-Hexachlorodibenzofuran | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 7647010 | Hydrochloric acid | Kiln | | * | * | * | 9.00E+00 | * | 2.10E+03 |
| 193395 | Indeno[1,2,3-cd]pyrene | Kiln | X | 1.10E-04 | 3.90E-01 | 1.20E+00 | * | * | * |
| 7439921 | Lead | Raw material | X | 1.20E-05 | 4.20E-02 | 8.50E-03 | * | * | * |
| 7439965 | Manganese | Raw material | | * | * | * | 9.00E-02 | * | * |

**TABLE 11**

**TOXICITY CRITERIA FOR CHEMICALS EMITTED FROM THE FACILITY**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS Number | CHEMICAL | Primary Emission Category[1] | Multiple Pathway[2] | Inhalation Cancer Unit Risk Value $(\mu g/m^3)^{-1}$ | Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Oral Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Inhalation Chronic REL[3] $ug/m^3$ | Oral Chronic REL[3] mg/kg-d | Acute REL[3] $ug/m^3$ |
|---|---|---|---|---|---|---|---|---|---|
| 7439976 | Mercury | Raw material | | * | * | * | 3.00E-02 | *[4] | 6.00E-01 |
| 74839 | Methyl bromide (Bromomethane) | Kiln | | * | * | * | 5.00E+00 | * | 3.90E+03 |
| 71556 | Methyl chloroform (1,1,1-Trichloroethane) | Kiln | | * | * | * | 1.00E+03 | * | 6.80E+04 |
| 75092 | Methylene chloride (Dichloromethane) | Kiln | | 1.00E-06 | 3.50E-03 | * | 4.00E+02 | * | 1.40E+04 |
| 91203 | Naphthalene | Kiln | | 3.40E-05 | 1.20E-01 | * | 9.00E+00 | * | * |
| 7440020 | Nickel | Raw material | X | 2.60E-04 | 9.10E-01 | * | 5.00E-02 | 5.00E-02 | 6.00E+00 |
| 3268879 | 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin | Kiln | X | 3.80E-03 | 1.30E+01 | 1.30E+01 | 4.00E-01 | 1.00E-04 | * |
| 39001020 | 1,2,3,4,6,7,8,9-Octachlorodibenzofuran | Kiln | X | 3.80E-03 | 1.30E+01 | 1.30E+01 | 4.00E-01 | 1.00E-04 | * |
| 40321764 | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | Kiln | X | 3.80E+01 | 1.30E+05 | 1.30E+05 | 4.00E-05 | 1.00E-08 | * |
| 57117416 | 1,2,3,7,8-Pentachlorodibenzofuran | Kiln | X | 1.90E+00 | 6.50E+03 | 6.50E+03 | 8.00E-04 | 2.00E-07 | * |
| 57117314 | 2,3,4,7,8-Pentachlorodibenzofuran | Kiln | X | 1.90E+01 | 6.50E+04 | 6.50E+04 | 8.00E-05 | 2.00E-08 | * |
| 127184 | Perchloroethylene (Tetrachloroethene) | Kiln | | 5.90E-06 | 2.10E-02 | * | 3.50E+01 | * | 2.00E+04 |

**TABLE 11**

**TOXICITY CRITERIA FOR CHEMICALS EMITTED FROM THE FACILITY**

Lehigh Southwest Cement Company

Cupertino Facility

| CAS Number | CHEMICAL | Primary Emission Category[1] | Multiple Pathway[2] | Inhalation Cancer Unit Risk Value $(\mu g/m^3)^{-1}$ | Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Oral Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$ | Inhalation Chronic REL[3] $ug/m^3$ | Oral Chronic REL[3] mg/kg-d | Acute REL[3] $ug/m^3$ |
|---|---|---|---|---|---|---|---|---|---|
| 7782492 | Selenium | Raw material | | * | * | * | 2.00E+01 | * | * |
| 100425 | Styrene | Kiln | | * | * | * | 9.00E+02 | * | 2.10E+04 |
| 1746016 | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | Kiln | X | 3.80E+01 | 1.30E+05 | 1.30E+05 | 4.00E-05 | 1.00E-08 | * |
| 51207319 | 2,3,7,8-Tetrachlorodibenzofuran | Kiln | X | 3.80E+00 | 1.30E+04 | 1.30E+04 | 4.00E-04 | 1.00E-07 | * |
| 79345 | 1,1,2,2-Tetrachloroethane | Kiln | | 5.80E-05 | 2.00E-01 | * | * | * | * |
| 108883 | Toluene | Kiln | | * | * | * | 3.00E+02 | * | 3.70E+04 |
| 79005 | 1,1,2-Trichloroethane | Kiln | | 1.60E-05 | 5.70E-02 | * | * | * | * |
| 79016 | Trichloroethylene | Kiln | | 2.00E-06 | 7.00E-03 | * | 6.00E+02 | * | * |
| 1314621 | Vanadium pentoxide | Raw material | | * | * | * | * | * | 3.00E+01 |
| 75014 | Vinyl chloride | Kiln | | 7.80E-05 | 2.70E-01 | * | * | * | 1.80E+05 |
| 75354 | Vinylidene chloride | Kiln | | * | * | * | 7.00E+01 | * | * |
| 95476 | o-Xylene | Kiln | | * | * | * | 7.00E+02 | * | 2.20E+04 |
| 1330207 | Xylenes (mixed) | Kiln | | * | * | * | 7.00E+02 | * | 2.20E+04 |

## TABLE 11

## TOXICITY CRITERIA FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company
Cupertino Facility

Notes

1. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.

   Kiln - Byproducts of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emissions occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welding equipment.

2. Indicates that a chemical is evaluated for exposure pathways in addition to inhalation because of potential accumulation on the ground. Applicable exposure pathways include ingestion of soil, dermal absorption, ingestion of mother's milk, and ingestion of homegrown produce.
3. Toxicity criteria (reference exposure levels (RELs)) for acute/chronic health effects for some chemicals for were revised by OEHHA in December 2008. Toxicity criteria applicable in 2005 were used to evaluate 2005 production emissions as follows:

| | |
|---|---|
| 2005 Inhalation Chronic REL: | acetaldehye (9), acrolein (0.06), arsenic (0.03), formaldehyde (3), manganese (0.2), and mercury (0.09 ug/$m^3$) |
| 2005 Oral Chronic REL: | arsenic (0.0003) and mercury (0.0003 mg/kg-d) |
| 2005 Acute REL: | acetaldehye (none), acrolein (0.19), arsenic (0.19), formaldehyde (94), and mercury (1.8 ug/$m^3$) |

4. Based on guidance provided to BAAQMD by OEHHA (Dr. Bob Blaisdell), it has been determined that elemental mercury does not have multiple exposure pathways. It is an inhalation risk only.

Abbreviations

* = Not applicable

**TABLE 12**

**POTENTIAL CHRONIC HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - CENTRAL NERVOUS SYSTEM AND RESPIRATORY HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #2037[4] | | | Maximum Exposed Individual Resident (MEIR) Receptor #2040[4] | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076[4,5] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| | | | Central Nervous System | | | Central Nervous System | | | Respiratory | Central Nervous System | |
| Acetaldehyde | 75070 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **7.27E-04** | 0.00E+00 | 0.0% - 0.8% |
| Acrolein | 107028 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **4.22E-03** | 0.00E+00 | 0.0% - 4.6% |
| Arsenic | 7440382 | Raw material | **8.95E-04** | **4.27E-02** | 0.4% - 14% | **8.95E-04** | **4.30E-02** | 0.5% - 17% | 0.00E+00 | **3.66E-02** | 0.0% - 27% |
| Benz(a)anthracene | 56553 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Benzene | 71432 | Kiln | **2.34E-03** | **1.36E-03** | 0.3% - 1.1% | **1.94E-03** | **1.12E-03** | 0.3% - 1.1% | 0.00E+00 | **5.26E-04** | 0.0% - 0.4% |
| Benzo(a)pyrene | 50328 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Benzo(b)fluoranthene | 205992 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Benzo(k)fluoranthene | 207089 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Benzyl chloride | 100447 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Beryllium | 7440417 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.08E-03** | 0.00E+00 | 0.0% - 1.2% |
| 1,3-Butadiene | 106990 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Cadmium | 7440439 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **5.97E-04** | 0.00E+00 | 0.0% - 0.6% |
| Carbon tetrachloride | 56235 | Kiln | **2.24E-05** | **1.30E-05** | 0.0% - 0.0% | **1.85E-05** | **1.07E-05** | 0.0% - 0.0% | 0.00E+00 | **5.03E-06** | 0.0% - 0.0% |
| Chlorobenzene | 108907 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Chloroform | 67663 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Chromium, hexavalent | 18540299 | Byproduct of manufacturing | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.17E-04** | 0.00E+00 | 0.0% - 0.1% |
| Chrysene | 218019 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Copper | 7440508 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Crystalline Silica | 1175 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **6.17E-03** | 0.00E+00 | 0.0% - 6.7% |
| Dibenz(a,h)anthracene | 53703 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | **1.07E-06** | **6.21E-07** | 0.0% - 0.0% | **8.86E-07** | **5.15E-07** | 0.0% - 0.0% | **4.15E-07** | **2.41E-07** | 0.0% - 0.0% |
| 1,1-Dichloroethane | 75343 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Diesel engine exhaust | 9901 | Stationary sources | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.21E-04** | 0.00E+00 | 0.0% - 0.1% |
| Ethyl benzene | 100414 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Ethyl chloride (Chloroethane) | 75003 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Ethylene dibromide (EDB) | 106934 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Ethylene dichloride (EDC) | 107062 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Formaldehyde | 50000 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.19E-04** | 0.00E+00 | 0.0% - 0.1% |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562394 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **4.54E-08** | 0.00E+00 | 0.0% - 0.0% |

**TABLE 12**

**POTENTIAL CHRONIC HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - CENTRAL NERVOUS SYSTEM AND RESPIRATORY HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #2037[4] | | | Maximum Exposed Individual Resident (MEIR) Receptor #2040[4] | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076[4,5] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673897 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.17E-08** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | 35822469 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **9.37E-08** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648269 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **3.96E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117449 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **3.71E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918219 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.25E-07** | 0.00E+00 | 0.0% - 0.0% |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851345 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.29E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | 39227286 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.62E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | 57653857 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.58E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | 19408743 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.68E-07** | 0.00E+00 | 0.0% - 0.0% |
| Hydrochloric acid | 7647010 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **6.71E-02** | 0.00E+00 | 0.0% - 72.7% |
| Indeno(1,2,3-cd)pyrene | 193395 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Lead | 7439921 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Manganese | 7439965 | Raw material | **2.90E-04** | **3.74E-04** | 0.1% - 0.1% | **2.40E-04** | **3.10E-04** | 0.1% - 0.1% | 0.00E+00 | **1.45E-04** | 0.0% - 0.1% |
| Mercury[6] | 7439976 | Raw material | **2.07E-01** | **3.60E-01** | 84.7% - 97.2% | **1.71E-01** | **2.99E-01** | 82.1% - 97.1% | 0.00E+00 | **1.40E-01** | 0.0% - 78.7% |
| Methyl bromide (Bromomethane) | 74839 | Kiln | **1.82E-03** | **1.05E-03** | 0.3% - 0.9% | **1.50E-03** | **8.74E-04** | 0.3% - 0.9% | **7.05E-04** | **4.09E-04** | 0.2% - 0.8% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | **4.66E-07** | **2.70E-07** | 0.0% - 0.0% | **3.86E-07** | **2.24E-07** | 0.0% - 0.0% | 0.00E+00 | **1.05E-07** | 0.0% - 0.0% |
| Methylene chloride (Dichloromethane) | 75092 | Kiln | **4.68E-06** | **2.72E-06** | 0.0% - 0.0% | **3.88E-06** | **2.25E-06** | 0.0% - 0.0% | 0.00E+00 | **1.05E-06** | 0.0% - 0.0% |
| Naphthalene | 91203 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **8.71E-05** | 0.00E+00 | 0.0% - 0.1% |
| Nickel | 7440020 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.10E-02** | 0.00E+00 | 0.0% - 11.9% |
| 1,2,3,4,6,7,8,9-Octachlorodibenzofuran | 39001020 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **4.49E-10** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin | 3268879 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.97E-09** | 0.00E+00 | 0.0% - 0.0% |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117314 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.33E-05** | 0.00E+00 | 0.0% - 0.0% |

**TABLE 12**

**POTENTIAL CHRONIC HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - CENTRAL NERVOUS SYSTEM AND RESPIRATORY HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #2037[4] | | | Maximum Exposed Individual Resident (MEIR) Receptor #2040[4] | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076[4,5] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117416 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **8.90E-07** | 0.00E+00 | 0.0% - 0.0% |
| 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | 40321764 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.31E-06** | 0.00E+00 | 0.0% - 0.0% |
| Perchloroethylene | 127184 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Selenium | 7782492 | Raw material | **3.66E-06** | **2.16E-06** | 0.0% - 0.0% | **3.21E-06** | **1.91E-06** | 0.0% - 0.0% | 0.00E+00 | **1.22E-06** | 0.0% - 0.0% |
| Styrene | 100425 | Kiln | **3.92E-06** | **2.28E-06** | 0.0% - 0.0% | **3.25E-06** | **1.89E-06** | 0.0% - 0.0% | 0.00E+00 | **8.84E-07** | 0.0% - 0.0% |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207319 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **1.12E-05** | 0.00E+00 | 0.0% - 0.0% |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 1746016 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | **2.27E-06** | 0.00E+00 | 0.0% - 0.0% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Toluene | 108883 | Kiln | **4.19E-04** | **2.43E-04** | 0.1% - 0.2% | **3.47E-04** | **2.01E-04** | 0.1% - 0.2% | **1.63E-04** | **9.42E-05** | 0.1% - 0.2% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Trichloroethylene | 79016 | Kiln | **1.02E-06** | **5.91E-07** | 0.0% - 0.0% | **8.45E-07** | **4.90E-07** | 0.0% - 0.0% | 0.00E+00 | **2.29E-07** | 0.0% - 0.0% |
| Vanadium pentoxide | 1314621 | Raw material | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Vinyl chloride | 75014 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| Vinylidene chloride | 75354 | Kiln | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% |
| o-Xylene | 95476 | Kiln | **2.82E-05** | **1.64E-05** | 0.0% - 0.0% | **2.34E-05** | **1.36E-05** | 0.0% - 0.0% | **1.10E-05** | **6.36E-06** | 0.0% - 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | **1.44E-04** | **8.36E-05** | 0.0% - 0.1% | **1.20E-04** | **6.93E-05** | 0.0% - 0.1% | **5.60E-05** | **3.25E-05** | 0.0% - 0.1% |
| **Total[7]** | | | **2.1E-01** | **4.1E-01** | 100% - 100% | **1.8E-01** | **3.4E-01** | 100% - 100% | **9.2E-02** | **1.8E-01** | 100% - 100% |

**TABLE 12**

**POTENTIAL CHRONIC HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - CENTRAL NERVOUS SYSTEM AND RESPIRATORY HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

Notes

1. Maximum chronic hazard index was highest for the central nervous system (CNS) or respiratory system depending on receptor and emission year. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendices D and E.
2. All evaluated Toxic Air Contaminants (TACs) presented; not all have chronic noncancer effects on the CNS or respiratory system. TACs without chronic effects on the applicable organ system are shaded.
3. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.
   - Kiln - Byproducts of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   - Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   - Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emission occur during material handling and storage.
   - Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welding equipment.
4. Receptor identifier in the HARP model.
5. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
6. The chronic hazard indiex for mercury has been adjusted from the HARP output to exclude oral exposure.
7. Chronic hazard index for the PMI, MEIR, and MEIW are below 1, the regulatory notification level.

Abbreviation

% Cont. = Percent contribution to total

**TABLE 13**

**POTENTIAL CHRONIC HAZARD INDEXES**
**AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY -**
**CENTRAL NERVOUS SYSTEM AND RESPIRATORY**
**HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #2037 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2040 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| | System | | | System | | | Respiratory | CNS | |
| KILN | 2.12E-01 | 3.81E-01 | 91% - 100% | 1.76E-01 | 3.16E-01 | 89% - 100% | 7.43E-02 | 1.45E-01 | 77% - 82% |
| 5D11_20 | 2.94E-05 | 1.39E-03 | 0.0% - 0.5% | 2.47E-05 | 1.14E-03 | 0.0% - 0.4% | 3.57E-04 | 1.19E-03 | 0.4% - 0.9% |
| 5D23 | 4.56E-06 | 3.25E-04 | 0.0% - 0.1% | 6.43E-06 | 2.89E-04 | 0.0% - 0.1% | 8.40E-05 | 2.75E-04 | 0.1% - 0.2% |
| 5D27 | 1.24E-06 | 1.07E-04 | 0.0% - 0.0% | 1.35E-06 | 6.17E-05 | 0.0% - 0.0% | 2.21E-05 | 6.26E-05 | 0.0% - 0.1% |
| 5D28 | 2.40E-06 | 1.32E-04 | 0.0% - 0.0% | 2.65E-06 | 1.21E-04 | 0.0% - 0.0% | 1.81E-05 | 8.20E-05 | 0.0% - 0.0% |
| 6D17 | 1.25E-05 | 5.91E-04 | 0.0% - 0.2% | 1.21E-05 | 5.48E-04 | 0.0% - 0.2% | 1.58E-04 | 4.64E-04 | 0.2% - 0.3% |
| 6D2 | 1.15E-05 | 5.40E-04 | 0.0% - 0.2% | 1.12E-05 | 5.07E-04 | 0.0% - 0.2% | 1.32E-04 | 3.75E-04 | 0.1% - 0.2% |
| 6D8 | 3.91E-06 | 2.05E-04 | 0.0% - 0.1% | 3.61E-06 | 1.61E-04 | 0.0% - 0.1% | 4.83E-05 | 1.40E-04 | 0.1% - 0.1% |
| 7 | 3.77E-07 | 2.65E-04 | 0.0% - 0.1% | 7.52E-07 | 5.24E-05 | 0.0% - 0.0% | 1.16E-04 | 1.23E-04 | 0.1% - 0.1% |
| 8 | 1.08E-06 | 3.52E-04 | 0.0% - 0.1% | 2.96E-06 | 1.89E-04 | 0.0% - 0.1% | 3.30E-04 | 5.79E-04 | 0.3% - 0.4% |
| 3 | 5.67E-05 | 2.82E-03 | 0.0% - 0.9% | 5.40E-05 | 2.43E-03 | 0.0% - 0.9% | 1.12E-03 | 3.14E-03 | 1.2% - 2.0% |
| 5 | 1.13E-05 | 1.13E-03 | 0.0% - 0.3% | 2.38E-05 | 1.15E-03 | 0.0% - 0.4% | 8.06E-04 | 9.43E-04 | 0.5% - 0.9% |
| 2 | 2.75E-05 | 1.55E-03 | 0.0% - 0.5% | 2.64E-05 | 1.39E-03 | 0.0% - 0.5% | 1.17E-03 | 1.47E-03 | 0.8% - 1.3% |
| 1 | 2.02E-05 | 1.12E-03 | 0.0% - 0.4% | 1.94E-05 | 1.03E-03 | 0.0% - 0.4% | 7.86E-04 | 9.69E-04 | 0.5% - 0.9% |
| 6D1 | 1.87E-05 | 1.26E-03 | 0.0% - 0.3% | 2.52E-05 | 1.14E-03 | 0.0% - 0.5% | 2.76E-04 | 1.06E-03 | 0.3% - 0.7% |
| 6D19 | 7.93E-06 | 3.58E-04 | 0.0% - 0.1% | 7.64E-06 | 3.44E-04 | 0.0% - 0.1% | 1.05E-04 | 3.93E-04 | 0.1% - 0.2% |
| 6D12 | 7.38E-06 | 3.55E-04 | 0.0% - 0.1% | 7.31E-06 | 3.30E-04 | 0.0% - 0.1% | 1.07E-04 | 3.47E-04 | 0.1% - 0.2% |
| 4D4 | 6.59E-06 | 2.73E-04 | 0.0% - 0.1% | 6.58E-06 | 3.02E-04 | 0.0% - 0.1% | 4.74E-05 | 1.40E-04 | 0.1% - 0.1% |
| 4D3 | 6.37E-06 | 2.71E-04 | 0.0% - 0.1% | 6.58E-06 | 3.01E-04 | 0.0% - 0.1% | 4.66E-05 | 1.38E-04 | 0.1% - 0.1% |
| 5D1 | 7.55E-06 | 2.82E-04 | 0.0% - 0.1% | 5.36E-06 | 2.35E-04 | 0.0% - 0.1% | 5.44E-05 | 1.62E-04 | 0.1% - 0.1% |
| 5D6 | 1.67E-05 | 3.97E-04 | 0.0% - 0.1% | 1.85E-05 | 4.37E-04 | 0.0% - 0.2% | 1.05E-03 | 2.00E-04 | 0.1% - 1.1% |
| 5D5 | 1.58E-05 | 3.70E-04 | 0.0% - 0.1% | 1.75E-05 | 4.15E-04 | 0.0% - 0.2% | 1.02E-03 | 1.89E-04 | 0.1% - 1.1% |
| 5D2 | 7.65E-06 | 3.05E-04 | 0.0% - 0.1% | 5.71E-06 | 2.50E-04 | 0.0% - 0.1% | 5.33E-05 | 1.60E-04 | 0.1% - 0.1% |
| 5D3 | 8.78E-06 | 4.61E-04 | 0.0% - 0.1% | 8.40E-06 | 3.66E-04 | 0.0% - 0.1% | 9.20E-05 | 2.81E-04 | 0.1% - 0.2% |
| S501 | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 7.39E-06 | 0.00E+00 | 0.0% - 0.0% |
| S502 | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 0.00E+00 | 0.00E+00 | 0.0% - 0.0% | 2.85E-05 | 0.00E+00 | 0.0% - 0.0% |
| 8D31 | 1.04E-06 | 3.02E-04 | 0.0% - 0.1% | 2.76E-06 | 1.15E-04 | 0.0% - 0.0% | 2.27E-04 | 1.65E-04 | 0.1% - 0.2% |
| 1D4 | 2.21E-05 | 1.56E-03 | 0.0% - 0.4% | 3.01E-05 | 1.30E-03 | 0.0% - 0.5% | 2.54E-04 | 4.81E-04 | 0.3% - 0.4% |

**TABLE 13**

**POTENTIAL CHRONIC HAZARD INDEXES**
**AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY -**
**CENTRAL NERVOUS SYSTEM AND RESPIRATORY**
**HEALTH EFFECTS ENDPOINTS[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #2037 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2040 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|
| Source ID | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| 2D1 | 8.87E-06 | 4.10E-04 | 0.0% - 0.1% | 7.47E-06 | 3.53E-04 | 0.0% - 0.1% | 4.96E-05 | 2.60E-04 | 0.1% - 0.2% |
| 3D1 | 9.04E-06 | 4.05E-04 | 0.0% - 0.1% | 8.53E-06 | 3.98E-04 | 0.0% - 0.2% | 3.33E-05 | 6.92E-05 | 0.0% - 0.1% |
| 3D4 | 5.87E-06 | 3.57E-04 | 0.0% - 0.1% | 1.07E-05 | 4.95E-04 | 0.0% - 0.2% | 4.34E-05 | 1.18E-04 | 0.0% - 0.1% |
| 3D5 | 4.66E-06 | 2.90E-04 | 0.0% - 0.1% | 9.10E-06 | 4.29E-04 | 0.0% - 0.2% | 2.38E-05 | 1.14E-04 | 0.0% - 0.1% |
| 999D | 3.19E-05 | 2.98E-03 | 0.0% - 0.7% | 4.05E-05 | 1.75E-03 | 0.0% - 0.7% | 1.01E-03 | 7.26E-04 | 0.4% - 1.6% |
| 7PD7 | 1.77E-06 | 2.22E-04 | 0.0% - 0.1% | 3.37E-06 | 1.48E-04 | 0.0% - 0.1% | 5.05E-05 | 1.18E-04 | 0.1% - 0.1% |
| 6A | 9.33E-06 | 1.81E-03 | 0.0% - 0.4% | 1.97E-05 | 1.02E-03 | 0.0% - 0.4% | 1.22E-03 | 1.50E-03 | 0.8% - 1.3% |
| 6B | 5.87E-06 | 2.21E-03 | 0.0% - 0.5% | 9.57E-06 | 4.94E-04 | 0.0% - 0.2% | 1.84E-03 | 1.76E-03 | 1.0% - 2.0% |
| 6C | 3.19E-05 | 1.57E-03 | 0.0% - 0.6% | 2.45E-05 | 1.39E-03 | 0.0% - 0.5% | 1.13E-03 | 1.17E-03 | 0.7% - 1.2% |
| 6D | 1.30E-05 | 2.46E-03 | 0.0% - 0.6% | 3.03E-05 | 1.63E-03 | 0.0% - 0.6% | 1.53E-03 | 1.30E-03 | 0.7% - 1.7% |
| 4A | 3.09E-05 | 1.36E-03 | 0.0% - 0.4% | 2.87E-05 | 1.17E-03 | 0.0% - 0.5% | 5.52E-04 | 2.54E-03 | 0.6% - 1.5% |
| 4B | 4.36E-05 | 1.57E-03 | 0.0% - 0.6% | 3.37E-05 | 1.42E-03 | 0.0% - 0.6% | 7.45E-04 | 3.61E-03 | 0.8% - 2.0% |
| 4C | 4.49E-05 | 1.62E-03 | 0.0% - 0.6% | 3.43E-05 | 1.44E-03 | 0.0% - 0.6% | 4.99E-04 | 2.31E-03 | 0.5% - 1.4% |
| 4D | 1.53E-05 | 1.95E-03 | 0.0% - 0.5% | 4.13E-05 | 1.65E-03 | 0.0% - 0.7% | 6.61E-04 | 2.91E-03 | 0.7% - 1.8% |
| Inhalation Pathways | 2.1E-01 | 3.6E-01 | 86% - 100% | 1.8E-01 | 3.0E-01 | 83% - 100% | 9.2E-02 | 1.4E-01 | 74% - 100% |
| Non-Inhalation | 3.7E-04 | 5.2E-02 | 0% - 14% | 4.3E-04 | 4.2E-02 | 0% - 17% | 5.7E-05 | 3.5E-02 | 0% - 26% |
| Total [3] | 2.1E-01 | 4.2E-01 | 100% - 100% | 1.8E-01 | 3.4E-01 | 100% - 100% | 9.2E-02 | 1.8E-01 | 100% - 100% |

Notes

1. Maximum chronic hazard index was highest for the central nervous system (CNS) or respiratory system depending on receptor and emission year. The total chronic hazard index for developmental effects was similar to the CNS. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendices D and E.
2. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
3. Chronic hazard indexes for the MEIR and MEIW are below 1, the regulatory notification level.

Abbreviation

% Cont. = Percent contribution to total

**TABLE 14**

**POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL**
**- THE DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS ONLY[1]**
Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category | Point of Maximum Impact (PMI) Receptor ID #13156 | | | | | Maximum Exposed Individual Resident (MEIR) Receptor ID #3701 | | | | | Maximum Exposed Individual Worker (MEIW) Receptor ID #5076 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. |
| Acetaldehyde | 75070 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Acrolein | 107028 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Arsenic | 7440382 | Raw material | 3.3E-02 | 3.1E-02 | 3.1E-02 | 3.1E-02 | 0.7% - 2.0% | 2.0E-02 | 1.9E-02 | 1.9E-02 | 1.9E-02 | 0.9% - 2.6% | 2.4E-02 | 2.3E-02 | 2.3E-02 | 2.3E-02 | 0.9% - 2.5% |
| Benz[a]anthracene | 56553 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Benzene | 71432 | Kiln | 1.5E-02 | 1.5E-02 | 1.5E-02 | 1.5E-02 | 0.3% - 1.0% | 7.4E-03 | 7.4E-03 | 7.4E-03 | 7.4E-03 | 0.3% - 1.0% | 9.1E-03 | 9.1E-03 | 9.1E-03 | 9.1E-03 | 0.3% - 1.0% |
| Benzo[a]pyrene | 50328 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Benzo[b]fluoranthene | 205992 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Benzo[k]fluoranthene | 207089 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Benzyl chloride | 100447 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Beryllium | 7440417 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,3-Butadiene | 106990 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Cadmium | 7440439 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Carbon Tetrachloride | 56235 | Kiln | 6.6E-05 | 6.6E-05 | 6.6E-05 | 6.6E-05 | 0.0% - 0.0% | 3.2E-05 | 3.2E-05 | 3.2E-05 | 3.2E-05 | 0.0% - 0.0% | 4.0E-05 | 4.0E-05 | 4.0E-05 | 4.0E-05 | 0.0% - 0.0% |
| Chlorobenzene | 108907 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Chloroform | 67663 | Kiln | 3.9E-04 | 3.9E-04 | 3.9E-04 | 3.9E-04 | 0.0% - 0.0% | 1.9E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.0% - 0.0% | 2.4E-04 | 2.4E-04 | 2.4E-04 | 2.4E-04 | 0.0% - 0.0% |
| Chromium VI | 18540299 | Byproduct of manufacturing | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Chrysene | 218019 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Copper | 7440508 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Crystalline silica | 1175 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Dibenz[a,h]anthracene | 53703 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,1-Dichloroethane | 75343 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Diesel PM | 9901 | Stationary sources | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Ethyl Chloride | 75003 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Ethylbenzene | 100414 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Ethylene dibromide | 106934 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Ethylene dichloride | 107062 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Formaldehyde | 50000 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8-HpCDD | 35822469 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8-HpCDF | 67562394 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,7,8,9-HpCDF | 55673897 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,7,8-HxCDD | 39227286 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,6,7,8-HxCDD | 57653857 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,7,8,9-HxCDD | 19408743 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,7,8-HxCDF | 70648269 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,6,7,8-HxCDF | 57117449 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,7,8,9-HxCDF | 72918219 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 2,3,4,6,7,8-HxCDF | 60851345 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Hydrochloric Acid | 7647010 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Indeno[1,2,3-c,d]pyrene | 193395 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |

## TABLE 14

**POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL**
**- THE DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS ONLY[1]**
Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category | Point of Maximum Impact (PMI) Receptor ID #13156 | | | | | Maximum Exposed Individual Resident (MEIR) Receptor ID #3701 | | | | | Maximum Exposed Individual Worker (MEIW) Receptor ID #5076 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. | 2005 [3] | 2008/2009 | 2010 | 2011 | % Cont. |
| Lead | 7439921 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Manganese | 7439965 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Mercury | 7439976 | Raw material | 1.6E+00 | 4.3E+00 | 3.0E+00 | 1.5E+00 | 97% - 99% | 7.6E-01 | 2.1E+00 | 1.5E+00 | 7.3E-01 | 96% - 99% | 9.4E-01 | 2.6E+00 | 1.8E+00 | 9.1E-01 | 96% - 99% |
| Methyl Bromide | 74839 | Kiln | 3.3E-04 | 3.3E-04 | 3.3E-04 | 3.3E-04 | 0.0% - 0.0% | 1.6E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.0% - 0.0% | 2.0E-04 | 2.0E-04 | 2.0E-04 | 2.0E-04 | 0.0% - 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Methylene chloride | 75092 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Naphthalene | 91203 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Nickel | 7440020 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8,9-OCDD | 3268879 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8,9-OCDF | 39001020 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,7,8-PeCDD | 40321764 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,2,3,7,8-PeCDF | 57117416 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 2,3,4,7,8-PeCDF | 57117314 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Perchloroethylene | 127184 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Selenium | 7782492 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Styrene | 100425 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 2,3,7,8-TCDD | 1746016 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 2,3,7,8-TCDF | 51207319 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Toluene | 108883 | Kiln | 4.8E-04 | 4.8E-04 | 4.8E-04 | 4.8E-04 | 0.0% - 0.0% | 2.3E-04 | 2.3E-04 | 2.3E-04 | 2.3E-04 | 0.0% - 0.0% | 2.9E-04 | 2.9E-04 | 2.9E-04 | 2.9E-04 | 0.0% - 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Trichloroethylene | 79016 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Vanadium | 1314621 | Raw material | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Vinyl Chloride | 75014 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Vinylidene chloride | 75354 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| o-xylene | 95476 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| **Total Hazard Index** | | | **1.6E+00** | **4.4E+00** | **3.1E+00** | **1.6E+00** | 100% - 100% | **7.9E-01** | **2.1E+00** | **1.5E+00** | 7.6E-01 | 100% - 100% | **9.8E-01** | **2.6E+00** | **1.9E+00** | 9.4E-01 | 100% - 100% |

Notes

1. Maximum acute hazard index was highest for developmental effects. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendices D, E, F, and G.
2. All evaluated toxic air contaminants (TACs) presented; not all have acute noncancer effects on the developmental system. Results for TACs without acute developmental effects are shaded.
3. Toxicity criteria (reference exposure levels (RELs)) for acute/chronic health effects for some chemicals for were revised by OEHHA in December 2008. Toxicity criteria applicable in 2005 were used to evaluate 2005 production emissions.

**TABLE 15**
**POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY SOURCE**
**- THE DEVELOPMENTAL HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #13156 | | | | | Maximum Exposed Individual Resident (MEIR) Receptor #3701 | | | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source ID | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution |
| KILN | 1.6E+00 | 4.3E+00 | 3.1E+00 | 1.5E+00 | 99% - 99% | 7.7E-01 | 2.1E+00 | 1.5E+00 | 7.4E-01 | 98% - 99% | 9.6E-01 | 2.6E+00 | 1.8E+00 | 9.2E-01 | 98% - 99% |
| 5D11_20 | 1.0E-03 | 9.8E-04 | 9.8E-04 | 9.8E-04 | 0.02% - 0.06% | 1.6E-03 | 1.5E-03 | 1.5E-03 | 1.5E-03 | 0.07% - 0.20% | 1.6E-03 | 1.6E-03 | 1.6E-03 | 1.6E-03 | 0.06% - 0.17% |
| 5D23 | 1.7E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.00% - 0.01% | 2.3E-04 | 2.2E-04 | 2.2E-04 | 2.2E-04 | 0.01% - 0.03% | 3.0E-04 | 2.9E-04 | 2.9E-04 | 2.9E-04 | 0.01% - 0.03% |
| 5D27 | 9.9E-05 | 9.4E-05 | 9.4E-05 | 9.4E-05 | 0.00% - 0.01% | 8.8E-05 | 8.4E-05 | 8.4E-05 | 8.4E-05 | 0.00% - 0.01% | 4.3E-05 | 4.1E-05 | 4.1E-05 | 4.1E-05 | 0.00% - 0.00% |
| 5D28 | 1.6E-04 | 1.5E-04 | 1.5E-04 | 1.5E-04 | 0.00% - 0.01% | 5.7E-05 | 5.5E-05 | 5.5E-05 | 5.5E-05 | 0.00% - 0.01% | 5.8E-05 | 5.5E-05 | 5.5E-05 | 5.5E-05 | 0.00% - 0.01% |
| 6D17 | 2.0E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.00% - 0.01% | 1.8E-04 | 1.7E-04 | 1.7E-04 | 1.7E-04 | 0.01% - 0.02% | 1.8E-04 | 1.7E-04 | 1.7E-04 | 1.7E-04 | 0.01% - 0.02% |
| 6D2 | 2.6E-04 | 2.4E-04 | 2.4E-04 | 2.4E-04 | 0.01% - 0.02% | 1.7E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.01% - 0.02% | 1.7E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.01% - 0.02% |
| 6D8 | 8.9E-05 | 8.5E-05 | 8.5E-05 | 8.5E-05 | 0.00% - 0.01% | 4.9E-05 | 4.6E-05 | 4.6E-05 | 4.6E-05 | 0.00% - 0.01% | 5.5E-05 | 5.2E-05 | 5.2E-05 | 5.2E-05 | 0.00% - 0.01% |
| 7 | 9.4E-05 | 9.3E-05 | 9.3E-05 | 9.3E-05 | 0.00% - 0.01% | 4.7E-05 | 4.7E-05 | 4.7E-05 | 4.7E-05 | 0.00% - 0.01% | 8.3E-05 | 8.2E-05 | 8.2E-05 | 8.2E-05 | 0.00% - 0.01% |
| 8 | 2.7E-04 | 2.7E-04 | 2.7E-04 | 2.7E-04 | 0.01% - 0.02% | 1.7E-04 | 1.7E-04 | 1.7E-04 | 1.7E-04 | 0.01% - 0.02% | 1.4E-04 | 1.5E-04 | 1.5E-04 | 1.5E-04 | 0.01% - 0.02% |
| 3 | 4.3E-04 | 4.1E-04 | 4.1E-04 | 4.1E-04 | 0.01% - 0.03% | 2.8E-04 | 2.7E-04 | 2.7E-04 | 2.7E-04 | 0.01% - 0.04% | 4.2E-04 | 4.0E-04 | 4.0E-04 | 4.0E-04 | 0.02% - 0.04% |
| 5 | 6.9E-04 | 6.8E-04 | 6.8E-04 | 6.8E-04 | 0.02% - 0.04% | 8.8E-04 | 8.6E-04 | 8.6E-04 | 8.6E-04 | 0.04% - 0.11% | 6.4E-04 | 6.3E-04 | 6.3E-04 | 6.3E-04 | 0.02% - 0.07% |
| 2 | 6.0E-04 | 5.9E-04 | 5.9E-04 | 5.9E-04 | 0.01% - 0.04% | 6.6E-04 | 6.5E-04 | 6.5E-04 | 6.5E-04 | 0.03% - 0.09% | 5.9E-04 | 5.8E-04 | 5.8E-04 | 5.8E-04 | 0.02% - 0.06% |
| 1 | 4.7E-04 | 4.6E-04 | 4.6E-04 | 4.6E-04 | 0.01% - 0.03% | 4.8E-04 | 4.7E-04 | 4.7E-04 | 4.7E-04 | 0.02% - 0.06% | 3.7E-04 | 3.7E-04 | 3.7E-04 | 3.7E-04 | 0.01% - 0.04% |
| 6D1 | 5.8E-04 | 5.5E-04 | 5.5E-04 | 5.5E-04 | 0.01% - 0.04% | 4.6E-04 | 4.3E-04 | 4.3E-04 | 4.3E-04 | 0.02% - 0.06% | 3.6E-04 | 3.4E-04 | 3.4E-04 | 3.4E-04 | 0.01% - 0.04% |
| 6D19 | 1.5E-04 | 1.4E-04 | 1.4E-04 | 1.4E-04 | 0.00% - 0.01% | 9.8E-05 | 9.3E-05 | 9.3E-05 | 9.3E-05 | 0.00% - 0.01% | 9.7E-05 | 9.2E-05 | 9.2E-05 | 9.2E-05 | 0.00% - 0.01% |
| 6D12 | 1.9E-04 | 1.8E-04 | 1.8E-04 | 1.8E-04 | 0.00% - 0.01% | 1.4E-04 | 1.3E-04 | 1.3E-04 | 1.3E-04 | 0.01% - 0.02% | 1.7E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.01% - 0.02% |
| 4D4 | 4.1E-04 | 4.0E-04 | 4.0E-04 | 4.0E-04 | 0.01% - 0.03% | 2.0E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.01% - 0.02% | 2.3E-04 | 2.2E-04 | 2.2E-04 | 2.2E-04 | 0.01% - 0.02% |
| 4D3 | 4.1E-04 | 3.9E-04 | 3.9E-04 | 3.9E-04 | 0.01% - 0.03% | 2.0E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.01% - 0.03% | 2.3E-04 | 2.2E-04 | 2.2E-04 | 2.2E-04 | 0.01% - 0.02% |
| 5D1 | 3.7E-04 | 3.6E-04 | 3.6E-04 | 3.6E-04 | 0.01% - 0.02% | 2.0E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.01% - 0.02% | 2.4E-04 | 2.3E-04 | 2.3E-04 | 2.3E-04 | 0.01% - 0.02% |
| 5D6 | 5.6E-04 | 8.1E-04 | 8.1E-04 | 8.1E-04 | 0.02% - 0.05% | 2.9E-04 | 4.2E-04 | 4.2E-04 | 4.2E-04 | 0.02% - 0.05% | 3.0E-04 | 4.4E-04 | 4.4E-04 | 4.4E-04 | 0.02% - 0.05% |
| 5D5 | 5.2E-04 | 7.6E-04 | 7.6E-04 | 7.6E-04 | 0.02% - 0.05% | 2.6E-04 | 3.8E-04 | 3.8E-04 | 3.8E-04 | 0.02% - 0.05% | 3.0E-04 | 4.3E-04 | 4.3E-04 | 4.3E-04 | 0.02% - 0.05% |
| 5D2 | 4.1E-04 | 3.9E-04 | 3.9E-04 | 3.9E-04 | 0.01% - 0.03% | 1.9E-04 | 1.9E-04 | 1.9E-04 | 1.9E-04 | 0.01% - 0.02% | 2.2E-04 | 2.1E-04 | 2.1E-04 | 2.1E-04 | 0.01% - 0.02% |
| 5D3 | 5.1E-04 | 4.9E-04 | 4.9E-04 | 4.9E-04 | 0.01% - 0.03% | 3.0E-04 | 2.9E-04 | 2.9E-04 | 2.9E-04 | 0.01% - 0.04% | 3.6E-04 | 3.4E-04 | 3.4E-04 | 3.4E-04 | 0.01% - 0.04% |
| S501 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% |
| S502 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.0E+00 | 0.00% - 0.00% |
| 8D31 | 2.1E-04 | 2.1E-04 | 2.1E-04 | 2.1E-04 | 0.00% - 0.01% | 8.7E-05 | 8.6E-05 | 8.6E-05 | 8.6E-05 | 0.00% - 0.01% | 1.4E-04 | 1.4E-04 | 1.4E-04 | 1.4E-04 | 0.01% - 0.01% |
| 1D4 | 7.4E-04 | 7.0E-04 | 7.0E-04 | 7.0E-04 | 0.02% - 0.05% | 4.4E-04 | 4.2E-04 | 4.2E-04 | 4.2E-04 | 0.02% - 0.06% | 5.1E-04 | 4.9E-04 | 4.9E-04 | 4.9E-04 | 0.02% - 0.05% |
| 2D1 | 1.4E-04 | 1.3E-04 | 1.3E-04 | 1.3E-04 | 0.00% - 0.01% | 3.3E-04 | 3.2E-04 | 3.2E-04 | 3.2E-04 | 0.02% - 0.04% | 4.0E-04 | 3.9E-04 | 3.9E-04 | 3.9E-04 | 0.01% - 0.04% |
| 3D1 | 1.2E-04 | 1.2E-04 | 1.2E-04 | 1.2E-04 | 0.00% - 0.01% | 8.0E-05 | 7.7E-05 | 7.7E-05 | 7.7E-05 | 0.00% - 0.01% | 1.2E-04 | 1.1E-04 | 1.1E-04 | 1.1E-04 | 0.00% - 0.01% |
| 3D4 | 2.4E-04 | 2.3E-04 | 2.3E-04 | 2.3E-04 | 0.01% - 0.01% | 1.6E-04 | 1.5E-04 | 1.5E-04 | 1.5E-04 | 0.01% - 0.02% | 1.8E-04 | 1.8E-04 | 1.8E-04 | 1.8E-04 | 0.01% - 0.02% |
| 3D5 | 2.1E-04 | 2.0E-04 | 2.0E-04 | 2.0E-04 | 0.00% - 0.01% | 1.5E-04 | 1.4E-04 | 1.4E-04 | 1.4E-04 | 0.01% - 0.02% | 1.7E-04 | 1.6E-04 | 1.6E-04 | 1.6E-04 | 0.01% - 0.02% |
| 999D | 3.4E-03 | 3.2E-03 | 3.2E-03 | 3.2E-03 | 0.07% - 0.21% | 1.1E-03 | 1.0E-03 | 1.0E-03 | 1.0E-03 | 0.05% - 0.14% | 2.2E-03 | 2.1E-03 | 2.1E-03 | 2.1E-03 | 0.08% - 0.23% |
| 7PD7 | 1.0E-04 | 9.7E-05 | 9.7E-05 | 9.7E-05 | 0.00% - 0.01% | 2.4E-05 | 2.3E-05 | 2.3E-05 | 2.3E-05 | 0.00% - 0.00% | 2.2E-05 | 2.1E-05 | 2.1E-05 | 2.1E-05 | 0.00% - 0.00% |
| 6A | 8.6E-04 | 8.2E-04 | 8.2E-04 | 8.2E-04 | 0.02% - 0.05% | 3.2E-04 | 3.1E-04 | 3.1E-04 | 3.1E-04 | 0.01% - 0.04% | 4.3E-04 | 4.1E-04 | 4.1E-04 | 4.1E-04 | 0.02% - 0.04% |
| 6B | 3.3E-04 | 3.2E-04 | 3.2E-04 | 3.2E-04 | 0.01% - 0.02% | 6.2E-04 | 5.9E-04 | 5.9E-04 | 5.9E-04 | 0.03% - 0.08% | 7.2E-04 | 7.0E-04 | 7.0E-04 | 7.0E-04 | 0.03% - 0.07% |
| 6C | 3.6E-04 | 3.5E-04 | 3.5E-04 | 3.5E-04 | 0.01% - 0.02% | 4.2E-04 | 4.0E-04 | 4.0E-04 | 4.0E-04 | 0.02% - 0.05% | 5.5E-04 | 5.3E-04 | 5.3E-04 | 5.3E-04 | 0.02% - 0.06% |
| 6D | 9.2E-04 | 8.9E-04 | 8.9E-04 | 8.9E-04 | 0.02% - 0.06% | 5.3E-04 | 5.1E-04 | 5.1E-04 | 5.1E-04 | 0.02% - 0.07% | 7.4E-04 | 7.1E-04 | 7.1E-04 | 7.1E-04 | 0.03% - 0.08% |

**TABLE 15**
**POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY SOURCE**
**- THE DEVELOPMENTAL HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #13156 | | | | | Maximum Exposed Individual Resident (MEIR) Receptor #3701 | | | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source ID | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution | 2005 (2008 CEIR[2]) | 2008/2009 | 2010 | 2011 | Relative Contribution |
| 4A | 2.3E-03 | 2.3E-03 | 2.3E-03 | 2.3E-03 | 0.05% - 0.15% | 1.5E-03 | 1.4E-03 | 1.4E-03 | 1.4E-03 | 0.07% - 0.19% | 1.5E-03 | 1.5E-03 | 1.5E-03 | 1.5E-03 | 0.06% - 0.16% |
| 4B | 2.4E-03 | 2.4E-03 | 2.4E-03 | 2.4E-03 | 0.05% - 0.15% | 1.5E-03 | 1.5E-03 | 1.5E-03 | 1.5E-03 | 0.07% - 0.19% | 2.0E-03 | 2.0E-03 | 2.0E-03 | 2.0E-03 | 0.07% - 0.21% |
| 4C | 1.8E-03 | 1.7E-03 | 1.7E-03 | 1.7E-03 | 0.04% - 0.11% | 1.0E-03 | 9.9E-04 | 9.9E-04 | 9.9E-04 | 0.05% - 0.13% | 1.2E-03 | 1.2E-03 | 1.2E-03 | 1.2E-03 | 0.05% - 0.13% |
| 4D | 2.6E-03 | 2.5E-03 | 2.5E-03 | 2.5E-03 | 0.06% - 0.16% | 1.3E-03 | 1.3E-03 | 1.3E-03 | 1.3E-03 | 0.06% - 0.17% | 1.6E-03 | 1.6E-03 | 1.6E-03 | 1.6E-03 | 0.06% - 0.17% |
| SUM | 1.6E+00 | 4.4E+00 | 3.1E+00 | 1.6E+00 | 100% - 100% | 7.9E-01 | 2.1E+00 | 1.5E+00 | 7.6E-01 | 100% - 100% | 9.8E-01 | 2.6E+00 | 1.9E+00 | 9.4E-01 | 100% - 100% |

Notes:
1. Maximum acute hazard index was highest for developmental effects. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendices D, E, F, and G.
2. Toxicity criteria (reference exposure levels (RELs)) for acute/chronic health effects for some chemicals for were revised by OEHHA in December 2008. Toxicity criteria applicable in 2005 were used to evaluate 2005 production emissions.

**TABLE 16**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| Acetaldehyde | 75070 | Kiln | 3.6E-08 | 3.5E-08 | 0.3% - 0.3% | 3.8E-08 | 3.8E-08 | 0.4% - 0.5% | 3.7E-09 | 2.2E-09 | 0.3% - 0.3% |
| Acrolein | 107028 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Arsenic | 7440382 | Raw material | 9.8E-07 | 9.8E-07 | 8.0% - 8.0% | 4.5E-07 | 4.6E-07 | 5.5% - 5.4% | 1.4E-07 | 8.2E-08 | 10% - 10% |
| Benz(a)anthracene | 56553 | Kiln | 4.7E-10 | 4.6E-10 | 0.0% - 0.0% | 5.0E-10 | 4.9E-10 | 0.0% - 0.0% | 4.4E-11 | 2.6E-11 | 0.0% - 0.0% |
| Benzene | 71432 | Kiln | 3.0E-06 | 2.9E-06 | 24% - 24% | 3.2E-06 | 3.1E-06 | 37% - 38% | 3.1E-07 | 1.8E-07 | 23% - 24% |
| Benzo(a)pyrene | 50328 | Kiln | 1.1E-10 | 1.0E-10 | 0.0% - 0.0% | 1.1E-10 | 1.1E-10 | 0.0% - 0.0% | 1.0E-11 | 5.8E-12 | 0.0% - 0.0% |
| Benzo(b)fluoranthene | 205992 | Kiln | 6.7E-11 | 6.5E-11 | 0.0% - 0.0% | 7.1E-11 | 7.0E-11 | 0.0% - 0.0% | 6.3E-12 | 3.7E-12 | 0.0% - 0.0% |
| Benzo(k)fluoranthene | 207089 | Kiln | 1.1E-11 | 1.0E-11 | 0.0% - 0.0% | 1.1E-11 | 1.1E-11 | 0.0% - 0.0% | 1.0E-12 | 5.8E-13 | 0.0% - 0.0% |
| Benzyl chloride | 100447 | Kiln | 5.3E-08 | 5.2E-08 | 0.4% - 0.4% | 5.7E-08 | 5.6E-08 | 0.7% - 0.7% | 5.5E-09 | 3.2E-09 | 0.4% - 0.4% |
| Beryllium | 7440417 | Raw material | 3.5E-08 | 3.6E-08 | 0.3% - 0.3% | 2.2E-08 | 2.3E-08 | 0.3% - 0.3% | 3.6E-09 | 2.4E-09 | 0.3% - 0.3% |
| 1,3-Butadiene | 106990 | Kiln | 1.7E-07 | 1.7E-07 | 1.4% - 1.4% | 1.8E-07 | 1.8E-07 | 2.1% - 2.2% | 1.8E-08 | 1.0E-08 | 1.3% - 1.4% |
| Cadmium | 7440439 | Raw material | 1.1E-07 | 1.1E-07 | 0.9% - 0.9% | 5.5E-08 | 5.8E-08 | 0.7% - 0.7% | 1.0E-08 | 6.5E-09 | 0.8% - 0.8% |
| Carbon Tetrachloride | 56235 | Kiln | 2.8E-08 | 2.8E-08 | 0.2% - 0.2% | 3.0E-08 | 3.0E-08 | 0.4% - 0.4% | 3.0E-09 | 1.7E-09 | 0.2% - 0.2% |
| Chlorobenzene | 108907 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Chloroform | 67663 | Kiln | 1.7E-09 | 1.6E-09 | 0.0% - 0.0% | 1.8E-09 | 1.8E-09 | 0.0% - 0.0% | 1.8E-10 | 1.0E-10 | 0.0% - 0.0% |
| Chromium VI | 18540299 | Byproduct of manufacturing | 7.1E-06 | 7.1E-06 | 57% - 58% | 3.5E-06 | 3.6E-06 | 42% - 42% | 6.9E-07 | 4.2E-07 | 53% - 53% |
| Chrysene | 218019 | Kiln | 1.4E-10 | 1.4E-10 | 0.0% - 0.0% | 1.5E-10 | 1.5E-10 | 0.0% - 0.0% | 1.3E-11 | 7.6E-12 | 0.0% - 0.0% |
| Copper | 7440508 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Crystalline silica | 1175 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Dibenz(a,h)anthracene | 53703 | Kiln | 3.8E-11 | 3.8E-11 | 0.0% - 0.0% | 4.1E-11 | 4.0E-11 | 0.0% - 0.0% | 3.7E-12 | 2.1E-12 | 0.0% - 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | 7.2E-09 | 7.1E-09 | 0.1% - 0.1% | 7.8E-09 | 7.7E-09 | 0.1% - 0.1% | 7.6E-10 | 4.4E-10 | 0.1% - 0.1% |
| 1,1-Dichloroethane | 75343 | Kiln | 3.5E-10 | 3.4E-10 | 0.0% - 0.0% | 3.7E-10 | 3.7E-10 | 0.0% - 0.0% | 3.6E-11 | 2.1E-11 | 0.0% - 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 5.2E-09 | 5.2E-09 | 0.0% - 0.0% | 5.6E-09 | 5.5E-09 | 0.1% - 0.1% | 5.5E-10 | 3.2E-10 | 0.0% - 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 1.9E-08 | 1.9E-08 | 0.2% - 0.2% | 2.0E-08 | 2.0E-08 | 0.2% - 0.2% | 2.0E-09 | 1.1E-09 | 0.1% - 0.2% |
| Diesel PM | 9901 | Stationary | 1.2E-07 | 2.0E-07 | 1.6% - 0.9% | 1.6E-07 | 2.7E-07 | 3.2% - 1.9% | 3.8E-08 | 3.8E-08 | 4.8% - 2.9% |
| Ethyl Chloride | 75003 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Ethylbenzene | 100414 | Kiln | 2.6E-08 | 2.5E-08 | 0.2% - 0.2% | 2.7E-08 | 2.7E-08 | 0.3% - 0.3% | 2.7E-09 | 1.6E-09 | 0.2% - 0.2% |
| Ethylene dibromide | 106934 | Kiln | 4.6E-08 | 4.6E-08 | 0.4% - 0.4% | 5.0E-08 | 4.9E-08 | 0.6% - 0.6% | 4.9E-09 | 2.8E-09 | 0.4% - 0.4% |
| Ethylene dichloride | 107062 | Kiln | 5.3E-09 | 5.2E-09 | 0.0% - 0.0% | 5.6E-09 | 5.6E-09 | 0.1% - 0.1% | 5.5E-10 | 3.2E-10 | 0.0% - 0.0% |
| Formaldehyde | 50000 | Kiln | 4.1E-09 | 4.0E-09 | 0.0% - 0.0% | 4.4E-09 | 4.3E-09 | 0.1% - 0.1% | 4.3E-10 | 2.5E-10 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8-HpCDD | 35822469 | Kiln | 3.8E-10 | 3.7E-10 | 0.0% - 0.0% | 4.0E-10 | 4.0E-10 | 0.0% - 0.0% | 4.4E-11 | 2.6E-11 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8-HpCDF | 67562394 | Kiln | 1.8E-10 | 1.8E-10 | 0.0% - 0.0% | 2.0E-10 | 1.9E-10 | 0.0% - 0.0% | 2.1E-11 | 1.2E-11 | 0.0% - 0.0% |
| 1,2,3,4,7,8,9-HpCDF | 55673897 | Kiln | 4.7E-11 | 4.6E-11 | 0.0% - 0.0% | 5.0E-11 | 4.9E-11 | 0.0% - 0.0% | 5.5E-12 | 3.2E-12 | 0.0% - 0.0% |
| 1,2,3,4,7,8-HxCDD | 39227286 | Kiln | 1.1E-09 | 1.0E-09 | 0.0% - 0.0% | 1.1E-09 | 1.1E-09 | 0.0% - 0.0% | 1.2E-10 | 7.1E-11 | 0.0% - 0.0% |
| 1,2,3,6,7,8-HxCDD | 57653857 | Kiln | 1.0E-09 | 1.0E-09 | 0.0% - 0.0% | 1.1E-09 | 1.1E-09 | 0.0% - 0.0% | 1.2E-10 | 7.0E-11 | 0.0% - 0.0% |

**TABLE 16**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| 1,2,3,7,8,9-HxCDD | 19408743 | Kiln | 1.1E-09 | 1.1E-09 | 0.0% - 0.0% | 1.2E-09 | 1.1E-09 | 0.0% - 0.0% | 1.3E-10 | 7.3E-11 | 0.0% - 0.0% |
| 1,2,3,4,7,8-HxCDF | 70648269 | Kiln | 1.6E-09 | 1.6E-09 | 0.0% - 0.0% | 1.7E-09 | 1.7E-09 | 0.0% - 0.0% | 1.9E-10 | 1.1E-10 | 0.0% - 0.0% |
| 1,2,3,6,7,8-HxCDF | 57117449 | Kiln | 1.5E-09 | 1.5E-09 | 0.0% - 0.0% | 1.6E-09 | 1.6E-09 | 0.0% - 0.0% | 1.7E-10 | 1.0E-10 | 0.0% - 0.0% |
| 1,2,3,7,8,9-HxCDF | 72918219 | Kiln | 5.0E-10 | 4.9E-10 | 0.0% - 0.0% | 5.3E-10 | 5.3E-10 | 0.0% - 0.0% | 5.9E-11 | 3.4E-11 | 0.0% - 0.0% |
| 2,3,4,6,7,8-HxCDF | 60851345 | Kiln | 9.2E-10 | 9.0E-10 | 0.0% - 0.0% | 9.8E-10 | 9.6E-10 | 0.0% - 0.0% | 1.1E-10 | 6.2E-11 | 0.0% - 0.0% |
| Hydrochloric Acid | 7647010 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Indeno(1,2,3-c,d)pyrene | 193395 | Kiln | 7.8E-12 | 7.7E-12 | 0.0% - 0.0% | 8.4E-12 | 8.2E-12 | 0.0% - 0.0% | 7.4E-13 | 4.3E-13 | 0.0% - 0.0% |
| Lead | 7439921 | Raw material | 2.0E-09 | 2.1E-09 | 0.0% - 0.0% | 1.2E-09 | 1.3E-09 | 0.0% - 0.0% | 3.1E-10 | 2.0E-10 | 0.0% - 0.0% |
| Manganese | 7439965 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Mercury | 7439976 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Methyl Bromide | 74839 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Methylene chloride | 75092 | Kiln | 1.4E-09 | 1.4E-09 | 0.0% - 0.0% | 1.5E-09 | 1.5E-09 | 0.0% - 0.0% | 1.5E-10 | 8.4E-11 | 0.0% - 0.0% |
| Naphthalene | 91203 | Kiln | 5.1E-08 | 5.0E-08 | 0.4% - 0.4% | 5.5E-08 | 5.4E-08 | 0.6% - 0.7% | 5.4E-09 | 3.1E-09 | 0.4% - 0.4% |
| Nickel | 7440020 | Raw material | 2.6E-07 | 2.7E-07 | 2.1% - 2.1% | 1.5E-07 | 1.6E-07 | 1.8% - 1.8% | 2.9E-08 | 1.8E-08 | 2.3% - 2.2% |
| 1,2,3,4,6,7,8,9-OCDD | 3268879 | Kiln | 7.9E-12 | 7.7E-12 | 0.0% - 0.0% | 8.4E-12 | 8.3E-12 | 0.0% - 0.0% | 9.2E-13 | 5.3E-13 | 0.0% - 0.0% |
| 1,2,3,4,6,7,8,9-OCDF | 39001020 | Kiln | 1.8E-12 | 1.8E-12 | 0.0% - 0.0% | 1.9E-12 | 1.9E-12 | 0.0% - 0.0% | 2.1E-13 | 1.2E-13 | 0.0% - 0.0% |
| 1,2,3,7,8-PeCDD | 40321764 | Kiln | 9.2E-09 | 9.1E-09 | 0.1% - 0.1% | 9.9E-09 | 9.8E-09 | 0.1% - 0.1% | 1.1E-09 | 6.3E-10 | 0.1% - 0.1% |
| 1,2,3,7,8-PeCDF | 57117416 | Kiln | 3.6E-09 | 3.5E-09 | 0.0% - 0.0% | 3.8E-09 | 3.8E-09 | 0.0% - 0.0% | 4.2E-10 | 2.4E-10 | 0.0% - 0.0% |
| 2,3,4,7,8-PeCDF | 57117314 | Kiln | 5.3E-08 | 5.3E-08 | 0.4% - 0.4% | 5.7E-08 | 5.6E-08 | 0.7% - 0.7% | 6.3E-09 | 3.6E-09 | 0.5% - 0.5% |
| Perchloroethylene | 127184 | Kiln | 3.4E-09 | 3.4E-09 | 0.0% - 0.0% | 3.7E-09 | 3.6E-09 | 0.0% - 0.0% | 3.6E-10 | 2.1E-10 | 0.0% - 0.0% |
| Selenium | 7782492 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Styrene | 100425 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 2,3,7,8-TCDD | 1746016 | Kiln | 9.1E-09 | 8.9E-09 | 0.1% - 0.1% | 9.7E-09 | 9.6E-09 | 0.1% - 0.1% | 1.1E-09 | 6.2E-10 | 0.1% - 0.1% |
| 2,3,7,8-TCDF | 51207319 | Kiln | 4.5E-08 | 4.4E-08 | 0.4% - 0.4% | 4.8E-08 | 4.7E-08 | 0.6% - 0.6% | 5.3E-09 | 3.1E-09 | 0.4% - 0.4% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 2.5E-08 | 2.4E-08 | 0.2% - 0.2% | 2.7E-08 | 2.6E-08 | 0.3% - 0.3% | 2.6E-09 | 1.5E-09 | 0.2% - 0.2% |
| Toluene | 108883 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 9.4E-09 | 9.2E-09 | 0.1% - 0.1% | 1.0E-08 | 9.9E-09 | 0.1% - 0.1% | 9.8E-10 | 5.7E-10 | 0.1% - 0.1% |
| Trichloroethylene | 79016 | Kiln | 9.1E-10 | 8.9E-10 | 0.0% - 0.0% | 9.7E-10 | 9.6E-10 | 0.0% - 0.0% | 9.5E-11 | 5.5E-11 | 0.0% - 0.0% |
| Vanadium | 1314621 | Raw material | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Vinyl Chloride | 75014 | Kiln | 1.2E-07 | 1.2E-07 | 0.9% - 1.0% | 1.3E-07 | 1.2E-07 | 1.5% - 1.5% | 1.2E-08 | 7.2E-09 | 0.9% - 1.0% |
| Vinylidene chloride | 75354 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| o-xylene | 95476 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% | 0.0E+00 | 0.0E+00 | 0.0% - 0.0% |

**TABLE 16**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| **Total Risk (Including LASF) [3]** | | | -- | 1.2E-05 | 100% | -- | 8.5E-06 | 100% | -- | -- | -- - -- |
| **Total Risk (Excluding LASF) [3]** | | | 1.2E-05 | -- | 100% | 8.3E-06 | -- | 100% | 1.3E-06 | 7.9E-07 | 100% - 100% |

Notes

1. All evaluated toxic air contaminants (TACs) are presented; not all are considered carcinogenic. Results for TACs that are not considered carcinogenic are shaded.
2. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.
   - Kiln - A byproduct of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   - Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   - Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emission occur during material handling and storage.
   - Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welders.
3. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime and is not applied to worker receptors (MEIW). The LASF was adopted in 2009 by OEHHA and 2010 by BAAQMD and is not applied to 2005 production (2008 CEIR) emissions.

Abbreviations

LASF - Lifetime age sensitivity factor

-- = not applicable to adult worker receptor and 2005 emissions

**TABLE 17**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY**

Lehigh Southwest Cement Company

Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #12506 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| KILN | 4.4E-06 | 4.4E-06 | 35% - 36% | 4.7E-06 | 4.7E-06 | 55% - 57% | 4.7E-07 | 2.7E-07 | 35% - 37% |
| 5D11_20 | 4.5E-07 | 4.5E-07 | 0.0% - 3.7% | 3.2E-07 | 3.2E-07 | 0.0% - 3.9% | 7.8E-08 | 4.5E-08 | 0.0% - 6.1% |
| 5D23 | 8.1E-08 | 8.0E-08 | 0.0% - 0.7% | 9.9E-08 | 9.8E-08 | 0.0% - 1.2% | 1.8E-08 | 1.1E-08 | 0.0% - 1.4% |
| 5D27 | 2.0E-08 | 2.0E-08 | 0.0% - 0.2% | 2.6E-08 | 2.6E-08 | 0.0% - 0.3% | 4.8E-09 | 2.8E-09 | 0.0% - 0.4% |
| 5D28 | 4.4E-08 | 4.3E-08 | 0.0% - 0.4% | 3.0E-08 | 2.9E-08 | 0.0% - 0.4% | 3.9E-09 | 2.3E-09 | 0.0% - 0.3% |
| 6D17 | 6.3E-07 | 6.2E-07 | 0.0% - 5.1% | 2.2E-07 | 2.2E-07 | 0.0% - 2.7% | 3.5E-08 | 2.0E-08 | 0.0% - 2.7% |
| 6D2 | 5.7E-07 | 5.6E-07 | 0.0% - 4.7% | 2.0E-07 | 2.0E-07 | 0.0% - 2.4% | 2.9E-08 | 1.7E-08 | 0.0% - 2.2% |
| 6D8 | 1.8E-07 | 1.8E-07 | 0.0% - 1.5% | 6.8E-08 | 6.7E-08 | 0.0% - 0.8% | 1.1E-08 | 6.2E-09 | 0.0% - 0.8% |
| 7 | 2.1E-09 | 3.5E-09 | 0.0% - 0.0% | 1.3E-08 | 2.2E-08 | 0.0% - 0.3% | 4.3E-09 | 4.3E-09 | 0.0% - 0.5% |
| 8 | 8.5E-10 | 1.4E-09 | 0.0% - 0.0% | 4.9E-09 | 8.1E-09 | 0.0% - 0.1% | 2.7E-09 | 2.6E-09 | 0.0% - 0.3% |
| 3 | 3.8E-07 | 3.8E-07 | 0.0% - 3.1% | 5.7E-08 | 5.6E-08 | 0.0% - 0.7% | 1.9E-08 | 1.1E-08 | 0.0% - 1.4% |
| 5 | 2.1E-08 | 3.0E-08 | 0.0% - 0.2% | 5.1E-08 | 7.1E-08 | 0.0% - 0.8% | 9.6E-09 | 7.7E-09 | 0.0% - 1.0% |
| 2 | 7.3E-08 | 8.4E-08 | 0.0% - 0.7% | 2.4E-08 | 2.8E-08 | 0.0% - 0.3% | 6.9E-09 | 4.7E-09 | 0.0% - 0.6% |
| 1 | 3.8E-08 | 4.3E-08 | 0.0% - 0.4% | 1.8E-08 | 2.0E-08 | 0.0% - 0.2% | 4.6E-09 | 3.1E-09 | 0.0% - 0.4% |
| 6D1 | 4.3E-07 | 4.3E-07 | 0.0% - 3.5% | 3.1E-07 | 3.1E-07 | 0.0% - 3.7% | 6.0E-08 | 3.5E-08 | 0.0% - 4.7% |
| 6D19 | 3.0E-07 | 3.0E-07 | 0.0% - 2.5% | 1.3E-07 | 1.3E-07 | 0.0% - 1.6% | 2.3E-08 | 1.3E-08 | 0.0% - 1.8% |
| 6D12 | 3.8E-07 | 3.7E-07 | 0.0% - 3.1% | 1.3E-07 | 1.3E-07 | 0.0% - 1.6% | 2.4E-08 | 1.4E-08 | 0.0% - 1.8% |
| 4D4 | 6.3E-09 | 6.2E-09 | 0.0% - 0.1% | 5.1E-09 | 5.0E-09 | 0.0% - 0.1% | 1.1E-09 | 6.6E-10 | 0.0% - 0.1% |
| 4D3 | 6.1E-09 | 6.0E-09 | 0.0% - 0.0% | 5.1E-09 | 5.0E-09 | 0.0% - 0.1% | 1.1E-09 | 6.5E-10 | 0.0% - 0.1% |
| 5D1 | 1.0E-08 | 9.9E-09 | 0.0% - 0.1% | 5.0E-09 | 4.9E-09 | 0.0% - 0.1% | 1.3E-09 | 7.6E-10 | 0.0% - 0.1% |
| 5D6 | 2.5E-08 | 2.5E-08 | 0.0% - 0.2% | 2.4E-08 | 2.4E-08 | 0.0% - 0.3% | 4.1E-09 | 2.4E-09 | 0.0% - 0.3% |
| 5D5 | 2.5E-08 | 2.5E-08 | 0.0% - 0.2% | 2.3E-08 | 2.2E-08 | 0.0% - 0.3% | 4.0E-09 | 2.3E-09 | 0.0% - 0.3% |
| 5D2 | 9.5E-09 | 9.4E-09 | 0.0% - 0.1% | 5.4E-09 | 5.3E-09 | 0.0% - 0.1% | 1.3E-09 | 7.4E-10 | 0.0% - 0.1% |
| 5D3 | 1.1E-08 | 1.1E-08 | 0.0% - 0.1% | 8.0E-09 | 7.9E-09 | 0.0% - 0.1% | 2.2E-09 | 1.3E-09 | 0.0% - 0.2% |
| S501 | 2.5E-08 | 4.2E-08 | 0.0% - 0.3% | 1.7E-08 | 2.9E-08 | 0.0% - 0.3% | 2.3E-09 | 2.3E-09 | 0.0% - 0.3% |
| S502 | 2.3E-08 | 3.9E-08 | 0.0% - 0.3% | 2.6E-08 | 4.4E-08 | 0.0% - 0.5% | 9.0E-09 | 9.0E-09 | 0.0% - 1.1% |
| 8D31 | 7.4E-10 | 7.3E-10 | 0.0% - 0.0% | 5.7E-09 | 5.6E-09 | 0.0% - 0.1% | 1.5E-09 | 8.5E-10 | 0.0% - 0.1% |
| 1D4 | 1.4E-08 | 1.4E-08 | 0.0% - 0.1% | 2.5E-08 | 2.5E-08 | 0.0% - 0.3% | 2.8E-09 | 1.6E-09 | 0.0% - 0.2% |
| 2D1 | 1.8E-08 | 1.8E-08 | 0.0% - 0.1% | 7.3E-09 | 7.2E-09 | 0.0% - 0.1% | 1.4E-09 | 8.1E-10 | 0.0% - 0.1% |
| 3D1 | 7.0E-09 | 6.9E-09 | 0.0% - 0.1% | 8.4E-09 | 8.3E-09 | 0.0% - 0.1% | 9.3E-10 | 5.4E-10 | 0.0% - 0.1% |
| 3D4 | 6.6E-09 | 6.5E-09 | 0.0% - 0.1% | 9.0E-09 | 8.9E-09 | 0.0% - 0.1% | 1.1E-09 | 6.6E-10 | 0.0% - 0.1% |
| 3D5 | 3.0E-09 | 2.9E-09 | 0.0% - 0.0% | 3.6E-09 | 3.5E-09 | 0.0% - 0.0% | 6.2E-10 | 3.6E-10 | 0.0% - 0.0% |
| 999D | 6.6E-07 | 6.5E-07 | 0.0% - 5.4% | 6.1E-07 | 6.0E-07 | 0.0% - 7.3% | 1.2E-07 | 7.0E-08 | 0.0% - 9.3% |

## TABLE 17

## POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY

Lehigh Southwest Cement Company
Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #12506 | | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. | 2005 | 2008/2009 | % Cont. |
| 7PD7 | 3.4E-08 | 3.3E-08 | 0.0% - 0.3% | 7.9E-08 | 7.7E-08 | 0.0% - 0.9% | 1.1E-08 | 6.4E-09 | 0.0% - 0.9% |
| 6A | 3.9E-08 | 5.4E-08 | 0.0% - 0.4% | 1.4E-07 | 2.0E-07 | 0.0% - 2.4% | 2.9E-08 | 2.4E-08 | 0.0% - 3.0% |
| 6B | 2.0E-08 | 2.8E-08 | 0.0% - 0.2% | 7.5E-08 | 1.0E-07 | 0.0% - 1.2% | 4.4E-08 | 3.6E-08 | 0.0% - 4.5% |
| 6C | 3.0E-07 | 4.1E-07 | 0.0% - 3.3% | 1.2E-07 | 1.6E-07 | 0.0% - 1.9% | 2.7E-08 | 2.2E-08 | 0.0% - 2.8% |
| 6D | 2.6E-08 | 3.6E-08 | 0.0% - 0.3% | 2.0E-07 | 2.8E-07 | 0.0% - 3.3% | 3.6E-08 | 3.0E-08 | 0.0% - 3.7% |
| 4A | 1.4E-06 | 1.4E-06 | 0.0% - 11.2% | 9.4E-08 | 9.3E-08 | 0.0% - 1.1% | 4.1E-08 | 2.4E-08 | 0.0% - 3.2% |
| 4B | 6.1E-07 | 6.1E-07 | 0.0% - 5.0% | 1.1E-07 | 1.1E-07 | 0.0% - 1.3% | 5.6E-08 | 3.2E-08 | 0.0% - 4.3% |
| 4C | 9.3E-07 | 9.2E-07 | 0.0% - 7.6% | 1.1E-07 | 1.1E-07 | 0.0% - 1.3% | 3.7E-08 | 2.2E-08 | 0.0% - 2.9% |
| 4D | 7.6E-08 | 7.5E-08 | 0.0% - 0.6% | 1.6E-07 | 1.6E-07 | 0.0% - 1.9% | 4.9E-08 | 2.9E-08 | 0.0% - 3.8% |
| Inhalation Pathways | 1.1E-05 | 1.1E-05 | 0.0% - 93% | 7.8E-06 | 8.0E-06 | 0.0% - 94% | 1.2E-06 | 7.1E-07 | 0.0% - 90% |
| Non-Inhalation Pathways | 8.9E-07 | 9.0E-07 | 0.0% - 7.3% | 4.8E-07 | 4.9E-07 | 0.0% - 5.8% | 1.3E-07 | 8.0E-08 | 0.0% - 10% |
| **Total (including LASF)[1]** | -- | 1.2E-05 | -- | -- | 8.5E-06 | -- | -- | -- | -- |
| **Total (excluding LASF)[1]** | 1.2E-05 | -- | -- | 8.3E-06 | -- | -- | 1.3E-06 | 7.9E-07 | -- |

Note

1. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime and is not applied to worker receptors (MEIW). The LASF was adopted in 2009 by OEHHA and 2010 by BAAQMD and is not applied to 2005 production (2008 CEIR) emissions.

Abbreviations

LASF - Lifetime age sensitivity factor

-- = not applicable to adult worker receptor and 2005 emissions

**TABLE 18**

**ANNUAL AVERAGE EMISSION RATES - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) |
|---|---|---|
| 75070 | Acetaldehyde | 7.87E+02 |
| 107028 | Acrolein | 3.05E+01 |
| 7440382 | Arsenic | 1.59E+00 |
| 56553 | Benz[a]anthracene | 8.91E-03 |
| 71432 | Benzene | 6.56E+03 |
| 50328 | Benzo[a]pyrene | 2.00E-04 |
| 205992 | Benzo[b]fluoranthene | 1.27E-03 |
| 207089 | Benzo[k]fluoranthene | 2.00E-04 |
| 100447 | Benzyl chloride | 6.88E+01 |
| 7440417 | Beryllium | 5.14E-01 |
| 106990 | 1,3-Butadiene | 6.25E+01 |
| 7440439 | Cadmium | 7.25E-01 |
| 56235 | Carbon tetrachloride | 4.19E+01 |
| 108907 | Chlorobenzene | 3.77E+02 |
| 67663 | Chloroform | 1.95E+01 |
| 18540299 | Chromium VI | 1.51E+00 |
| 218019 | Chrysene | 2.63E-02 |
| 7440508 | Copper | 1.07E+01 |
| 1175 | Crystalline silica | 8.03E+02 |
| 53703 | Dibenz[a,h]anthracene | 2.00E-04 |
| 106467 | p-Dichlorobenzene | 4.00E+01 |
| 75343 | 1,1-Dichloroethane | 1.35E+01 |
| 78875 | 1,2-Dichloropropane | 1.85E+01 |
| 542756 | 1,3-Dichloropropene | 7.56E+01 |
| 9901 | Diesel PM | 2.47E+01 |
| 75003 | Ethyl chloride | 2.63E+01 |
| 100414 | Ethylbenzene | 6.52E+02 |
| 106934 | Ethylene dibromide | 4.10E+01 |
| 107062 | Ethylene dichloride | 1.62E+01 |
| 50000 | Formaldehyde | 4.29E+01 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 6.55E-06 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 3.18E-06 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 8.18E-07 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 1.83E-06 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 1.80E-06 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 1.87E-06 |

**TABLE 18**

**ANNUAL AVERAGE EMISSION RATES - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company
Cupertino Facility

| CAS No. | Chemical | Annual Average (lb/yr) |
|---|---|---|
| 70648269 | 1,2,3,4,7,8-HxCDF | 2.77E-06 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 2.59E-06 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 8.72E-07 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 1.59E-06 |
| 7647010 | Hydrochloric acid | 7.29E+04 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 1.49E-04 |
| 7439921 | Lead | 1.35E+00 |
| 7439965 | Manganese | 2.71E+00 |
| 7439976 | Mercury | 8.73E+02 |
| 74839 | Methyl bromide | 4.25E+02 |
| 71556 | Methyl chloroform (1,1,1-trichlorethane) | 2.18E+01 |
| 75092 | Methylene chloride | 8.77E+01 |
| 91203 | Naphthalene | 9.43E+01 |
| 7440020 | Nickel | 3.60E+01 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 1.37E-05 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 3.14E-06 |
| 40321764 | 1,2,3,7,8-PeCDD | 1.61E-06 |
| 57117416 | 1,2,3,7,8-PeCDF | 1.25E-05 |
| 57117314 | 2,3,4,7,8-PeCDF | 1.87E-05 |
| 127184 | Perchloroethylene | 3.61E+01 |
| 7782492 | Selenium | 3.70E+00 |
| 100425 | Styrene | 1.65E+02 |
| 1746016 | 2,3,7,8-TCDD | 1.58E-06 |
| 51207319 | 2,3,7,8-TCDF | 7.84E-05 |
| 79345 | 1,1,2,2-Tetrachloroethane | 2.74E+01 |
| 108883 | Toluene | 5.88E+03 |
| 79005 | 1,1,2-Trichloroethane | 3.63E+01 |
| 79016 | Trichloroethylene | 2.86E+01 |
| 1314621 | Vanadium | 1.01E+02 |
| 75014 | Vinyl chloride | 9.64E+01 |
| 75354 | Vinylidene chloride | 2.64E+01 |
| 95476 | o-Xylene | 9.25E+02 |
| 1330207 | Xylenes (mixed) | 4.72E+03 |

Abbreviation
lb/yr = pounds per year

## TABLE 19A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN - OPTIMAL PRODUCTION RATES

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | Kiln |
|---|---|---|
| 75070 | Acetaldehyde | 7.87E+02 |
| 107028 | Acrolein | 3.05E+01 |
| 7440382 | Arsenic | 5.17E-01 |
| 56553 | Benz[a]anthracene | 8.91E-03 |
| 71432 | Benzene | 6.56E+03 |
| 50328 | Benzo[a]pyrene | 2.00E-04 |
| 205992 | Benzo[b]fluoranthene | 1.27E-03 |
| 207089 | Benzo[k]fluoranthene | 2.00E-04 |
| 100447 | Benzyl chloride | 6.88E+01 |
| 7440417 | Beryllium | 2.59E-01 |
| 106990 | 1,3-Butadiene | 6.25E+01 |
| 7440439 | Cadmium | 2.59E-01 |
| 56235 | Carbon tetrachloride | 4.19E+01 |
| 108907 | Chlorobenzene | 3.77E+02 |
| 67663 | Chloroform | 1.95E+01 |
| 18540299 | Chromium VI | 2.28E-01 |
| 218019 | Chrysene | 2.63E-02 |
| 7440508 | Copper | 2.88E+00 |
| 1175 | Crystalline silica | 0.00E+00 |
| 53703 | Dibenz[a,h]anthracene | 2.00E-04 |
| 106467 | p-Dichlorobenzene | 4.00E+01 |
| 75343 | 1,1-Dichloroethane | 1.35E+01 |
| 78875 | 1,2-Dichloropropane | 1.85E+01 |
| 542756 | 1,3-Dichloropropene | 7.56E+01 |
| 9901 | Diesel PM | 0.00E+00 |
| 75003 | Ethyl chloride | 2.63E+01 |
| 100414 | Ethylbenzene | 6.52E+02 |

## TABLE 19A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN - OPTIMAL PRODUCTION RATES

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | Kiln |
|---|---|---|
| 106934 | Ethylene dibromide | 4.10E+01 |
| 107062 | Ethylene dichloride | 1.62E+01 |
| 50000 | Formaldehyde | 4.29E+01 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 6.55E-06 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 3.18E-06 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 8.18E-07 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 1.83E-06 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 1.80E-06 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 1.87E-06 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 2.77E-06 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 2.59E-06 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 8.72E-07 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 1.59E-06 |
| 7647010 | Hydrochloric acid | 7.29E+04 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 1.49E-04 |
| 7439921 | Lead | 6.02E-01 |
| 7439965 | Manganese | 2.71E+00 |
| 7439976 | Mercury | 8.72E+02 |
| 74839 | Methyl bromide | 4.25E+02 |
| 71556 | Methyl chloroform (1,1,1-trichloroethane) | 2.18E+01 |
| 75092 | Methylene chloride | 8.77E+01 |
| 91203 | Naphthalene | 9.43E+01 |
| 7440020 | Nickel | 4.44E+00 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 1.37E-05 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 3.14E-06 |
| 40321764 | 1,2,3,7,8-PeCDD | 1.61E-06 |
| 57117416 | 1,2,3,7,8-PeCDF | 1.25E-05 |

## TABLE 19A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN - OPTIMAL PRODUCTION RATES

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | Kiln |
|---|---|---|
| 57117314 | 2,3,4,7,8-PeCDF | 1.87E-05 |
| 127184 | Perchloroethylene | 3.61E+01 |
| 7782492 | Selenium | 2.89E+00 |
| 100425 | Styrene | 1.65E+02 |
| 1746016 | 2,3,7,8-TCDD | 1.58E-06 |
| 51207319 | 2,3,7,8-TCDF | 7.84E-05 |
| 79345 | 1,1,2,2-Tetrachloroethane | 2.74E+01 |
| 108883 | Toluene | 5.88E+03 |
| 79005 | 1,1,2-Trichloroethane | 3.63E+01 |
| 79016 | Trichloroethylene | 2.86E+01 |
| 1314621 | Vanadium | 2.59E+00 |
| 75014 | Vinyl chloride | 9.64E+01 |
| 75354 | Vinylidene chloride | 2.64E+01 |
| 95476 | o-Xylene | 9.25E+02 |
| 1330207 | Xylenes (mixed) | 4.72E+03 |

**TABLE 19B**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR DUST COLLECTORS - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | Emission Source Group | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1D4 | 2D1 | 3D1 | 3D4 | 3D5 | 4D3 | 4D4 | 5D1 | 5D2 | 5D3 | 5D5 | 5D6 | 5D11_20 | 5D23 | 5D27 | 5D28 | 6D17 | 6D19 | 6D2 | 6D1218 | 6D1 | 6D8 | 7PD7 | 8D31 | 999DC |
| 7440382 | Arsenic | 4.30E-02 | 2.46E-02 | 1.14E-02 | 1.23E-02 | 1.18E-02 | 1.57E-02 | 1.60E-02 | 2.04E-02 | 2.04E-02 | 3.68E-02 | 1.92E-02 | 1.89E-02 | 1.07E-01 | 1.86E-02 | 4.89E-03 | 4.89E-03 | 2.07E-02 | 2.33E-02 | 2.09E-02 | 1.28E-02 | 2.21E-02 | 1.37E-02 | 1.04E-02 | 4.11E-03 | 1.20E-01 |
| 7440417 | Beryllium | 4.61E-03 | 4.01E-03 | 1.85E-03 | 1.95E-03 | 1.88E-03 | 2.44E-03 | 2.49E-03 | 3.17E-03 | 3.17E-03 | 5.70E-03 | 1.15E-02 | 1.14E-02 | 1.73E-02 | 3.01E-03 | 7.92E-04 | 7.92E-04 | 3.55E-03 | 4.00E-03 | 3.58E-03 | 2.20E-03 | 3.58E-03 | 2.34E-03 | 1.78E-03 | 2.47E-03 | 1.92E-02 |
| 7440439 | Cadmium | 7.68E-03 | 1.01E-02 | 4.65E-03 | 6.66E-03 | 3.14E-03 | 5.95E-03 | 6.07E-03 | 7.72E-03 | 7.72E-03 | 1.39E-02 | 1.92E-02 | 1.89E-02 | 2.89E-02 | 5.02E-03 | 1.32E-03 | 1.32E-03 | 5.92E-03 | 6.66E-03 | 5.97E-03 | 3.67E-03 | 5.97E-03 | 3.90E-03 | 2.96E-03 | 4.11E-03 | 3.44E-02 |
| 18540299 | Chromium VI | 3.07E-04 | 2.38E-03 | 1.10E-03 | 2.10E-03 | 2.51E-04 | 1.33E-03 | 1.36E-03 | 1.73E-03 | 1.73E-03 | 3.11E-03 | 1.53E-03 | 1.52E-03 | 2.77E-01 | 4.82E-02 | 1.27E-02 | 1.27E-02 | 8.17E-02 | 9.19E-02 | 8.23E-02 | 5.07E-02 | 5.73E-02 | 5.38E-02 | 4.09E-02 | 3.29E-04 | 2.65E-01 |
| 7440508 | Copper | 1.87E-01 | 1.84E-01 | 8.49E-02 | 8.99E-02 | 8.53E-02 | 1.11E-01 | 1.13E-01 | 1.44E-01 | 1.44E-01 | 2.59E-01 | 9.82E-02 | 9.70E-02 | 4.47E-01 | 7.77E-02 | 2.04E-02 | 2.04E-02 | 1.05E-01 | 1.19E-01 | 1.06E-01 | 6.53E-02 | 9.23E-02 | 6.94E-02 | 5.27E-02 | 4.60E-02 | 6.28E-01 |
| 1175 | Crystalline silica | 1.00E+00 | 6.45E+00 | 2.98E+00 | 3.69E+00 | 2.36E+00 | 3.60E+00 | 3.68E+00 | 4.68E+00 | 4.68E+00 | 8.43E+00 | 1.56E-01 | 1.55E-01 | 2.36E-01 | 4.10E-02 | 1.08E-02 | 1.08E-02 | 2.90E-01 | 3.26E-01 | 2.92E-01 | 1.80E-01 | 4.87E-02 | 1.91E-01 | 1.45E-01 | 1.22E+01 | 1.06E+01 |
| 7439921 | Lead | 2.09E-02 | 9.61E-03 | 4.44E-03 | 6.72E-03 | 3.14E-03 | 6.35E-03 | 6.48E-03 | 8.25E-03 | 8.25E-03 | 1.49E-02 | 1.92E-02 | 1.89E-02 | 8.09E-02 | 1.41E-02 | 3.70E-03 | 3.70E-03 | 1.47E-02 | 1.65E-02 | 1.48E-02 | 9.10E-03 | 1.67E-02 | 9.67E-03 | 7.34E-03 | 4.28E-03 | 7.58E-02 |
| 7439976 | Mercury | 1.32E-03 | 1.67E-03 | 7.73E-04 | 1.37E-03 | 3.01E-04 | 9.91E-04 | 1.01E-03 | 1.29E-03 | 1.29E-03 | 2.32E-03 | 5.98E-02 | 5.91E-02 | 2.31E-04 | 4.02E-05 | 1.06E-05 | 1.06E-05 | 4.74E-05 | 5.33E-05 | 4.77E-05 | 2.94E-05 | 4.77E-05 | 3.12E-05 | 2.37E-05 | 6.58E-04 | 2.53E-03 |
| 7440020 | Nickel | 1.32E+00 | 2.29E-01 | 1.06E-01 | 1.78E-01 | 8.79E-02 | 1.93E-01 | 1.97E-01 | 2.50E-01 | 2.50E-01 | 4.51E-01 | 5.83E+00 | 5.76E+00 | 1.73E+00 | 3.01E-01 | 7.92E-02 | 7.92E-02 | 5.09E-01 | 5.73E-01 | 5.13E-01 | 3.16E-01 | 3.58E-01 | 3.35E-01 | 2.55E-01 | 7.56E-02 | 3.14E+00 |
| 7782492 | Selenium | 1.54E-02 | 1.34E-02 | 6.16E-03 | 6.50E-03 | 6.28E-03 | 8.12E-03 | 8.29E-03 | 1.06E-02 | 1.06E-02 | 1.90E-02 | 3.84E-02 | 3.79E-02 | 5.78E-02 | 1.00E-02 | 2.64E-03 | 2.64E-03 | 1.18E-02 | 1.33E-02 | 1.19E-02 | 7.34E-03 | 1.19E-02 | 7.80E-03 | 5.92E-03 | 8.22E-03 | 6.38E-02 |
| 1314621 | Vanadium | 3.99E+00 | 1.08E+00 | 4.99E-01 | 5.84E-01 | 5.52E-01 | 7.96E-01 | 8.12E-01 | 1.03E+00 | 1.03E+00 | 1.86E+00 | 1.69E+01 | 1.67E+01 | 9.40E+00 | 1.63E+00 | 4.29E-01 | 4.29E-01 | 1.71E+00 | 1.92E+00 | 1.72E+00 | 1.06E+00 | 1.94E+00 | 1.12E+00 | 8.53E-01 | 6.25E-02 | 1.02E+01 |

**TABLE 19C**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR FUGITIVE SOURCES - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | Emission Source Group | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S501 | S502 | 1 | 2 | 3 | 4A | 4B | 4C | 4D | 5 | 6A | 6B | 6C | 6D | 7 | 8 |
| 7440382 | Arsenic | -- | -- | 6.13E-02 | 6.13E-02 | 7.30E-02 | 3.16E-02 | 3.16E-02 | 3.16E-02 | 3.16E-02 | 2.20E-02 | 2.27E-02 | 2.27E-02 | 2.27E-02 | 2.27E-02 | 2.70E-03 | 4.11E-03 |
| 71432 | Benzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.55E-03 | 1.55E-03 | 1.55E-03 | 1.55E-03 | 9.18E-05 | -- |
| 7440417 | Beryllium | -- | -- | 2.25E-02 | 2.25E-02 | 1.83E-02 | 4.60E-03 | 4.60E-03 | 4.60E-03 | 4.60E-03 | 1.26E-02 | 8.55E-03 | 8.55E-03 | 8.55E-03 | 8.55E-03 | 1.62E-03 | 6.02E-03 |
| 7440439 | Cadmium | -- | -- | 3.75E-02 | 3.75E-02 | 3.93E-02 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 1.12E-02 | 2.19E-02 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 1.42E-02 | 2.70E-03 | 3.94E-03 |
| 18540299 | Chromium VI | -- | -- | 3.00E-03 | 3.00E-03 | 7.24E-03 | 2.25E-02 | 2.25E-02 | 2.25E-02 | 2.25E-02 | 1.67E-03 | 2.00E-02 | 2.00E-02 | 2.00E-02 | 2.00E-02 | 2.16E-04 | 3.15E-04 |
| 7440508 | Copper | -- | -- | 6.91E-01 | 6.91E-01 | 6.01E-01 | 2.13E-01 | 2.13E-01 | 2.13E-01 | 2.13E-01 | 2.43E-01 | 2.95E-01 | 2.95E-01 | 2.95E-01 | 2.95E-01 | 3.02E-02 | 3.43E-02 |
| 1175 | Crystalline silica | -- | -- | 1.69E+02 | 1.69E+02 | 5.91E+01 | 5.39E+00 | 5.39E+00 | 5.39E+00 | 5.39E+00 | 6.20E+01 | 5.99E+01 | 5.99E+01 | 5.99E+01 | 5.99E+01 | 8.01E+00 | 8.22E+00 |
| 9901 | Diesel PM | 3.14E+00 | 6.28E+00 | -- | -- | -- | -- | -- | -- | -- | 3.83E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | -- |
| 7439921 | Lead | -- | -- | 3.75E-02 | 3.75E-02 | 3.87E-02 | 1.61E-02 | 1.61E-02 | 1.61E-02 | 1.61E-02 | 2.17E-02 | 3.50E-02 | 3.50E-02 | 3.50E-02 | 3.50E-02 | 2.81E-03 | 4.05E-03 |
| 7439976 | Mercury | -- | -- | 8.61E-03 | 8.61E-03 | 6.55E-03 | 1.09E-02 | 1.09E-02 | 1.09E-02 | 1.09E-02 | 3.38E-03 | 1.69E-03 | 1.69E-03 | 1.69E-03 | 1.69E-03 | 4.32E-04 | 1.47E-03 |
| 7440020 | Nickel | -- | -- | 1.18E+00 | 1.18E+00 | 8.23E-01 | 4.16E-01 | 4.16E-01 | 4.16E-01 | 4.16E-01 | 3.87E-01 | 7.77E-01 | 7.77E-01 | 7.77E-01 | 7.77E-01 | 4.96E-02 | 5.41E-02 |
| 7782492 | Selenium | -- | -- | 7.51E-02 | 7.51E-02 | 6.10E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 1.68E-02 | 4.19E-02 | 1.92E-02 | 1.92E-02 | 1.92E-02 | 1.92E-02 | 5.40E-03 | 7.89E-03 |
| 108883 | Toluene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.10E-03 | 6.10E-03 | 6.10E-03 | 6.10E-03 | 3.67E-03 | -- |
| 1314621 | Vanadium | -- | -- | 1.38E+00 | 1.38E+00 | 2.77E+00 | 1.76E+00 | 1.76E+00 | 1.76E+00 | 1.76E+00 | 4.30E-01 | 1.81E+00 | 1.81E+00 | 1.81E+00 | 1.81E+00 | 4.10E-02 | 6.21E-02 |
| 1330207 | Xylenes (mixed) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.93E-03 | 8.93E-03 | 8.93E-03 | 8.93E-03 | 3.33E-02 | -- |

Abbreviation

-- = not applicable

**TABLE 20**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. |
| Acetaldehyde | 75070 | Kiln | 4.1E-08 | 0.3% | 4.4E-08 | 0.4% | 2.5E-09 | 0.3% |
| Acrolein | 107028 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Arsenic | 7440382 | Raw material | 1.1E-06 | 6.8% | 5.4E-07 | 5.4% | 9.5E-08 | 10% |
| Benz(a)anthracene | 56553 | Kiln | 5.4E-10 | 0.0% | 5.8E-10 | 0.0% | 3.0E-11 | 0.0% |
| Benzene | 71432 | Kiln | 3.4E-06 | 24% | 3.7E-06 | 37% | 2.1E-07 | 23% |
| Benzo(a)pyrene | 50328 | Kiln | 1.2E-10 | 0.0% | 1.3E-10 | 0.0% | 6.8E-12 | 0.0% |
| Benzo(b)fluoranthene | 205992 | Kiln | 7.7E-11 | 0.0% | 8.2E-11 | 0.0% | 4.3E-12 | 0.0% |
| Benzo(k)fluoranthene | 207089 | Kiln | 1.2E-11 | 0.0% | 1.3E-11 | 0.0% | 6.8E-13 | 0.0% |
| Benzyl chloride | 100447 | Kiln | 6.1E-08 | 0.4% | 6.5E-08 | 0.7% | 3.8E-09 | 0.4% |
| Beryllium | 7440417 | Raw material | 4.1E-08 | 0.3% | 2.6E-08 | 0.3% | 2.7E-09 | 0.3% |
| 1,3-Butadiene | 106990 | Kiln | 2.0E-07 | 1.4% | 2.1E-07 | 2.1% | 1.2E-08 | 1.3% |
| Cadmium | 7440439 | Raw material | 1.3E-07 | 0.9% | 6.6E-08 | 0.7% | 7.4E-09 | 0.8% |
| Carbon Tetrachloride | 56235 | Kiln | 3.3E-08 | 0.2% | 3.5E-08 | 0.4% | 2.0E-09 | 0.2% |
| Chlorobenzene | 108907 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chloroform | 67663 | Kiln | 1.9E-09 | 0.0% | 2.1E-09 | 0.0% | 1.2E-10 | 0.0% |
| Chromium VI | 18540299 | Byproduct of manufacturing | 8.3E-06 | 58% | 4.2E-06 | 42% | 4.8E-07 | 53% |
| Chrysene | 218019 | Kiln | 1.6E-10 | 0.0% | 1.7E-10 | 0.0% | 8.9E-12 | 0.0% |
| Copper | 7440508 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Crystalline silica | 1175 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Dibenz(a,h)anthracene | 53703 | Kiln | 4.4E-11 | 0.0% | 4.7E-11 | 0.0% | 2.5E-12 | 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | 8.4E-09 | 0.1% | 9.0E-09 | 0.1% | 5.2E-10 | 0.1% |
| 1,1-Dichloroethane | 75343 | Kiln | 4.0E-10 | 0.0% | 4.3E-10 | 0.0% | 2.5E-11 | 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 6.1E-09 | 0.0% | 6.5E-09 | 0.1% | 3.8E-10 | 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 2.2E-08 | 0.2% | 2.3E-08 | 0.2% | 1.3E-09 | 0.1% |
| Diesel PM | 9901 | Stationary | 2.0E-07 | 1.4% | 2.7E-07 | 2.7% | 3.8E-08 | 4.2% |
| Ethyl Chloride | 75003 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Ethylbenzene | 100414 | Kiln | 3.0E-08 | 0.2% | 3.2E-08 | 0.3% | 1.8E-09 | 0.2% |
| Ethylene dibromide | 106934 | Kiln | 5.4E-08 | 0.4% | 5.7E-08 | 0.6% | 3.3E-09 | 0.4% |
| Ethylene dichloride | 107062 | Kiln | 6.1E-09 | 0.0% | 6.5E-09 | 0.1% | 3.8E-10 | 0.0% |
| Formaldehyde | 50000 | Kiln | 4.7E-09 | 0.0% | 5.0E-09 | 0.1% | 2.9E-10 | 0.0% |
| 1,2,3,4,6,7,8-HpCDD | 35822469 | Kiln | 4.3E-10 | 0.0% | 4.6E-10 | 0.0% | 3.0E-11 | 0.0% |
| 1,2,3,4,6,7,8-HpCDF | 67562394 | Kiln | 2.1E-10 | 0.0% | 2.3E-10 | 0.0% | 1.5E-11 | 0.0% |
| 1,2,3,4,7,8,9-HpCDF | 55673897 | Kiln | 5.4E-11 | 0.0% | 5.8E-11 | 0.0% | 3.7E-12 | 0.0% |
| 1,2,3,4,7,8-HxCDD | 39227286 | Kiln | 1.2E-09 | 0.0% | 1.3E-09 | 0.0% | 8.4E-11 | 0.0% |
| 1,2,3,6,7,8-HxCDD | 57653857 | Kiln | 1.2E-09 | 0.0% | 1.3E-09 | 0.0% | 8.2E-11 | 0.0% |

**TABLE 20**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. |
| 1,2,3,7,8,9-HxCDD | 19408743 | Kiln | 1.2E-09 | 0.0% | 1.3E-09 | 0.0% | 8.5E-11 | 0.0% |
| 1,2,3,4,7,8-HxCDF | 70648269 | Kiln | 1.8E-09 | 0.0% | 2.0E-09 | 0.0% | 1.3E-10 | 0.0% |
| 1,2,3,6,7,8-HxCDF | 57117449 | Kiln | 1.7E-09 | 0.0% | 1.8E-09 | 0.0% | 1.2E-10 | 0.0% |
| 1,2,3,7,8,9-HxCDF | 72918219 | Kiln | 5.8E-10 | 0.0% | 6.2E-10 | 0.0% | 4.0E-11 | 0.0% |
| 2,3,4,6,7,8-HxCDF | 60851345 | Kiln | 1.1E-09 | 0.0% | 1.1E-09 | 0.0% | 7.3E-11 | 0.0% |
| Hydrochloric Acid | 7647010 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Indeno(1,2,3-c,d)pyrene | 193395 | Kiln | 9.0E-12 | 0.0% | 9.7E-12 | 0.0% | 5.1E-13 | 0.0% |
| Lead | 7439921 | Raw material | 2.4E-09 | 0.0% | 1.5E-09 | 0.0% | 2.2E-10 | 0.0% |
| Manganese | 7439965 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Mercury | 7439976 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methyl Bromide | 74839 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methylene chloride | 75092 | Kiln | 1.6E-09 | 0.0% | 1.7E-09 | 0.0% | 9.9E-11 | 0.0% |
| Naphthalene | 91203 | Kiln | 5.9E-08 | 0.4% | 6.3E-08 | 0.6% | 3.7E-09 | 0.4% |
| Nickel | 7440020 | Raw material | 3.1E-07 | 2.1% | 1.8E-07 | 1.8% | 2.0E-08 | 2.2% |
| 1,2,3,4,6,7,8,9-OCDD | 3268879 | Kiln | 9.1E-12 | 0.0% | 9.7E-12 | 0.0% | 6.3E-13 | 0.0% |
| 1,2,3,4,6,7,8,9-OCDF | 39001020 | Kiln | 2.1E-12 | 0.0% | 2.2E-12 | 0.0% | 1.4E-13 | 0.0% |
| 1,2,3,7,8-PeCDD | 40321764 | Kiln | 1.1E-08 | 0.1% | 1.1E-08 | 0.1% | 7.4E-10 | 0.1% |
| 1,2,3,7,8-PeCDF | 57117416 | Kiln | 4.1E-09 | 0.0% | 4.4E-09 | 0.0% | 2.9E-10 | 0.0% |
| 2,3,4,7,8-PeCDF | 57117314 | Kiln | 6.2E-08 | 0.4% | 6.6E-08 | 0.7% | 4.3E-09 | 0.5% |
| Perchloroethylene | 127184 | Kiln | 4.0E-09 | 0.0% | 4.2E-09 | 0.0% | 2.4E-10 | 0.0% |
| Selenium | 7782492 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Styrene | 100425 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 2,3,7,8-TCDD | 1746016 | Kiln | 1.0E-08 | 0.1% | 1.1E-08 | 0.1% | 7.2E-10 | 0.1% |

**TABLE 20**

**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY CHEMICAL - OPTIMAL PRODUCTION RATES**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12506 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. | Optimal Production Rates [3] | % Cont. |
| 2,3,7,8-TCDF | 51207319 | Kiln | 5.2E-08 | 0.4% | 5.6E-08 | 0.6% | 3.6E-09 | 0.4% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 2.9E-08 | 0.2% | 3.1E-08 | 0.3% | 1.8E-09 | 0.2% |
| Toluene | 108883 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 1.1E-08 | 0.1% | 1.2E-08 | 0.1% | 6.7E-10 | 0.1% |
| Trichloroethylene | 79016 | Kiln | 1.0E-09 | 0.0% | 1.1E-09 | 0.0% | 6.5E-11 | 0.0% |
| Vanadium | 1314621 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Vinyl Chloride | 75014 | Kiln | 1.4E-07 | 0.9% | 1.5E-07 | 1.5% | 8.4E-09 | 0.9% |
| Vinylidene chloride | 75354 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| o-xylene | 95476 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| **Total Risk [4]** | | | **1.4E-05** | 100% | **9.8E-06** | 100% | **9.1E-07** | 100% |

Notes

1. All evaluated toxic air contaminants (TACs) are presented; not all are considered carcinogenic. Results for TACs that are not considered carcinogenic are shaded.
2. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.
   Kiln - A byproduct of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emission occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welders.
3. Evaluates cancer risk at 68% of 2005 clinker and cement production rates in order to estimate potential off-site cancer risks below the notification level of $1.0 \times 10^{-5}$ (approximately $9.8 \times 10^{-6}$ at the MEIR).
4. The potential cancer risk for the PMI and MEIR include a lifetime age sensitivity factor that accounts for the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime. This does not apply to the adult worker at the MEIW.

Abbreviations

-- = not applicable to adult worker receptor
LASF - Lifetime age sensitivity factor

**TABLE 21**
**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY - OPTIMAL PRODUCTION RATES**
Lehigh Southwest Cement Company
Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #129 | | Maximum Exposed Individual Resident (MEIR) Receptor #2085 | | Maximum Exposed Individual Worker (MEIW) Receptor #10963 | |
|---|---|---|---|---|---|---|
| | Target Production Rates [1] | % Cont. | Target Production Rates [1] | % Cont. | Target Production Rates [1] | % Cont. |
| KILN | 5.1E-06 | 35% | 5.5E-06 | 56% | 3.2E-07 | 35% |
| 5D11_20 | 5.2E-07 | 3.6% | 3.7E-07 | 3.8% | 5.3E-08 | 5.8% |
| 5D23 | 9.3E-08 | 0.6% | 1.1E-07 | 1.2% | 1.3E-08 | 1.4% |
| 5D27 | 2.3E-08 | 0.2% | 3.0E-08 | 0.3% | 3.3E-09 | 0.4% |
| 5D28 | 5.1E-08 | 0.4% | 3.4E-08 | 0.3% | 2.7E-09 | 0.3% |
| 6D17 | 7.3E-07 | 5.1% | 2.6E-07 | 2.6% | 2.4E-08 | 2.6% |
| 6D2 | 6.6E-07 | 4.6% | 2.3E-07 | 2.4% | 2.0E-08 | 2.2% |
| 6D8 | 2.1E-07 | 1.5% | 7.8E-08 | 0.8% | 7.2E-09 | 0.8% |
| 7 | 3.5E-09 | 0.0% | 2.2E-08 | 0.2% | 4.3E-09 | 0.5% |
| 8 | 1.4E-09 | 0.0% | 8.2E-09 | 0.1% | 2.6E-09 | 0.3% |
| 3 | 4.4E-07 | 3.1% | 6.5E-08 | 0.7% | 1.3E-08 | 1.4% |
| 5 | 3.1E-08 | 0.2% | 7.5E-08 | 0.8% | 8.1E-09 | 0.9% |
| 2 | 9.4E-08 | 0.7% | 3.1E-08 | 0.3% | 5.2E-09 | 0.6% |
| 1 | 4.8E-08 | 0.3% | 2.3E-08 | 0.2% | 3.5E-09 | 0.4% |
| 6D1 | 5.0E-07 | 3.5% | 3.6E-07 | 3.7% | 4.1E-08 | 4.5% |
| 6D19 | 3.5E-07 | 2.4% | 1.6E-07 | 1.6% | 1.6E-08 | 1.7% |
| 6D12 | 4.4E-07 | 3.0% | 1.5E-07 | 1.6% | 1.6E-08 | 1.8% |
| 4D4 | 7.3E-09 | 0.1% | 5.9E-09 | 0.1% | 7.7E-10 | 0.1% |
| 4D3 | 7.0E-09 | 0.0% | 5.9E-09 | 0.1% | 7.6E-10 | 0.1% |
| 5D1 | 1.2E-08 | 0.1% | 5.8E-09 | 0.1% | 8.9E-10 | 0.1% |
| 5D6 | 2.9E-08 | 0.2% | 2.8E-08 | 0.3% | 2.8E-09 | 0.3% |
| 5D5 | 2.9E-08 | 0.2% | 2.6E-08 | 0.3% | 2.7E-09 | 0.3% |
| 5D2 | 1.1E-08 | 0.1% | 6.2E-09 | 0.1% | 8.7E-10 | 0.1% |
| 5D3 | 1.3E-08 | 0.1% | 9.3E-09 | 0.1% | 1.5E-09 | 0.2% |
| S501 | 4.2E-08 | 0.3% | 2.9E-08 | 0.3% | 2.3E-09 | 0.3% |
| S502 | 3.9E-08 | 0.3% | 4.4E-08 | 0.4% | 9.0E-09 | 1.0% |
| 8D31 | 8.6E-10 | 0.0% | 6.6E-09 | 0.1% | 9.9E-10 | 0.1% |
| 1D4 | 1.6E-08 | 0.1% | 2.9E-08 | 0.3% | 1.9E-09 | 0.2% |
| 2D1 | 2.1E-08 | 0.1% | 8.4E-09 | 0.1% | 9.5E-10 | 0.1% |
| 3D1 | 8.0E-09 | 0.1% | 9.7E-09 | 0.1% | 6.4E-10 | 0.1% |
| 3D4 | 7.7E-09 | 0.1% | 1.0E-08 | 0.1% | 7.7E-10 | 0.1% |
| 3D5 | 3.4E-09 | 0.0% | 4.1E-09 | 0.0% | 4.2E-10 | 0.0% |
| 999D | 7.7E-07 | 5.3% | 7.0E-07 | 7.2% | 8.2E-08 | 9.0% |

**TABLE 21**
**POTENTIAL CARCINOGENIC RISK AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY - OPTIMAL PRODUCTION RATES**
Lehigh Southwest Cement Company
Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #129 | | Maximum Exposed Individual Resident (MEIR) Receptor #2085 | | Maximum Exposed Individual Worker (MEIW) Receptor #10963 | |
|---|---|---|---|---|---|---|
| | Target Production Rates [1] | % Cont. | Target Production Rates [1] | % Cont. | Target Production Rates [1] | % Cont. |
| 7PD7 | 3.9E-08 | 0.3% | 9.1E-08 | 0.9% | 7.6E-09 | 0.8% |
| 6A | 5.7E-08 | 0.4% | 2.1E-07 | 2.2% | 2.5E-08 | 2.7% |
| 6B | 3.0E-08 | 0.2% | 1.1E-07 | 1.1% | 3.8E-08 | 4.1% |
| 6C | 4.4E-07 | 3.0% | 1.7E-07 | 1.7% | 2.3E-08 | 2.5% |
| 6D | 3.8E-08 | 0.3% | 3.0E-07 | 3.0% | 3.1E-08 | 3.4% |
| 4A | 1.6E-06 | 11.0% | 1.1E-07 | 1.1% | 2.8E-08 | 3.1% |
| 4B | 7.1E-07 | 4.9% | 1.2E-07 | 1.3% | 3.8E-08 | 4.2% |
| 4C | 1.1E-06 | 7.5% | 1.3E-07 | 1.3% | 2.5E-08 | 2.8% |
| 4D | 8.8E-08 | 0.6% | 1.8E-07 | 1.9% | 3.4E-08 | 3.7% |
| Inhalation Pathways | 1.3E-05 | 93% | 9.2E-06 | 94% | 8.2E-07 | 90% |
| Non-Inhalation Pathways | 1.0E-06 | 7% | 5.7E-07 | 6% | 9.2E-08 | 10% |
| TOTAL [3] | 1.4E-05 | 100% | 9.8E-06 | 100% | 9.1E-07 | 100% |

**TABLE 22**

**POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS**

Lehigh Southwest Cement Company

Cupertino Facility

| Model ID# | UTM Coordinates[1] | Elevation (meters) | Receptor Type [2] | Description | 2005 Production[3] | | | 2008/2009 Production[4] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Inhalation Pathways | Non-Inhalation Pathways | Total | Inhalation Pathways | Non-Inhalation Pathways | Total |
| 10647 | 584608 , 4130709 | 91.84 | Daycare (18 months - 5 yrs) | De Anza College Child Development Center 21250 Stevens Creek Boulevard Cupertino 95014 | 2.5E-07 | 2.4E-08 | 2.8E-07 | 2.9E-07 | 2.8E-08 | 3.2E-07 |
| 10600 | 585721 , 4128215 | 91.39 | Daycare (6 wks - 4 yrs) | Kindercare Learning Center 1515 S. De Anza Boulevard, Cupertino 95014 | 2.3E-07 | 2.1E-08 | 2.5E-07 | 4.5E-07 | 4.1E-08 | 4.9E-07 |
| 10604 | 580371 , 4135348 | 58.5 | Preschool | Children's House of Los Altos 770 Berry Avenue, Los Altos 94024 | 2.6E-07 | 2.6E-08 | 2.9E-07 | 4.7E-07 | 4.8E-08 | 5.2E-07 |
| 10605 | 581784 , 4132851 | 82.69 | Preschool | Foothill Preschool 2100 Woods Lane, Los Altos 94024 | 5.2E-07 | 5.2E-08 | 5.7E-07 | 9.5E-07 | 9.4E-08 | 1.0E-06 |
| 10606 | 579699 , 4135148 | 60.44 | Preschool | Los Altos Christian Preschool 625 Magdalena Avenue, Los Altos 94024 | 2.6E-07 | 2.7E-08 | 2.8E-07 | 4.7E-07 | 4.9E-08 | 5.1E-07 |
| 10607 | 579790 , 4135231 | 59.57 | Preschool | Los Altos United Methodist Children's Center 655 Magdalena Avenue, Los Altos 94024 | 2.4E-07 | 2.5E-08 | 2.7E-07 | 4.4E-07 | 4.7E-08 | 4.8E-07 |
| 10601 | 583373 , 4130991 | 103.93 | Preschool | Play & Learn Preschool Daycare 10067 Byrne Avenue, Cupertino 95014 | 3.9E-07 | 3.7E-08 | 4.3E-07 | 7.1E-07 | 6.7E-08 | 7.8E-07 |
| 10690 | 585749 , 4129341 | 82.54 | School-Age Care | Happy Childhood Education 1091 S. DeAnza Boulevard, San Jose 95129 | 2.8E-07 | 2.5E-08 | 3.1E-07 | 5.1E-07 | 4.5E-08 | 5.5E-07 |
| 10643 | 581289 , 4135590 | 54.91 | School | Blach Intermediate School 1120 Covington Rd, Los Altos 94024 | 2.4E-07 | 2.4E-08 | 2.7E-07 | 4.4E-07 | 4.4E-08 | 4.9E-07 |
| 10645 | 583251 , 4132945 | 85.81 | School | Creekside Private School 10300 Creston Dr. Cupertino 95014 | 4.0E-07 | 3.7E-08 | 4.4E-07 | 7.3E-07 | 6.7E-08 | 8.0E-07 |
| 10646 | 583348 , 4132945 | 79.28 | School | Cupertino Junior High School 1650 S. Bernardo Ave, Sunnyvale 94087 | 3.2E-07 | 2.9E-08 | 3.4E-07 | 5.8E-07 | 5.3E-08 | 6.3E-07 |
| 10650 | 584603 , 4132007 | 79.64 | School | Garden Gate Elementary School 10500 Ann Arbor Avenue, Cupertino 95014 | 2.4E-07 | 2.2E-08 | 2.6E-07 | 4.4E-07 | 4.1E-08 | 4.8E-07 |
| 10651 | 584167 , 4132593 | 77.56 | School | Homestead High School 21370 Homestead Rd, Cupertino 95014 | 2.4E-07 | 2.3E-08 | 2.7E-07 | 4.4E-07 | 4.2E-08 | 4.8E-07 |
| 10652 | 584043 , 4129779 | 106.21 | School | Kennedy Middle School 821 Bubb Rd, Cupertino 95014 | 4.8E-07 | 4.2E-08 | 5.2E-07 | 8.7E-07 | 7.6E-08 | 9.4E-07 |

**TABLE 22**

**POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS**

Lehigh Southwest Cement Company

Cupertino Facility

| Model ID# | UTM Coordinates[1] | Elevation (meters) | Receptor Type [2] | Description | 2005 Production[3] | | | 2008/2009 Production[4] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Inhalation Pathways | Non-Inhalation Pathways | Total | Inhalation Pathways | Non-Inhalation Pathways | Total |
| 10599 | 583832 , 4130282 | 107.46 | School | Lincoln Elementary School<br>21710 McClellan Road, Cupertino 95014 | 3.9E-07 | 3.7E-08 | 4.3E-07 | 7.1E-07 | 6.7E-08 | 7.8E-07 |
| 10654 | 580364 , 4135237 | 60.02 | School | Loyola School<br>770 Berry Avenue, Los Altos 94024 | 2.6E-07 | 2.6E-08 | 2.8E-07 | 4.7E-07 | 4.8E-08 | 5.2E-07 |
| 10688 | 586260 , 4129393 | 76.69 | School | Meyerholz Elementary School<br>6990 Melvin Drive, San Jose 95129 | 2.4E-07 | 2.2E-08 | 2.7E-07 | 4.4E-07 | 4.0E-08 | 4.8E-07 |
| 10656 | 581344 , 4135423 | 56.49 | School | Miramonte School<br>1175 Altamead Drive, Los Altos 94024 | 2.6E-07 | 2.5E-08 | 2.8E-07 | 4.7E-07 | 4.6E-08 | 5.1E-07 |
| 10603 | 581301 , 4133301 | 78.4 | School | Montclaire Elementary and School-Age Child Development Center<br>1160 St. Joseph Avenue, Los Altos 94024 | 5.2E-07 | 5.1E-08 | 5.7E-07 | 9.4E-07 | 9.3E-08 | 1.0E-06 |
| 10679 | 582476 , 4135016 | 59.05 | School | Mountain View High School<br>3535 Truman Avenue, Mountain View 94040 | 2.5E-07 | 2.5E-08 | 2.7E-07 | 4.5E-07 | 4.5E-08 | 4.9E-07 |
| 10659 | 582218 , 4134902 | 59.6 | School | Oak Elementary School<br>1501 Oak Avenue, Los Altos 94024 | 2.7E-07 | 2.6E-08 | 3.0E-07 | 4.9E-07 | 4.8E-08 | 5.4E-07 |
| 10598 | 584472 , 4128982 | 111.85 | School | Regnart Elementary and CDC<br>1180 Yorkshire Drive, Cupertino 95014 | 4.0E-07 | 3.5E-08 | 4.4E-07 | 7.2E-07 | 6.4E-08 | 7.9E-07 |
| 10682 | 583464 , 4134099 | 63.82 | School | South Peninsula Hebrew Day School<br>1030 Astoria Drive, Sunnyvale 94087 | 2.5E-07 | 2.3E-08 | 2.7E-07 | 4.5E-07 | 4.2E-08 | 4.9E-07 |
| 10672 | 581052 , 4136201 | 48.05 | School | St. Francis High School<br>1885 Miramonte Avenue, Mountain View 94040 | 2.3E-07 | 2.2E-08 | 2.5E-07 | 4.1E-07 | 4.0E-08 | 4.5E-07 |
| 10661 | 581553 , 4133763 | 72.5 | School | St. Simon Elementary School<br>1840 Grant Road, Los Altos 94024 | 4.0E-07 | 3.9E-08 | 4.3E-07 | 7.2E-07 | 7.2E-08 | 7.9E-07 |
| 10576 | 582896 , 4131568 | 107.48 | School | Stevens Creek Elementary School<br>10300 Ainsworth Drive, Cupertino 95014 | 4.2E-07 | 4.0E-08 | 4.6E-07 | 7.8E-07 | 7.3E-08 | 8.5E-07 |
| 10680 | 583736 , 4134738 | 58.71 | School | Stratford School<br>1196 Lime Drive, Sunnyvale 94087 | 2.4E-07 | 2.2E-08 | 2.6E-07 | 4.3E-07 | 4.0E-08 | 4.7E-07 |
| 10663 | 580133 , 4133320 | 100.27 | School | Waldorf School-Peninsula<br>11311 Mora Drive, Los Altos 94024 | 5.0E-07 | 5.4E-08 | 5.5E-07 | 9.1E-07 | 9.8E-08 | 1.0E-06 |

## TABLE 22

## POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS

Lehigh Southwest Cement Company

Cupertino Facility

| Model ID# | UTM Coordinates[1] | Elevation (meters) | Receptor Type [2] | Description | 2005 Production[3] | | | 2008/2009 Production[4] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Inhalation Pathways | Non-Inhalation Pathways | Total | Inhalation Pathways | Non-Inhalation Pathways | Total |
| 10664 | 583118 , 4133107 | 74.89 | School | West Valley Elementary School<br>1635 Belleville Way , Sunnyvale 94087 | 3.4E-07 | 3.1E-08 | 3.7E-07 | 6.2E-07 | 5.7E-08 | 6.8E-07 |

Notes

1. Universal Transverse Mercator Coordinate System
2. Per BAAQMD guidance (2010), receptors at schools and daycares are modeled in HARP using the 9-yr child resident Derived OEHHA option.
3. The lifetime age sensitivity factor (LASF) was adopted in 2009 by OEHHA and 2010 by BAAQMD and is not applied to 2005 production emissions.
4. Per BAAQMD guidance (2010), cancer risks for student receptors over the age of 2 years (schools and preschools) are multiplied by a LASF of 3; risks at daycare locations that serve children under 2 years are multiplied by an age-weighted LASF as follows:

   LASF of 1.9 for 18 months to 5 years = [duration under 2 yrs (0.5yr / 9yr) x 10 ASF] + [duration above 2 yrs (4yr / 9yr) x 3 ASF]

   LASF of 3.2 for 6 weeks to 4 years = [duration under 2 yrs (2yr / 9yr) x 10 ASF] + [duration above 2 yrs (3yr / 9yr) x 3 ASF]

**TABLE 23**

**ESTIMATE OF EXCESS CANCER BURDEN**
**FOR CENSUS TRACTS IN ZONE OF IMPACT[1]**
Lehigh Southwest Cement Company
Cupertino Facility

| Description | Model ID #[2] | 2008/2009 Production | | |
|---|---|---|---|---|
| | | Residential Cancer Risk[3] | Resident Population | Residential Cancer Burden[4] |
| Census Tract 507600 | 10595 | 8.7E-07 | 5773 | 5.0E-03 |
| Census Tract 507701 | 10591 | 1.3E-06 | 3670 | 4.8E-03 |
| Census Tract 507702 | 10593 | 2.1E-06 | 6252 | 1.3E-02 |
| Census Tract 507703 | 10590 | 3.1E-06 | 6959 | 2.2E-02 |
| Census Tract 507805 | 10589 | 1.2E-06 | 4525 | 5.6E-03 |
| Census Tract 507806 | 10638 | 9.1E-07 | 5396 | 4.9E-03 |
| Census Tract 507807 | 10592 | 1.3E-06 | 3041 | 3.9E-03 |
| Census Tract 507808 | 10594 | 1.5E-06 | 5238 | 8.0E-03 |
| Census Tract 507905 | 10632 | 1.1E-06 | 5448 | 6.1E-03 |
| Census Tract 507906 | 10633 | 9.8E-07 | 4437 | 4.3E-03 |
| Census Tract 508301 | 10609 | 1.3E-06 | 4298 | 5.5E-03 |
| Census Tract 508401 | 10615 | 8.8E-07 | 6352 | 5.6E-03 |
| Census Tract 509901 | 10900 | 1.1E-06 | 2030 | 2.2E-03 |
| Census Tract 509902 | 10903 | 9.5E-07 | 4686 | 4.5E-03 |
| Census Tract 510001 | 10614 | 1.3E-06 | 5973 | 7.8E-03 |
| Census Tract 510002 | 10608 | 1.6E-06 | 3550 | 5.7E-03 |
| Census Tract 510100 | 10588 | 2.2E-06 | 2947 | 6.5E-03 |
| Census Tract 510200 | 10618 | 8.6E-07 | 4207 | 3.6E-03 |
| Census Tract 511701 | 10617 | 6.7E-07 | 3719 | 2.5E-03 |
| Census Tract 511702 | 10587 | 1.6E-06 | 2637 | 4.1E-03 |
| Census Tract 511703 | 10586 | 1.7E-06 | 6759 | 1.1E-02 |
| **Total** | | | 97897 | 1.4E-01 |

Notes

1. The boundaries of some census tracts extend beyond zone of impact, making cancer burden estimate conservative.
2. Receptor identifier in the HARP model.
3. A Lifetime Age Sensitivity Factor (LASF) of 1.7 was applied to residential cancer risk from each census tract centroid.
4. A cancer burden less than one indicates that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions.

## TABLE 24A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN - 2013 PRODUCTION

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2013 Production |
|---|---|---|
| 75070 | Acetaldehyde | 1.32E+03 |
| 107028 | Acrolein | 5.13E+01 |
| 7440382 | Arsenic | 8.69E-01 |
| 56553 | Benz[a]anthracene | 1.50E-02 |
| 71432 | Benzene | 1.10E+04 |
| 50328 | Benzo[a]pyrene | 3.37E-04 |
| 205992 | Benzo[b]fluoranthene | 2.14E-03 |
| 207089 | Benzo[k]fluoranthene | 3.37E-04 |
| 100447 | Benzyl chloride | 1.16E+02 |
| 7440417 | Beryllium | 4.35E-01 |
| 106990 | 1,3-Butadiene | 1.05E+02 |
| 7440439 | Cadmium | 4.35E-01 |
| 56235 | Carbon tetrachloride | 7.04E+01 |
| 108907 | Chlorobenzene | 6.33E+02 |
| 67663 | Chloroform | 3.28E+01 |
| 18540299 | Chromium VI | 3.84E-01 |
| 218019 | Chrysene | 4.42E-02 |
| 7440508 | Copper | 4.85E+00 |
| 1175 | Crystalline silica | 0.00E+00 |
| 53703 | Dibenz[a,h]anthracene | 3.37E-04 |
| 106467 | p-Dichlorobenzene | 6.73E+01 |
| 75343 | 1,1-Dichloroethane | 2.27E+01 |
| 78875 | 1,2-Dichloropropane | 3.10E+01 |
| 542756 | 1,3-Dichloropropene | 1.27E+02 |
| 9901 | Diesel PM | 0.00E+00 |
| 75003 | Ethyl chloride | 4.43E+01 |
| 100414 | Ethylbenzene | 1.10E+03 |
| 106934 | Ethylene dibromide | 6.88E+01 |
| 107062 | Ethylene dichloride | 2.72E+01 |
| 50000 | Formaldehyde | 7.21E+01 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 1.10E-05 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 5.34E-06 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.38E-06 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 3.07E-06 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 3.03E-06 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 3.14E-06 |

## TABLE 24A

## ANNUAL AVERAGE EMISSION RATES FOR THE KILN - 2013 PRODUCTION

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2013 Production |
|---|---|---|
| 70648269 | 1,2,3,4,7,8-HxCDF | 4.65E-06 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 4.35E-06 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.47E-06 |
| 60851345 | 2,3,4,6,7,8-HxCDF | 2.68E-06 |
| 7647010 | Hydrochloric acid | 5.35E+04 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 2.50E-04 |
| 7439921 | Lead | 1.01E+00 |
| 7439965 | Manganese | 4.56E+00 |
| 7439976 | Mercury | 8.80E+01 |
| 74839 | Methyl bromide | 7.15E+02 |
| 71556 | Methyl chloroform | 3.66E+01 |
| 75092 | Methylene chloride | 1.48E+02 |
| 91203 | Naphthalene | 1.58E+02 |
| 7440020 | Nickel | 7.46E+00 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.31E-05 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 5.27E-06 |
| 40321764 | 1,2,3,7,8-PeCDD | 2.71E-06 |
| 57117416 | 1,2,3,7,8-PeCDF | 2.10E-05 |
| 57117314 | 2,3,4,7,8-PeCDF | 3.14E-05 |
| 127184 | Perchloroethylene | 6.07E+01 |
| 7782492 | Selenium | 4.86E+00 |
| 100425 | Styrene | 2.78E+02 |
| 1746016 | 2,3,7,8-TCDD | 2.66E-06 |
| 51207319 | 2,3,7,8-TCDF | 1.32E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 4.61E+01 |
| 108883 | Toluene | 9.88E+03 |
| 79005 | 1,1,2-Trichloroethane | 6.11E+01 |
| 79016 | Trichloroethylene | 4.81E+01 |
| 1314621 | Vanadium | 4.35E+00 |
| 75014 | Vinyl chloride | 1.62E+02 |
| 75354 | Vinylidene chloride | 4.44E+01 |
| 95476 | o-Xylene | 1.56E+03 |
| 1330207 | Xylenes (mixed) | 7.94E+03 |

**TABLE 24B**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR DUST COLLECTORS - 2013 PRODUCTION**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2013 Production | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1D4 | 2D1 | 3D1 | 3D4 | 3D5 | 4D3 | 4D4 | 5D1 | 5D2 | 5D3 | 5D5 | 5D6 | 5D11_20 | 5D23 | 5D27 | 5D28 | 6D17 | 6D19 | 6D2 | 6D1218 | 6D1 | 6D8 | 7PD7 | 8D31 | 999DC |
| 7440382 | Arsenic | 7.23E-02 | 4.14E-02 | 1.91E-02 | 2.07E-02 | 1.98E-02 | 2.64E-02 | 2.70E-02 | 3.43E-02 | 3.43E-02 | 6.18E-02 | 3.22E-02 | 3.18E-02 | 1.80E-01 | 3.13E-02 | 8.23E-03 | 8.23E-03 | 3.48E-02 | 3.92E-02 | 3.51E-02 | 2.16E-02 | 3.72E-02 | 2.29E-02 | 1.74E-02 | 6.91E-03 | 2.02E-01 |
| 7440417 | Beryllium | 7.75E-03 | 6.73E-03 | 3.11E-03 | 3.28E-03 | 3.16E-03 | 4.10E-03 | 4.18E-03 | 5.32E-03 | 5.32E-03 | 9.58E-03 | 1.93E-02 | 1.91E-02 | 2.92E-02 | 5.07E-03 | 1.33E-03 | 1.33E-03 | 5.97E-03 | 6.72E-03 | 6.02E-03 | 3.70E-03 | 6.02E-03 | 3.93E-03 | 2.99E-03 | 4.15E-03 | 3.23E-02 |
| 7440439 | Cadmium | 1.29E-02 | 1.70E-02 | 7.82E-03 | 1.12E-02 | 5.27E-03 | 1.00E-02 | 1.02E-02 | 1.30E-02 | 1.30E-02 | 2.34E-02 | 3.22E-02 | 3.18E-02 | 4.86E-02 | 8.45E-03 | 2.22E-03 | 2.22E-03 | 9.95E-03 | 1.12E-02 | 1.00E-02 | 6.17E-03 | 1.00E-02 | 6.56E-03 | 4.98E-03 | 6.91E-03 | 5.78E-02 |
| 7440473 | Chromium (total) | 1.43E-01 | 3.12E-01 | 1.44E-01 | 1.81E-01 | 1.15E-01 | 1.79E-01 | 1.83E-01 | 2.33E-01 | 2.33E-01 | 4.19E-01 | 2.34E-01 | 2.31E-01 | 3.03E+00 | 5.26E-01 | 1.38E-01 | 1.38E-01 | 5.16E-01 | 5.80E-01 | 5.19E-01 | 3.20E-01 | 6.24E-01 | 3.40E-01 | 2.58E-01 | 1.33E-01 | 2.25E+00 |
| 18540299 | Chromium VI | 5.16E-04 | 4.01E-03 | 1.85E-03 | 3.53E-03 | 4.22E-04 | 2.24E-03 | 2.28E-03 | 2.91E-03 | 2.91E-03 | 5.24E-03 | 2.58E-03 | 2.55E-03 | 4.66E-01 | 8.11E-02 | 2.13E-02 | 2.13E-02 | 1.37E-01 | 1.55E-01 | 1.38E-01 | 8.52E-02 | 9.63E-02 | 9.05E-02 | 6.87E-02 | 5.53E-04 | 4.45E-01 |
| 7440508 | Copper | 3.15E-01 | 3.09E-01 | 1.43E-01 | 1.51E-01 | 1.43E-01 | 1.86E-01 | 1.90E-01 | 2.42E-01 | 2.42E-01 | 4.35E-01 | 1.65E-01 | 1.63E-01 | 7.51E-01 | 1.31E-01 | 3.43E-02 | 3.43E-02 | 1.77E-01 | 1.99E-01 | 1.79E-01 | 1.10E-01 | 1.55E-01 | 1.17E-01 | 8.86E-02 | 7.74E-02 | 1.06E+00 |
| 1175 | Crystalline silica | 1.69E+00 | 1.08E+01 | 5.00E+00 | 6.20E+00 | 3.96E+00 | 6.06E+00 | 6.18E+00 | 7.87E+00 | 7.87E+00 | 1.42E+01 | 2.63E-01 | 2.60E-01 | 3.96E-01 | 6.89E-02 | 1.81E-02 | 1.81E-02 | 4.87E-01 | 5.48E-01 | 4.91E-01 | 3.02E-01 | 8.18E-02 | 3.21E-01 | 2.44E-01 | 2.05E+01 | 1.79E+01 |
| 7439921 | Lead | 3.51E-02 | 1.62E-02 | 7.46E-03 | 1.13E-02 | 5.27E-03 | 1.07E-02 | 1.09E-02 | 1.39E-02 | 1.39E-02 | 2.50E-02 | 3.22E-02 | 3.18E-02 | 1.36E-01 | 2.37E-02 | 6.21E-03 | 6.21E-03 | 2.47E-02 | 2.78E-02 | 2.49E-02 | 1.53E-02 | 2.81E-02 | 1.63E-02 | 1.23E-02 | 7.19E-03 | 1.27E-01 |
| 7439976 | Mercury | 2.22E-03 | 2.82E-03 | 1.30E-03 | 2.30E-03 | 5.06E-04 | 1.67E-03 | 1.70E-03 | 2.16E-03 | 2.16E-03 | 3.90E-03 | 1.01E-01 | 9.93E-02 | 3.89E-04 | 6.76E-05 | 1.78E-05 | 1.78E-05 | 7.96E-05 | 8.96E-05 | 8.02E-05 | 4.94E-05 | 8.02E-05 | 5.24E-05 | 3.98E-05 | 1.11E-03 | 4.25E-03 |
| 7440020 | Nickel | 2.22E+00 | 3.85E-01 | 1.78E-01 | 2.99E-01 | 1.48E-01 | 3.24E-01 | 3.31E-01 | 4.21E-01 | 4.21E-01 | 7.58E-01 | 9.80E+00 | 9.68E+00 | 2.92E+00 | 5.07E-01 | 1.33E-01 | 1.33E-01 | 8.56E-01 | 9.63E-01 | 8.62E-01 | 5.31E-01 | 6.02E-01 | 5.64E-01 | 4.28E-01 | 1.27E-01 | 5.27E+00 |
| 7782492 | Selenium | 2.58E-02 | 2.24E-02 | 1.04E-02 | 1.09E-02 | 1.05E-02 | 1.37E-02 | 1.39E-02 | 1.77E-02 | 1.77E-02 | 3.19E-02 | 6.45E-02 | 6.37E-02 | 9.72E-02 | 1.69E-02 | 4.44E-03 | 4.44E-03 | 1.99E-02 | 2.24E-02 | 2.01E-02 | 1.23E-02 | 2.01E-02 | 1.31E-02 | 9.95E-03 | 1.38E-02 | 1.07E-01 |
| 1314621 | Vanadium | 6.71E+00 | 1.82E+00 | 8.38E-01 | 9.82E-01 | 9.28E-01 | 1.34E+00 | 1.37E+00 | 1.74E+00 | 1.74E+00 | 3.13E+00 | 2.84E+01 | 2.80E+01 | 1.58E+01 | 2.75E+00 | 7.22E-01 | 7.22E-01 | 2.87E+00 | 3.22E+00 | 2.89E+00 | 1.78E+00 | 3.26E+00 | 1.89E+00 | 1.43E+00 | 1.05E-01 | 1.72E+01 |

**TABLE 24C**

**ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES - 2013 PRODUCTION**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/yr)

| CAS No. | Chemical | 2013 Production | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S501 | S502 | 1 | 2 | 3 | 4A | 4B | 4C | 4D | 5 | 6A | 6B | 6C | 6D | 7 | 8 |
| 7440382 | Arsenic | - | - | 8.90E-02 | 8.90E-02 | 1.23E-01 | 5.32E-02 | 5.32E-02 | 5.32E-02 | 5.32E-02 | 3.42E-02 | 3.21E-02 | 3.21E-02 | 3.21E-02 | 3.21E-02 | 2.84E-03 | 4.26E-03 |
| 71432 | Benzene | - | - | - | - | - | - | - | - | - | - | 2.60E-03 | 2.60E-03 | 2.60E-03 | 2.60E-03 | 1.54E-04 | - |
| 7440417 | Beryllium | - | - | 3.36E-02 | 3.36E-02 | 3.08E-02 | 7.73E-03 | 7.73E-03 | 7.73E-03 | 7.73E-03 | 1.98E-02 | 1.09E-02 | 1.09E-02 | 1.09E-02 | 1.09E-02 | 1.70E-03 | 6.11E-03 |
| 7440439 | Cadmium | - | - | 5.60E-02 | 5.60E-02 | 6.61E-02 | 1.88E-02 | 1.88E-02 | 1.88E-02 | 1.88E-02 | 3.41E-02 | 1.82E-02 | 1.82E-02 | 1.82E-02 | 1.82E-02 | 2.84E-03 | 4.09E-03 |
| 18540299 | Chromium VI | - | - | 4.48E-03 | 4.48E-03 | 1.22E-02 | 3.78E-02 | 3.78E-02 | 3.78E-02 | 3.78E-02 | 2.64E-03 | 2.52E-02 | 2.52E-02 | 2.52E-02 | 2.52E-02 | 2.27E-04 | 3.27E-04 |
| 7440508 | Copper | - | - | 1.03E+00 | 1.03E+00 | 1.01E+00 | 3.59E-01 | 3.59E-01 | 3.59E-01 | 3.59E-01 | 3.79E-01 | 3.86E-01 | 3.86E-01 | 3.86E-01 | 3.86E-01 | 3.18E-02 | 3.59E-02 |
| 1175 | Crystalline silica | - | - | 2.57E+02 | 2.57E+02 | 9.94E+01 | 9.06E+00 | 9.06E+00 | 9.06E+00 | 9.06E+00 | 9.77E+01 | 6.91E+01 | 6.91E+01 | 6.91E+01 | 6.91E+01 | 8.43E+00 | 8.64E+00 |
| 9901 | Diesel PM | 3.14E+00 | 6.28E+00 | - | - | - | - | - | - | - | 3.83E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | 2.30E+00 | - |
| 7439921 | Lead | - | - | 5.60E-02 | 5.60E-02 | 6.51E-02 | 2.71E-02 | 2.71E-02 | 2.71E-02 | 2.71E-02 | 3.43E-02 | 4.81E-02 | 4.81E-02 | 4.81E-02 | 4.81E-02 | 2.95E-03 | 4.20E-03 |
| 7439976 | Mercury | - | - | 1.28E-02 | 1.28E-02 | 1.10E-02 | 1.82E-02 | 1.82E-02 | 1.82E-02 | 1.82E-02 | 5.31E-03 | 2.22E-03 | 2.22E-03 | 2.22E-03 | 2.22E-03 | 4.54E-04 | 1.49E-03 |
| 7440020 | Nickel | - | - | 1.77E+00 | 1.77E+00 | 1.38E+00 | 6.99E-01 | 6.99E-01 | 6.99E-01 | 6.99E-01 | 6.09E-01 | 1.05E+00 | 1.05E+00 | 1.05E+00 | 1.05E+00 | 5.22E-02 | 5.67E-02 |
| 7782492 | Selenium | - | - | 1.12E-01 | 1.12E-01 | 1.03E-01 | 2.82E-02 | 2.82E-02 | 2.82E-02 | 2.82E-02 | 6.59E-02 | 2.09E-02 | 2.09E-02 | 2.09E-02 | 2.09E-02 | 5.68E-03 | 8.17E-03 |
| 108883 | Toluene | - | - | - | - | - | - | - | - | - | - | 1.03E-02 | 1.03E-02 | 1.03E-02 | 1.03E-02 | 6.17E-03 | - |
| 1314621 | Vanadium | - | - | 2.04E+00 | 2.04E+00 | 4.66E+00 | 2.96E+00 | 2.96E+00 | 2.96E+00 | 2.96E+00 | 6.36E-01 | 2.63E+00 | 2.63E+00 | 2.63E+00 | 2.63E+00 | 4.31E-02 | 6.44E-02 |
| 1330207 | Xylenes (mixed) | - | - | - | - | - | - | - | - | - | - | 1.50E-02 | 1.50E-02 | 1.50E-02 | 1.50E-02 | 5.60E-02 | - |

**TABLE 25A**

**MAXIMUM HOURLY EMISSION RATES FOR THE KILN - 2013 PRODUCTION**

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2013 Production |
|---|---|---|
| 75070 | Acetaldehyde | 1.68E-01 |
| 107028 | Acrolein | 6.51E-03 |
| 7440382 | Arsenic | 1.10E-04 |
| 7440393 | Barium | 1.42E-03 |
| 56553 | Benz[a]anthracene | 1.90E-06 |
| 71432 | Benzene | 1.40E+00 |
| 50328 | Benzo[a]pyrene | 4.27E-08 |
| 205992 | Benzo[b]fluoranthene | 2.71E-07 |
| 207089 | Benzo[k]fluoranthene | 4.27E-08 |
| 100447 | Benzyl chloride | 1.47E-02 |
| 7440417 | Beryllium | 5.52E-05 |
| 106990 | 1,3-Butadiene | 1.33E-02 |
| 7440439 | Cadmium | 5.52E-05 |
| 56235 | Carbon tetrachloride | 8.94E-03 |
| 108907 | Chlorobenzene | 8.04E-02 |
| 67663 | Chloroform | 4.16E-03 |
| 7440473 | Chromium (total) | 8.04E-04 |
| 18540299 | Chromium VI | 4.87E-05 |
| 218019 | Chrysene | 5.60E-06 |
| 7440508 | Copper | 6.15E-04 |
| 1175 | Crystalline silica | 0.00E+00 |
| 53703 | Dibenz[a,h]anthracene | 4.27E-08 |
| 106467 | p-Dichlorobenzene | 8.54E-03 |
| 75343 | 1,1-Dichloroethane | 2.87E-03 |
| 78875 | 1,2-Dichloropropane | 3.94E-03 |
| 542756 | 1,3-Dichloropropene | 1.61E-02 |
| 9901 | Diesel PM | 0.00E+00 |
| 75003 | Ethyl chloride | 5.62E-03 |
| 100414 | Ethylbenzene | 1.39E-01 |
| 106934 | Ethylene dibromide | 8.73E-03 |
| 107062 | Ethylene dichloride | 3.45E-03 |
| 50000 | Formaldehyde | 9.15E-03 |
| 87683 | Hexachlorobutadiene | 1.52E-02 |
| 35822469 | 1,2,3,4,6,7,8-HpCDD | 1.40E-09 |
| 67562394 | 1,2,3,4,6,7,8-HpCDF | 6.77E-10 |
| 55673897 | 1,2,3,4,7,8,9-HpCDF | 1.75E-10 |
| 39227286 | 1,2,3,4,7,8-HxCDD | 3.90E-10 |
| 57653857 | 1,2,3,6,7,8-HxCDD | 3.85E-10 |
| 19408743 | 1,2,3,7,8,9-HxCDD | 3.98E-10 |
| 70648269 | 1,2,3,4,7,8-HxCDF | 5.90E-10 |
| 57117449 | 1,2,3,6,7,8-HxCDF | 5.52E-10 |
| 72918219 | 1,2,3,7,8,9-HxCDF | 1.86E-10 |

**TABLE 25A**

**MAXIMUM HOURLY EMISSION RATES FOR THE KILN - 2013 PRODUCTION**

Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2013 Production |
|---|---|---|
| 60851345 | 2,3,4,6,7,8-HxCDF | 3.40E-10 |
| 7647010 | Hydrochloric acid | 7.75E+00 |
| 193395 | Indeno[1,2,3-c,d] pyrene | 3.17E-08 |
| 7439921 | Lead | 1.28E-04 |
| 7439965 | Manganese | 5.79E-04 |
| 7439976 | Mercury | 1.10E-02 |
| 74839 | Methyl bromide | 9.07E-02 |
| 71556 | Methyl chloroform | 4.65E-03 |
| 75092 | Methylene chloride | 1.87E-02 |
| 91203 | Naphthalene | 2.01E-02 |
| 7440020 | Nickel | 9.46E-04 |
| 3268879 | 1,2,3,4,6,7,8,9-OCDD | 2.92E-09 |
| 39001020 | 1,2,3,4,6,7,8,9-OCDF | 6.69E-10 |
| 40321764 | 1,2,3,7,8-PeCDD | 3.44E-10 |
| 57117416 | 1,2,3,7,8-PeCDF | 2.66E-09 |
| 57117314 | 2,3,4,7,8-PeCDF | 3.98E-09 |
| 127184 | Perchloroethylene | 7.70E-03 |
| 7782492 | Selenium | 6.17E-04 |
| 7440224 | Silver | 1.07E-04 |
| 100425 | Styrene | 3.52E-02 |
| 1746016 | 2,3,7,8-TCDD | 3.38E-10 |
| 51207319 | 2,3,7,8-TCDF | 1.67E-08 |
| 79345 | 1,1,2,2-Tetrachloroethane | 5.85E-03 |
| 7440280 | Thallium | 6.17E-04 |
| 108883 | Toluene | 1.25E+00 |
| 79005 | 1,1,2-Trichloroethane | 7.75E-03 |
| 79016 | Trichloroethylene | 6.10E-03 |
| 1314621 | Vanadium | 5.52E-04 |
| 75014 | Vinyl chloride | 2.06E-02 |
| 75354 | Vinylidene chloride | 5.64E-03 |
| 95476 | o-Xylene | 1.97E-01 |
| 1330207 | Xylenes (mixed) | 1.01E+00 |

**TABLE 25B**

**MAXIMUM HOURLY EMISSION RATES BY SOURCE GROUP FOR DUST COLLECTORS - 2013 PRODUCTION**
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2013 Production | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1D4 | 2D1 | 3D1 | 3D4 | 3D5 | 4D3 | 4D4 | 5D1 | 5D2 | 5D3 | 5D5 | 5D6 | 5D11_20 | 5D23 | 5D27 | 5D28 | 6D17 | 6D19 | 6D2 | 6D1218 | 6D1 | 6D8 | 7PD7 | 8D31 | 999DC |
| 7440382 | Arsenic | 9.60E-06 | 6.33E-06 | 2.37E-06 | 3.41E-06 | 3.22E-06 | 4.36E-06 | 4.36E-06 | 4.36E-06 | 4.36E-06 | 7.84E-06 | 4.13E-06 | 4.13E-06 | 2.28E-05 | 3.97E-06 | 1.59E-06 | 1.59E-06 | 4.50E-06 | 5.06E-06 | 5.63E-06 | 3.60E-06 | 5.96E-06 | 3.83E-06 | 2.25E-06 | 1.82E-06 | 4.16E-05 |
| 7440417 | Beryllium | 1.03E-06 | 1.03E-06 | 3.86E-07 | 5.40E-07 | 5.14E-07 | 6.75E-07 | 6.75E-07 | 6.75E-07 | 6.75E-07 | 1.22E-06 | 2.48E-06 | 2.48E-06 | 3.70E-06 | 6.43E-07 | 2.57E-07 | 2.57E-07 | 7.71E-07 | 8.68E-07 | 9.64E-07 | 6.17E-07 | 9.64E-07 | 6.56E-07 | 3.86E-07 | 1.09E-06 | 6.52E-06 |
| 7440439 | Cadmium | 1.71E-06 | 2.59E-06 | 9.71E-07 | 1.84E-06 | 8.57E-07 | 1.65E-06 | 1.65E-06 | 1.65E-06 | 1.65E-06 | 2.96E-06 | 4.13E-06 | 4.13E-06 | 6.16E-06 | 1.07E-06 | 4.29E-07 | 4.29E-07 | 1.29E-06 | 1.45E-06 | 1.61E-06 | 1.03E-06 | 1.61E-06 | 1.09E-06 | 6.43E-07 | 1.82E-06 | 1.15E-05 |
| 7440473 | Chromium (total) | 1.90E-05 | 4.76E-05 | 1.79E-05 | 2.98E-05 | 1.87E-05 | 2.95E-05 | 2.95E-05 | 2.95E-05 | 2.95E-05 | 5.31E-05 | 2.99E-05 | 2.99E-05 | 3.84E-04 | 6.67E-05 | 2.67E-05 | 2.67E-05 | 6.66E-05 | 7.49E-05 | 8.33E-05 | 5.33E-05 | 1.00E-04 | 5.66E-05 | 3.33E-05 | 3.50E-05 | 4.37E-04 |
| 18540299 | Chromium VI | 6.86E-08 | 6.12E-07 | 2.29E-07 | 5.81E-07 | 6.86E-08 | 3.69E-07 | 3.69E-07 | 3.69E-07 | 3.69E-07 | 6.64E-07 | 3.30E-07 | 3.30E-07 | 5.92E-05 | 1.03E-05 | 4.11E-06 | 4.11E-06 | 1.77E-05 | 2.00E-05 | 2.22E-05 | 1.42E-05 | 1.54E-05 | 1.51E-05 | 8.87E-06 | 1.46E-07 | 8.40E-05 |
| 7440508 | Copper | 4.18E-05 | 4.72E-05 | 1.77E-05 | 2.49E-05 | 2.33E-05 | 3.07E-05 | 3.07E-05 | 3.07E-05 | 3.07E-05 | 5.52E-05 | 2.11E-05 | 2.11E-05 | 9.53E-05 | 1.66E-05 | 6.63E-06 | 6.63E-06 | 2.29E-05 | 2.57E-05 | 2.86E-05 | 1.83E-05 | 2.49E-05 | 1.95E-05 | 1.14E-05 | 2.04E-05 | 2.12E-04 |
| 1175 | Crystalline silica | 2.24E-04 | 1.66E-03 | 6.21E-04 | 1.02E-03 | 6.43E-04 | 9.98E-04 | 9.98E-04 | 9.98E-04 | 9.98E-04 | 1.80E-03 | 3.37E-05 | 3.37E-05 | 5.03E-05 | 8.74E-06 | 3.50E-06 | 3.50E-06 | 6.29E-05 | 7.08E-05 | 7.87E-05 | 5.04E-05 | 1.31E-05 | 5.35E-05 | 3.15E-05 | 5.41E-03 | 3.77E-03 |
| 7439921 | Lead | 4.66E-06 | 2.47E-06 | 9.26E-07 | 1.86E-06 | 8.57E-07 | 1.76E-06 | 1.76E-06 | 1.76E-06 | 1.76E-06 | 3.17E-06 | 4.13E-06 | 4.13E-06 | 1.73E-05 | 3.00E-06 | 1.20E-06 | 1.20E-06 | 3.19E-06 | 3.59E-06 | 3.99E-06 | 2.55E-06 | 4.50E-06 | 2.71E-06 | 1.59E-06 | 1.89E-06 | 2.62E-05 |
| 7439976 | Mercury | 2.95E-07 | 4.30E-07 | 1.61E-07 | 3.80E-07 | 8.23E-08 | 2.75E-07 | 2.75E-07 | 2.75E-07 | 2.75E-07 | 4.94E-07 | 1.29E-05 | 1.29E-05 | 4.93E-08 | 8.57E-09 | 3.43E-09 | 3.43E-09 | 1.03E-08 | 1.16E-08 | 1.29E-08 | 8.23E-09 | 1.29E-08 | 8.74E-09 | 5.14E-09 | 2.91E-07 | 1.30E-06 |
| 7440020 | Nickel | 2.95E-04 | 5.89E-05 | 2.21E-05 | 4.93E-05 | 2.40E-05 | 5.34E-05 | 5.34E-05 | 5.34E-05 | 5.34E-05 | 9.61E-05 | 1.25E-03 | 1.25E-03 | 3.70E-04 | 6.43E-05 | 2.57E-05 | 2.57E-05 | 1.11E-04 | 1.24E-04 | 1.38E-04 | 8.85E-05 | 9.64E-05 | 9.40E-05 | 5.53E-05 | 3.35E-05 | 1.11E-03 |
| 7782492 | Selenium | 3.43E-06 | 3.43E-06 | 1.29E-06 | 1.80E-06 | 1.71E-06 | 2.25E-06 | 2.25E-06 | 2.25E-06 | 2.25E-06 | 4.05E-06 | 8.25E-06 | 8.25E-06 | 1.23E-05 | 2.14E-06 | 8.57E-07 | 8.57E-07 | 2.57E-06 | 2.89E-06 | 3.21E-06 | 2.06E-06 | 3.21E-06 | 2.19E-06 | 1.29E-06 | 3.64E-06 | 2.17E-05 |
| 1314621 | Vanadium | 8.91E-04 | 2.78E-04 | 1.04E-04 | 1.62E-04 | 1.51E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 3.97E-04 | 3.63E-03 | 3.63E-03 | 2.00E-03 | 3.49E-04 | 1.39E-04 | 1.39E-04 | 3.70E-04 | 4.17E-04 | 4.63E-04 | 2.96E-04 | 5.23E-04 | 3.15E-04 | 1.85E-04 | 2.77E-05 | 3.60E-03 |

**TABLE 25C**

**MAXIMUM HOURLY EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES - 2013 PRODUCTION**

Lehigh Southwest Cement Company

Cupertino Facility

Concentrations reported in pounds per year (lbs/hr)

| CAS No. | Chemical | 2013 Production | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S501 | S502 | 1 | 2 | 3 | 4A | 4B | 4C | 4D | 5 | 6A | 6B | 6C | 6D | 7 | 8 |
| 7440382 | Arsenic | - | - | 3.22E-05 | 3.22E-05 | 9.69E-06 | 1.98E-05 | 1.98E-05 | 1.98E-05 | 1.98E-05 | 1.88E-05 | 8.76E-06 | 8.76E-06 | 8.76E-06 | 8.76E-06 | 1.12E-06 | 1.68E-06 |
| 71432 | Benzene | - | - | - | - | - | - | - | - | - | - | 9.10E-07 | 9.10E-07 | 9.10E-07 | 9.10E-07 | 5.40E-08 | - |
| 7440417 | Beryllium | - | - | 1.21E-05 | 1.21E-05 | 2.43E-06 | 2.99E-06 | 2.99E-06 | 2.99E-06 | 2.99E-06 | 1.10E-05 | 2.33E-06 | 2.33E-06 | 2.33E-06 | 2.33E-06 | 6.71E-07 | 2.43E-06 |
| 7440439 | Cadmium | - | - | 2.01E-05 | 2.01E-05 | 5.22E-06 | 7.23E-06 | 7.23E-06 | 7.23E-06 | 7.23E-06 | 1.88E-05 | 3.86E-06 | 3.86E-06 | 3.86E-06 | 3.86E-06 | 1.12E-06 | 1.62E-06 |
| 18540299 | Chromium VI | - | - | 1.61E-06 | 1.61E-06 | 9.60E-07 | 1.06E-05 | 1.06E-05 | 1.06E-05 | 1.06E-05 | 1.47E-06 | 5.03E-06 | 5.03E-06 | 5.03E-06 | 5.03E-06 | 8.95E-08 | 1.29E-07 |
| 7440508 | Copper | - | - | 3.69E-04 | 3.69E-04 | 7.98E-05 | 1.36E-04 | 1.36E-04 | 1.36E-04 | 1.36E-04 | 2.10E-04 | 8.57E-05 | 8.57E-05 | 8.57E-05 | 8.57E-05 | 1.25E-05 | 1.42E-05 |
| 1175 | Crystalline silica | - | - | 9.19E-02 | 9.19E-02 | 7.84E-03 | 3.88E-03 | 3.88E-03 | 3.88E-03 | 3.88E-03 | 5.45E-02 | 9.96E-03 | 9.96E-03 | 9.96E-03 | 9.96E-03 | 3.32E-03 | 3.40E-03 |
| 9901 | Diesel PM | 2.99E-01 | 5.98E-01 | - | - | - | - | - | - | - | 1.90E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | 1.14E-02 | - |
| 7439921 | Lead | - | - | 2.01E-05 | 2.01E-05 | 5.13E-06 | 9.22E-06 | 9.22E-06 | 9.22E-06 | 9.22E-06 | 1.91E-05 | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.16E-06 | 1.66E-06 |
| 7439976 | Mercury | - | - | 4.61E-06 | 4.61E-06 | 8.69E-07 | 3.14E-06 | 3.14E-06 | 3.14E-06 | 3.14E-06 | 2.95E-06 | 4.95E-07 | 4.95E-07 | 4.95E-07 | 4.95E-07 | 1.79E-07 | 5.94E-07 |
| 7440020 | Nickel | - | - | 6.36E-04 | 6.36E-04 | 1.09E-04 | 2.63E-04 | 2.63E-04 | 2.63E-04 | 2.63E-04 | 3.39E-04 | 2.62E-04 | 2.62E-04 | 2.62E-04 | 2.62E-04 | 2.06E-05 | 2.24E-05 |
| 7782492 | Selenium | - | - | 4.02E-05 | 4.02E-05 | 8.09E-06 | 1.05E-05 | 1.05E-05 | 1.05E-05 | 1.05E-05 | 3.67E-05 | 2.32E-06 | 2.32E-06 | 2.32E-06 | 2.32E-06 | 2.24E-06 | 3.23E-06 |
| 108883 | Toluene | - | - | - | - | - | - | - | - | - | - | 3.59E-06 | 3.59E-06 | 3.59E-06 | 3.59E-06 | 2.16E-06 | - |
| 1314621 | Vanadium | - | - | 7.34E-04 | 7.34E-04 | 3.67E-04 | 1.08E-03 | 1.08E-03 | 1.08E-03 | 1.08E-03 | 3.30E-04 | 7.56E-04 | 7.56E-04 | 7.56E-04 | 7.56E-04 | 1.70E-05 | 2.55E-05 |
| 1330207 | Xylenes (mixed) | - | - | - | - | - | - | - | - | - | - | 5.25E-06 | 5.25E-06 | 5.25E-06 | 5.25E-06 | 1.96E-05 | - |

## TABLE 26

## POTENTIAL CHRONIC HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #12506[4] | | Maximum Exposed Individual Resident (MEIR) Receptor #3700[4] | | Maximum Exposed Individual Worker (MEIW) Receptor #10581[4,5] | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Acetaldehyde | 75070 | Kiln | **1.31E-06** | 0.0% | **1.06E-06** | 0.0% | **6.81E-07** | 0.0% |
| Acrolein | 107028 | Kiln | **2.04E-05** | 0.0% | **1.65E-05** | 0.0% | **1.06E-05** | 0.0% |
| Arsenic | 7440382 | Raw material | **1.55E-01** | 81.2% | **5.93E-02** | 76.2% | **5.91E-02** | 74.6% |
| Benz(a)anthracene | 56553 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Benzene | 71432 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Benzo(a)pyrene | 50328 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Benzo(b)fluoranthene | 205992 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Benzo(k)fluoranthene | 207089 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Benzyl chloride | 100447 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Beryllium | 7440417 | Raw material | **1.67E-03** | 0.9% | **7.75E-04** | 1.0% | **8.80E-04** | 1.1% |
| 1,3-Butadiene | 106990 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Cadmium | 7440439 | Raw material | **1.21E-03** | 0.6% | **4.94E-04** | 0.6% | **5.74E-04** | 0.7% |
| Carbon tetrachloride | 56235 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Chlorobenzene | 108907 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Chloroform | 67663 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Chromium, hexavalent (& compounds) | 18540299 | Byproduct of manufacturing | **2.53E-04** | 0.1% | **1.12E-04** | 0.1% | **1.21E-04** | 0.2% |
| Chrysene | 218019 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Copper | 7440508 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Crystalline Silica | 1175 | Raw material | **1.07E-02** | 5.6% | **6.09E-03** | 7.8% | **6.88E-03** | 8.7% |
| Dibenz(a,h)anthracene | 53703 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | **1.17E-08** | 0.0% | **9.44E-09** | 0.0% | **6.08E-09** | 0.0% |
| 1,1-Dichloroethane | 75343 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Diesel engine exhaust | 9901 | Stationary sources | **7.26E-05** | 0.0% | **9.66E-05** | 0.1% | **1.04E-04** | 0.1% |

**TABLE 26**

**POTENTIAL CHRONIC HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #12506[4] | | Maximum Exposed Individual Resident (MEIR) Receptor #3700[4] | | Maximum Exposed Individual Worker (MEIW) Receptor #10581[4,5] | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Ethyl benzene | 100414 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Ethyl chloride (Chloroethane) | 75003 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Ethylene dibromide (EDB) | 106934 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Ethylene dichloride (EDC) | 107062 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Formaldehyde | 50000 | Kiln | **1.12E-06** | 0.0% | **8.99E-07** | 0.0% | **5.79E-07** | 0.0% |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562394 | Kiln | **2.14E-09** | 0.0% | **1.73E-09** | 0.0% | **6.66E-10** | 0.0% |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673897 | Kiln | **5.54E-10** | 0.0% | **4.47E-10** | 0.0% | **1.72E-10** | 0.0% |
| 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | 35822469 | Kiln | **4.41E-09** | 0.0% | **3.56E-09** | 0.0% | **1.37E-09** | 0.0% |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648269 | Kiln | **1.87E-08** | 0.0% | **1.50E-08** | 0.0% | **5.80E-09** | 0.0% |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117449 | Kiln | **1.75E-08** | 0.0% | **1.41E-08** | 0.0% | **5.42E-09** | 0.0% |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918219 | Kiln | **5.90E-09** | 0.0% | **4.76E-09** | 0.0% | **1.83E-09** | 0.0% |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851345 | Kiln | **1.08E-08** | 0.0% | **8.67E-09** | 0.0% | **3.34E-09** | 0.0% |
| 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | 39227286 | Kiln | **1.23E-08** | 0.0% | **9.93E-09** | 0.0% | **3.83E-09** | 0.0% |
| 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | 57653857 | Kiln | **1.22E-08** | 0.0% | **9.81E-09** | 0.0% | **3.78E-09** | 0.0% |

## TABLE 26

## POTENTIAL CHRONIC HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #12506[4] | | Maximum Exposed Individual Resident (MEIR) Receptor #3700[4] | | Maximum Exposed Individual Worker (MEIW) Receptor #10581[4,5] | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | 19408743 | Kiln | **1.26E-08** | 0.0% | **1.02E-08** | 0.0% | **3.91E-09** | 0.0% |
| Hydrochloric acid | 7647010 | Kiln | **8.28E-04** | 0.4% | **6.67E-04** | 0.9% | **4.29E-04** | 0.5% |
| Indeno(1,2,3-cd)pyrene | 193395 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Lead | 7439921 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Manganese | 7439965 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Mercury[6] | 7439976 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Methyl bromide (Bromomethane) | 74839 | Kiln | **1.99E-05** | 0.0% | **1.61E-05** | 0.0% | **1.03E-05** | 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Methylene chloride (Dichloromethane) | 75092 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Naphthalene | 91203 | Kiln | **2.46E-06** | 0.0% | **1.98E-06** | 0.0% | **1.28E-06** | 0.0% |
| Nickel | 7440020 | Raw material | **2.10E-02** | 11.0% | **1.02E-02** | 13.1% | **1.11E-02** | 14.0% |
| 1,2,3,4,6,7,8,9-Octachlorodibenzofuran | 39001020 | Kiln | **2.12E-11** | 0.0% | **1.71E-11** | 0.0% | **6.57E-12** | 0.0% |
| 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin | 3268879 | Kiln | **9.27E-11** | 0.0% | **7.48E-11** | 0.0% | **2.88E-11** | 0.0% |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117314 | Kiln | **6.30E-07** | 0.0% | **5.08E-07** | 0.0% | **1.96E-07** | 0.0% |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117416 | Kiln | **4.21E-08** | 0.0% | **3.40E-08** | 0.0% | **1.31E-08** | 0.0% |
| 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | 40321764 | Kiln | **1.09E-07** | 0.0% | **8.77E-08** | 0.0% | **3.38E-08** | 0.0% |

**TABLE 26**

**POTENTIAL CHRONIC HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category[3] | Point of Maximum Impact (PMI) Receptor #12506[4] | | Maximum Exposed Individual Resident (MEIR) Receptor #3700[4] | | Maximum Exposed Individual Worker (MEIW) Receptor #10581[4,5] | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Perchloroethylene | 127184 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Selenium | 7782492 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Styrene | 100425 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207319 | Kiln | **5.30E-07** | 0.0% | **4.27E-07** | 0.0% | **1.65E-07** | 0.0% |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 1746016 | Kiln | **1.07E-07** | 0.0% | **8.61E-08** | 0.0% | **3.32E-08** | 0.0% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Toluene | 108883 | Kiln | **4.59E-06** | 0.0% | **3.70E-06** | 0.0% | **2.38E-06** | 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Trichloroethylene | 79016 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Vanadium pentoxide | 1314621 | Raw material | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Vinyl chloride | 75014 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| Vinylidene chloride | 75354 | Kiln | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% | 0.00E+00 | 0.0% |
| o-Xylene | 95476 | Kiln | **3.10E-07** | 0.0% | **2.50E-07** | 0.0% | **1.61E-07** | 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | **1.58E-06** | 0.0% | **1.28E-06** | 0.0% | **8.24E-07** | 0.0% |
| **Total[7]** | | | **1.9E-01** | 100% | **7.8E-02** | 100% | **7.9E-02** | 100% |

**TABLE 26**

**POTENTIAL CHRONIC HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

Notes

1. Maximum chronic hazard index was highest for the respiratory system. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix J.
2. All evaluated Toxic Air Contaminants (TACs) presented; not all have chronic noncancer effects on the respiratory system. TACs without chronic effects on the applicable organ system are shaded.
3. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.
   Kiln - Byproducts of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emission occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welding equipment.
4. Receptor identifier in the HARP model.
5. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
6. The chronic hazard indiex for mercury has been adjusted from the HARP output to exclude oral exposure.
7. Chronic hazard index for the PMI, MEIR, and MEIW are below 1, the regulatory notification level.

Abbreviation

% Cont. = Percent contribution to total

**TABLE 27**

**POTENTIAL CHRONIC HAZARD INDEXES FOR 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company

Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #12506 | | Maximum Exposed Individual Resident (MEIR) Receptor #3700 | | Maximum Exposed Individual Worker (MEIW)[2] Receptor #10581 | |
|---|---|---|---|---|---|---|
| | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| KILN | 1.24E-03 | 1% | 9.97E-04 | 1% | 6.18E-04 | 1% |
| 5D11_20 | 3.88E-03 | 2.0% | 2.74E-03 | 3.5% | 2.73E-03 | 3.4% |
| 5D23 | 6.92E-04 | 0.4% | 5.52E-04 | 0.7% | 6.29E-04 | 0.8% |
| 5D27 | 1.74E-04 | 0.1% | 1.56E-04 | 0.2% | 1.44E-04 | 0.2% |
| 5D28 | 3.78E-04 | 0.2% | 1.62E-04 | 0.2% | 1.88E-04 | 0.2% |
| 6D17 | 3.83E-03 | 2.0% | 9.99E-04 | 1.3% | 1.13E-03 | 1.4% |
| 6D2 | 3.47E-03 | 1.8% | 8.81E-04 | 1.1% | 9.17E-04 | 1.2% |
| 6D8 | 1.11E-03 | 0.6% | 2.95E-04 | 0.4% | 3.44E-04 | 0.4% |
| 7 | 3.04E-05 | 0.0% | 3.09E-04 | 0.4% | 2.25E-04 | 0.3% |
| 8 | 8.45E-05 | 0.0% | 9.20E-04 | 1.2% | 9.15E-04 | 1.2% |
| 3 | 3.82E-02 | 20.0% | 6.73E-03 | 8.6% | 7.68E-03 | 9.7% |
| 5 | 1.26E-03 | 0.7% | 2.32E-03 | 3.0% | 2.73E-03 | 3.4% |
| 2 | 1.02E-02 | 5.3% | 3.55E-03 | 4.6% | 3.84E-03 | 4.8% |
| 1 | 5.23E-03 | 2.7% | 2.40E-03 | 3.1% | 2.53E-03 | 3.2% |
| 6D1 | 3.73E-03 | 2.0% | 2.62E-03 | 3.4% | 2.43E-03 | 3.1% |
| 6D19 | 1.84E-03 | 1.0% | 6.86E-04 | 0.9% | 9.60E-04 | 1.2% |
| 6D12 | 2.29E-03 | 1.2% | 5.83E-04 | 0.7% | 8.45E-04 | 1.1% |
| 4D4 | 6.39E-04 | 0.3% | 3.70E-04 | 0.5% | 3.18E-04 | 0.4% |
| 4D3 | 6.14E-04 | 0.3% | 3.60E-04 | 0.5% | 3.14E-04 | 0.4% |
| 5D1 | 1.02E-03 | 0.5% | 3.90E-04 | 0.5% | 3.67E-04 | 0.5% |
| 5D6 | 2.23E-03 | 1.2% | 1.32E-03 | 1.7% | 1.38E-03 | 1.7% |
| 5D5 | 2.21E-03 | 1.2% | 1.36E-03 | 1.7% | 1.30E-03 | 1.6% |
| 5D2 | 9.57E-04 | 0.5% | 3.89E-04 | 0.5% | 3.64E-04 | 0.5% |
| 5D3 | 1.13E-03 | 0.6% | 6.65E-04 | 0.9% | 6.41E-04 | 0.8% |
| S501 | 1.54E-05 | 0.0% | 6.03E-06 | 0.0% | 5.11E-06 | 0.0% |
| S502 | 1.44E-05 | 0.0% | 1.30E-05 | 0.0% | 1.82E-05 | 0.0% |

**TABLE 27**

**POTENTIAL CHRONIC HAZARD INDEXES FOR 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY - THE RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company

Cupertino Facility

| Source ID | Point of Maximum Impact (PMI) Receptor #12506 | | Maximum Exposed Individual Resident (MEIR) Receptor #3700 | | Maximum Exposed Individual Worker (MEIW)[2] Receptor #10581 | |
|---|---|---|---|---|---|---|
| | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| 8D31 | 9.05E-05 | 0.0% | 6.50E-04 | 0.8% | 5.33E-04 | 0.7% |
| 1D4 | 1.97E-03 | 1.0% | 1.35E-03 | 1.7% | 1.22E-03 | 1.5% |
| 2D1 | 1.76E-03 | 0.9% | 4.93E-04 | 0.6% | 5.84E-04 | 0.7% |
| 3D1 | 6.68E-04 | 0.3% | 2.91E-04 | 0.4% | 1.55E-04 | 0.2% |
| 3D4 | 4.86E-04 | 0.3% | 3.04E-04 | 0.4% | 2.78E-04 | 0.4% |
| 3D5 | 4.25E-04 | 0.2% | 2.71E-04 | 0.3% | 2.47E-04 | 0.3% |
| 999D | 7.06E-03 | 3.7% | 6.10E-03 | 7.8% | 1.81E-03 | 2.3% |
| 7PD7 | 2.05E-04 | 0.1% | 3.87E-04 | 0.5% | 2.88E-04 | 0.4% |
| 6A | 1.02E-03 | 0.5% | 3.21E-03 | 4.1% | 3.82E-03 | 4.8% |
| 6B | 5.35E-04 | 0.3% | 5.40E-03 | 6.9% | 4.48E-03 | 5.7% |
| 6C | 7.80E-03 | 4.1% | 2.86E-03 | 3.7% | 2.95E-03 | 3.7% |
| 6D | 6.85E-04 | 0.4% | 3.94E-03 | 5.1% | 3.29E-03 | 4.2% |
| 4A | 3.75E-02 | 19.6% | 4.81E-03 | 6.2% | 5.87E-03 | 7.4% |
| 4B | 1.68E-02 | 8.8% | 6.13E-03 | 7.9% | 8.22E-03 | 10.4% |
| 4C | 2.55E-02 | 13.3% | 4.25E-03 | 5.5% | 5.25E-03 | 6.6% |
| 4D | 2.09E-03 | 1.1% | 5.63E-03 | 7.2% | 6.62E-03 | 8.4% |
| Inhalation Pathways | 4.0E-02 | 21% | 2.0E-02 | 26% | 2.2E-02 | 28% |
| Non-Inhalation Pathways | 1.5E-01 | 79% | 5.8E-02 | 74% | 5.7E-02 | 72% |
| Total [3] | 1.9E-01 | 100% | 7.8E-02 | 100% | 7.9E-02 | 100% |

Notes

1. Maximum chronic hazard index was highest for the respiratory system. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix J.
2. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
3. Chronic hazard indexes for the MEIR and MEIW are below 1, the regulatory notification level.

Abbreviation

% Cont. = Percent contribution to total

**TABLE 28**

**POTENTIAL ACUTE HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category | Point of Maximum Impact (PMI) Receptor ID #6363 | | Maximum Exposed Individual Resident (MEIR) Receptor ID #2041 | | Maximum Exposed Individual Worker (MEIW) Receptor ID #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Acetaldehyde | 75070 | Kiln | **2.8E-05** | 0.1% | **3.0E-05** | 0.1% | **2.7E-05** | 0.1% |
| Acrolein | 107028 | Kiln | **2.0E-04** | 0.5% | **2.2E-04** | 0.9% | **2.0E-04** | 0.7% |
| Arsenic | 7440382 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benz[a]anthracene | 56553 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benzene | 71432 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benzo[a]pyrene | 50328 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benzo[b]fluoranthene | 205992 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benzo[k]fluoranthene | 207089 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Benzyl chloride | 100447 | Kiln | **4.8E-06** | 0.0% | **5.1E-06** | 0.0% | **4.6E-06** | 0.0% |
| Beryllium | 7440417 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,3-Butadiene | 106990 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Cadmium | 7440439 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Carbon Tetrachloride | 56235 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chlorobenzene | 108907 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chloroform | 67663 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chromium VI | 18540299 | Byproduct of manufacturing | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chrysene | 218019 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Copper | 7440508 | Raw material | **4.5E-04** | 1.1% | **2.6E-04** | 1.0% | **2.6E-04** | 1.0% |
| Crystalline silica | 1175 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Dibenz[a,h]anthracene | 53703 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,1-Dichloroethane | 75343 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Diesel PM | 9901 | Stationary sources | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Ethyl Chloride | 75003 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Ethylbenzene | 100414 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |

**TABLE 28**

**POTENTIAL ACUTE HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category | Point of Maximum Impact (PMI) Receptor ID #6363 | | Maximum Exposed Individual Resident (MEIR) Receptor ID #2041 | | Maximum Exposed Individual Worker (MEIW) Receptor ID #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Ethylene dibromide | 106934 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Ethylene dichloride | 107062 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Formaldehyde | 50000 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,6,7,8-HpCDD | 35822469 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,6,7,8-HpCDF | 67562394 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,7,8,9-HpCDF | 55673897 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,7,8-HxCDD | 39227286 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,6,7,8-HxCDD | 57653857 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,7,8,9-HxCDD | 19408743 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,7,8-HxCDF | 70648269 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,6,7,8-HxCDF | 57117449 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,7,8,9-HxCDF | 72918219 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 2,3,4,6,7,8-HxCDF | 60851345 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Hydrochloric Acid | 7647010 | Kiln | **2.9E-04** | 0.7% | **3.1E-04** | 1.2% | **2.8E-04** | 1.0% |
| Indeno[1,2,3-c,d]pyrene | 193395 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Lead | 7439921 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Manganese | 7439965 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Mercury | 7439976 | Raw material | 0.0E+00 | 0% | 0.0E+00 | 0% | 0.0E+00 | 0% |
| Methyl Bromide | 74839 | Kiln | **1.8E-06** | 0.0% | **1.9E-06** | 0.0% | **1.7E-06** | 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methylene chloride | 75092 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Naphthalene | 91203 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Nickel | 7440020 | Raw material | **2.5E-02** | 58.9% | **1.5E-02** | 59.4% | **1.5E-02** | 58.4% |
| 1,2,3,4,6,7,8,9-OCDD | 3268879 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,4,6,7,8,9-OCDF | 39001020 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,7,8-PeCDD | 40321764 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,2,3,7,8-PeCDF | 57117416 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 2,3,4,7,8-PeCDF | 57117314 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |

## TABLE 28

## POTENTIAL ACUTE HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL - THE RESPIRATORY HEALTH EFFECTS ENDPOINT ONLY[1]

Lehigh Southwest Cement Company
Cupertino Facility

| Chemical[2] | CAS Number | Primary Emission Category | Point of Maximum Impact (PMI) Receptor ID #6363 | | Maximum Exposed Individual Resident (MEIR) Receptor ID #2041 | | Maximum Exposed Individual Worker (MEIW) Receptor ID #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Perchloroethylene | 127184 | Kiln | **3.0E-08** | 0.0% | **3.2E-08** | 0.0% | **2.9E-08** | 0.0% |
| Selenium | 7782492 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Styrene | 100425 | Kiln | **1.3E-07** | 0.0% | **1.4E-07** | 0.0% | **1.3E-07** | 0.0% |
| 2,3,7,8-TCDD | 1746016 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 2,3,7,8-TCDF | 51207319 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Thallium | 7440280 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Toluene | 108883 | Kiln | **2.6E-06** | 0.0% | **2.8E-06** | 0.0% | **2.5E-06** | 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Trichloroethylene | 79016 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Vanadium | 1314621 | Raw material | **1.7E-02** | 38.9% | **9.4E-03** | 37.3% | **1.0E-02** | 38.7% |
| Vinyl Chloride | 75014 | Kiln | **8.9E-09** | 0.0% | **9.5E-09** | 0.0% | **8.6E-09** | 0.0% |
| Vinylidene chloride | 75354 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| o-xylene | 95476 | Kiln | **7.0E-07** | 0.0% | **7.4E-07** | 0.0% | **6.7E-07** | 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | **3.6E-06** | 0.0% | **3.8E-06** | 0.0% | **3.5E-06** | 0.0% |
| **Total Hazard Index[3]** | | | **4.3E-02** | 100% | **2.5E-02** | 100% | **2.6E-02** | 100% |

Notes

1. Maximum acute hazard index was highest for respiratory system effects. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix J.
2. All evaluated toxic air contaminants (TACs) presented; not all have acute noncancer effects on the respiratory system. Results for TACs without acute developmental effects are shaded.
3. Acute hazard indexes for the MEIR and MEIW are below 1, the regulatory notification level for the AB2588 program.

**TABLE 29**

**POTENTIAL ACUTE HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE - THE RESPIRATORY HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #6363 | | Maximum Exposed Individual Resident (MEIR) Receptor #2041 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|
| Source ID | 2013 | Relative Contribution | 2013 | Relative Contribution | 2013 | Relative Contribution |
| KILN | 5.5E-04 | 1.3% | 5.8E-04 | 2.3% | 5.3E-04 | 2.0% |
| 5D11_20 | 2.2E-03 | 5.2% | 8.3E-04 | 3.3% | 1.8E-03 | 6.7% |
| 5D23 | 3.5E-04 | 0.83% | 1.2E-04 | 0.49% | 3.2E-04 | 1.2% |
| 5D27 | 1.4E-04 | 0.33% | 4.8E-05 | 0.19% | 4.6E-05 | 0.17% |
| 5D28 | 9.6E-05 | 0.22% | 3.2E-05 | 0.13% | 6.3E-05 | 0.24% |
| 6D17 | 3.8E-04 | 0.88% | 2.9E-04 | 1.2% | 2.4E-04 | 0.90% |
| 6D2 | 3.4E-04 | 0.79% | 3.1E-04 | 1.2% | 2.2E-04 | 0.84% |
| 6D8 | 1.4E-04 | 0.32% | 6.6E-05 | 0.26% | 7.2E-05 | 0.27% |
| 7 | 7.9E-05 | 0.18% | 2.0E-05 | 0.08% | 5.7E-05 | 0.22% |
| 8 | 8.6E-05 | 0.20% | 1.1E-04 | 0.43% | 7.4E-05 | 0.28% |
| 3 | 3.3E-04 | 0.77% | 1.4E-04 | 0.56% | 2.5E-04 | 0.96% |
| 5 | 1.0E-03 | 2.4% | 1.1E-03 | 4.2% | 4.4E-04 | 1.7% |
| 2 | 7.7E-04 | 1.8% | 4.9E-04 | 1.9% | 4.6E-04 | 1.8% |
| 1 | 6.8E-04 | 1.6% | 4.5E-04 | 1.8% | 2.9E-04 | 1.1% |
| 6D1 | 8.2E-04 | 1.9% | 6.0E-04 | 2.4% | 3.8E-04 | 1.4% |
| 6D19 | 2.7E-04 | 0.64% | 1.5E-04 | 0.59% | 1.3E-04 | 0.48% |
| 6D12 | 4.2E-04 | 0.98% | 2.3E-04 | 0.90% | 2.3E-04 | 0.85% |
| 4D4 | 1.9E-04 | 0.45% | 1.5E-04 | 0.58% | 1.6E-04 | 0.62% |
| 4D3 | 1.9E-04 | 0.45% | 1.5E-04 | 0.59% | 1.7E-04 | 0.63% |
| 5D1 | 1.9E-04 | 0.45% | 1.4E-04 | 0.57% | 1.7E-04 | 0.64% |
| 5D6 | 3.8E-03 | 8.7% | 3.3E-03 | 13% | 3.4E-03 | 13% |
| 5D5 | 4.0E-03 | 9.2% | 3.1E-03 | 12% | 3.4E-03 | 13% |
| 5D2 | 1.8E-04 | 0.42% | 1.6E-04 | 0.62% | 1.6E-04 | 0.60% |
| 5D3 | 2.9E-04 | 0.68% | 2.1E-04 | 0.83% | 2.6E-04 | 0.97% |
| S501 | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| S502 | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 8D31 | 1.8E-04 | 0.41% | 9.0E-05 | 0.36% | 9.5E-05 | 0.36% |
| 1D4 | 9.2E-04 | 2.2% | 1.0E-03 | 4.1% | 8.0E-04 | 3.0% |
| 2D1 | 2.3E-04 | 0.54% | 1.4E-04 | 0.57% | 2.4E-04 | 0.89% |
| 3D1 | 1.4E-04 | 0.32% | 5.7E-05 | 0.23% | 6.9E-05 | 0.26% |

**TABLE 29**

**POTENTIAL ACUTE HAZARD INDEXES BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE - THE RESPIRATORY HEALTH EFFECTS ENDPOINT ONLY[1]**

Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #6363 | | Maximum Exposed Individual Resident (MEIR) Receptor #2041 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|
| Source ID | 2013 | Relative Contribution | 2013 | Relative Contribution | 2013 | Relative Contribution |
| 3D4 | 1.4E-04 | 0.32% | 8.7E-05 | 0.35% | 1.4E-04 | 0.53% |
| 3D5 | 9.3E-05 | 0.22% | 6.5E-05 | 0.26% | 9.3E-05 | 0.35% |
| 999D | 9.3E-03 | 22% | 2.5E-03 | 10% | 3.1E-03 | 12% |
| 7PD7 | 1.8E-04 | 0.41% | 5.6E-05 | 0.22% | 2.9E-05 | 0.11% |
| 6A | 1.8E-03 | 4.3% | 8.1E-04 | 3.2% | 6.4E-04 | 2.4% |
| 6B | 6.9E-04 | 1.6% | 2.1E-04 | 0.82% | 1.1E-03 | 4.1% |
| 6C | 6.3E-04 | 1.5% | 7.9E-04 | 3.2% | 8.2E-04 | 3.1% |
| 6D | 1.9E-03 | 4.3% | 1.6E-03 | 6.5% | 1.1E-03 | 4.2% |
| 4A | 2.9E-03 | 6.7% | 9.2E-04 | 3.6% | 1.2E-03 | 4.4% |
| 4B | 2.4E-03 | 5.6% | 1.5E-03 | 6.0% | 1.5E-03 | 5.8% |
| 4C | 2.0E-03 | 4.6% | 6.8E-04 | 2.7% | 9.3E-04 | 3.5% |
| 4D | 2.0E-03 | 4.8% | 1.8E-03 | 7.2% | 1.2E-03 | 4.6% |
| SUM | 4.3E-02 | 100% | 2.5E-02 | 100% | 2.6E-02 | 100% |

Notes:

1. Maximum acute hazard index was highest for respiratory effects. Hazard indexes for other target systems/organs were lower. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix J.

**TABLE 30**

**POTENTIAL CARCINOGENIC RISK BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12476 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Acetaldehyde | 75070 | Kiln | 6.1E-10 | 0.0% | 8.4E-10 | 0.0% | 6.1E-11 | 0.0% |
| Acrolein | 107028 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Arsenic | 7440382 | Raw material | 1.4E-06 | 6.8% | 6.0E-07 | 8.6% | 1.3E-07 | 14% |
| Benz(a)anthracene | 56553 | Kiln | 8.1E-12 | 0.0% | 1.1E-11 | 0.0% | 7.3E-13 | 0.0% |
| Benzene | 71432 | Kiln | 5.1E-08 | 0.3% | 7.0E-08 | 1.0% | 5.1E-09 | 0.5% |
| Benzo(a)pyrene | 50328 | Kiln | 1.8E-12 | 0.0% | 2.5E-12 | 0.0% | 1.6E-13 | 0.0% |
| Benzo(b)fluoranthene | 205992 | Kiln | 1.2E-12 | 0.0% | 1.6E-12 | 0.0% | 1.0E-13 | 0.0% |
| Benzo(k)fluoranthene | 207089 | Kiln | 1.8E-13 | 0.0% | 2.5E-13 | 0.0% | 1.6E-14 | 0.0% |
| Benzyl chloride | 100447 | Kiln | 9.2E-10 | 0.0% | 1.3E-09 | 0.0% | 9.1E-11 | 0.0% |
| Beryllium | 7440417 | Raw material | 4.5E-08 | 0.3% | 2.1E-08 | 0.3% | 2.9E-09 | 0.3% |
| 1,3-Butadiene | 106990 | Kiln | 2.9E-09 | 0.0% | 4.0E-09 | 0.1% | 2.9E-10 | 0.0% |
| Cadmium | 7440439 | Raw material | 1.5E-07 | 0.9% | 6.9E-08 | 1.0% | 9.4E-09 | 1.0% |
| Carbon Tetrachloride | 56235 | Kiln | 4.9E-10 | 0.0% | 6.7E-10 | 0.0% | 4.9E-11 | 0.0% |
| Chlorobenzene | 108907 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Chloroform | 67663 | Kiln | 2.9E-11 | 0.0% | 4.0E-11 | 0.0% | 2.9E-12 | 0.0% |
| Chromium VI | 18540299 | Byproduct of manufacturing | 1.4E-05 | 84% | 5.7E-06 | 81% | 7.1E-07 | 77% |
| Chrysene | 218019 | Kiln | 2.4E-12 | 0.0% | 3.3E-12 | 0.0% | 2.1E-13 | 0.0% |
| Copper | 7440508 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Crystalline silica | 1175 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Dibenz(a,h)anthracene | 53703 | Kiln | 6.6E-13 | 0.0% | 9.1E-13 | 0.0% | 6.0E-14 | 0.0% |
| p-Dichlorobenzene | 106467 | Kiln | 1.3E-10 | 0.0% | 1.7E-10 | 0.0% | 1.2E-11 | 0.0% |
| 1,1-Dichloroethane | 75343 | Kiln | 6.0E-12 | 0.0% | 8.3E-12 | 0.0% | 6.0E-13 | 0.0% |
| 1,2-Dichloropropane | 78875 | Kiln | 9.1E-11 | 0.0% | 1.2E-10 | 0.0% | 9.0E-12 | 0.0% |
| 1,3-Dichloropropene | 542756 | Kiln | 3.2E-10 | 0.0% | 4.5E-10 | 0.0% | 3.2E-11 | 0.0% |
| Diesel PM | 9901 | Stationary | 5.1E-07 | 3.0% | 2.7E-07 | 3.9% | 3.8E-08 | 4.1% |
| Ethyl Chloride | 75003 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Ethylbenzene | 100414 | Kiln | 4.5E-10 | 0.0% | 6.1E-10 | 0.0% | 4.4E-11 | 0.0% |
| Ethylene dibromide | 106934 | Kiln | 8.0E-10 | 0.0% | 1.1E-09 | 0.0% | 7.9E-11 | 0.0% |
| Ethylene dichloride | 107062 | Kiln | 9.1E-11 | 0.0% | 1.3E-10 | 0.0% | 9.0E-12 | 0.0% |
| Formaldehyde | 50000 | Kiln | 7.0E-11 | 0.0% | 9.7E-11 | 0.0% | 7.0E-12 | 0.0% |
| 1,2,3,4,6,7,8-HpCDD | 35822469 | Kiln | 6.5E-12 | 0.0% | 8.9E-12 | 0.0% | 7.2E-13 | 0.0% |

**TABLE 30**

**POTENTIAL CARCINOGENIC RISK BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12476 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| 1,2,3,4,6,7,8-HpCDF | 67562394 | Kiln | 3.1E-12 | 0.0% | 4.3E-12 | 0.0% | 3.5E-13 | 0.0% |
| 1,2,3,4,7,8,9-HpCDF | 55673897 | Kiln | 8.1E-13 | 0.0% | 1.1E-12 | 0.0% | 9.0E-14 | 0.0% |
| 1,2,3,4,7,8-HxCDD | 39227286 | Kiln | 1.8E-11 | 0.0% | 2.5E-11 | 0.0% | 2.0E-12 | 0.0% |
| 1,2,3,6,7,8-HxCDD | 57653857 | Kiln | 1.8E-11 | 0.0% | 2.4E-11 | 0.0% | 2.0E-12 | 0.0% |
| 1,2,3,7,8,9-HxCDD | 19408743 | Kiln | 1.9E-11 | 0.0% | 2.6E-11 | 0.0% | 2.1E-12 | 0.0% |
| 1,2,3,4,7,8-HxCDF | 70648269 | Kiln | 2.7E-11 | 0.0% | 3.8E-11 | 0.0% | 3.0E-12 | 0.0% |
| 1,2,3,6,7,8-HxCDF | 57117449 | Kiln | 2.6E-11 | 0.0% | 3.5E-11 | 0.0% | 2.8E-12 | 0.0% |
| 1,2,3,7,8,9-HxCDF | 72918219 | Kiln | 8.7E-12 | 0.0% | 1.2E-11 | 0.0% | 9.6E-13 | 0.0% |
| 2,3,4,6,7,8-HxCDF | 60851345 | Kiln | 1.6E-11 | 0.0% | 2.2E-11 | 0.0% | 1.8E-12 | 0.0% |
| Hydrochloric Acid | 7647010 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Indeno(1,2,3-c,d)pyrene | 193395 | Kiln | 1.3E-13 | 0.0% | 1.9E-13 | 0.0% | 1.2E-14 | 0.0% |
| Lead | 7439921 | Raw material | 3.0E-09 | 0.0% | 1.4E-09 | 0.0% | 2.7E-10 | 0.0% |
| Manganese | 7439965 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Mercury | 7439976 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methyl Bromide | 74839 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methyl chloroform (1,1,1-trichloroethane) | 71556 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Methylene chloride | 75092 | Kiln | 2.4E-11 | 0.0% | 3.3E-11 | 0.0% | 2.4E-12 | 0.0% |
| Naphthalene | 91203 | Kiln | 8.9E-10 | 0.0% | 1.2E-09 | 0.0% | 8.8E-11 | 0.0% |
| Nickel | 7440020 | Raw material | 4.7E-07 | 2.8% | 2.5E-07 | 3.6% | 3.0E-08 | 3.2% |
| 1,2,3,4,6,7,8,9-OCDD | 3268879 | Kiln | 1.4E-13 | 0.0% | 1.9E-13 | 0.0% | 1.5E-14 | 0.0% |
| 1,2,3,4,6,7,8,9-OCDF | 39001020 | Kiln | 3.1E-14 | 0.0% | 4.3E-14 | 0.0% | 3.4E-15 | 0.0% |
| 1,2,3,7,8-PeCDD | 40321764 | Kiln | 1.6E-10 | 0.0% | 2.2E-10 | 0.0% | 1.8E-11 | 0.0% |
| 1,2,3,7,8-PeCDF | 57117416 | Kiln | 6.2E-11 | 0.0% | 8.5E-11 | 0.0% | 6.9E-12 | 0.0% |
| 2,3,4,7,8-PeCDF | 57117314 | Kiln | 9.2E-10 | 0.0% | 1.3E-09 | 0.0% | 1.0E-10 | 0.0% |
| Perchloroethylene | 127184 | Kiln | 5.9E-11 | 0.0% | 8.1E-11 | 0.0% | 5.9E-12 | 0.0% |
| Selenium | 7782492 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Styrene | 100425 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 2,3,7,8-TCDD | 1746016 | Kiln | 1.6E-10 | 0.0% | 2.2E-10 | 0.0% | 1.7E-11 | 0.0% |
| 2,3,7,8-TCDF | 51207319 | Kiln | 7.8E-10 | 0.0% | 1.1E-09 | 0.0% | 8.6E-11 | 0.0% |
| 1,1,2,2-Tetrachloroethane | 79345 | Kiln | 4.3E-10 | 0.0% | 5.9E-10 | 0.0% | 4.2E-11 | 0.0% |

**TABLE 30**

**POTENTIAL CARCINOGENIC RISK BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY CHEMICAL**

Lehigh Southwest Cement Company

Cupertino Facility

| Chemical [1] | CAS Number | Primary Emission Category [2] | Point of Maximum Impact (PMI) Receptor #12476 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|---|---|
| | | | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| Toluene | 108883 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| 1,1,2-Trichloroethane | 79005 | Kiln | 1.6E-10 | 0.0% | 2.2E-10 | 0.0% | 1.6E-11 | 0.0% |
| Trichloroethylene | 79016 | Kiln | 1.6E-11 | 0.0% | 2.2E-11 | 0.0% | 1.6E-12 | 0.0% |
| Vanadium | 1314621 | Raw material | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Vinyl Chloride | 75014 | Kiln | 2.0E-09 | 0.0% | 2.8E-09 | 0.0% | 2.0E-10 | 0.0% |
| Vinylidene chloride | 75354 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| o-xylene | 95476 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| Xylenes (mixed) | 1330207 | Kiln | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% | 0.0E+00 | 0.0% |
| **Total Risk (Including LASF) [3]** | | | **1.7E-05** | 100% | **7.0E-06** | 100% | **9.3E-07** | 100% |

Notes

1. All Evaluated toxic air contaminants (TACs) are presented; not all are considered carcinogenic. Results for TACs that are not considered carcinogenic are shaded.
2. An emission category is presented for each chemical to provide information on where the chemicals originate in the cement manufacturing process. The same chemical may originate from different parts of the manufacturing process, but only the primary source of the chemical is provided.
   Kiln - A byproduct of natural gas combustion to heat the kiln for the manufacture of cement and other chemicals identified during a source test of the kiln.
   Raw material - A chemical that occurs naturally in the raw materials used to manufacture cement.
   Byproduct of manufacturing - Hexavalent chromium concentrations increase from those in the raw materials during manufacture of cement. Primary emission occur during material handling and storage.
   Stationary sources - Emissions from combustion of fuel for stationary sources, such as emergency generators and welders.
3. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime.

Abbreviations

LASF - Lifetime age sensitivity factor

-- = not applicable to adult worker receptor

**TABLE 31**
**POTENTIAL CARCINOGENIC RISK BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY**
Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #12476 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|
| Source ID | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| KILN | 7.6E-08 | 0% | 1.0E-07 | 2% | 7.7E-09 | 1% |
| 5D11_20 | 1.0E-06 | 6.0% | 6.2E-07 | 8.9% | 8.9E-08 | 9.6% |
| 5D23 | 3.6E-07 | 2.2% | 1.9E-07 | 2.8% | 2.1E-08 | 2.3% |
| 5D27 | 8.9E-08 | 0.5% | 5.0E-08 | 0.7% | 5.5E-09 | 0.6% |
| 5D28 | 9.4E-08 | 0.6% | 5.7E-08 | 0.8% | 4.5E-09 | 0.5% |
| 6D17 | 8.2E-07 | 4.9% | 4.3E-07 | 6.2% | 4.0E-08 | 4.3% |
| 6D2 | 6.6E-07 | 4.0% | 3.9E-07 | 5.7% | 3.3E-08 | 3.6% |
| 6D8 | 2.4E-07 | 1.5% | 1.3E-07 | 1.9% | 1.2E-08 | 1.3% |
| 7 | 3.5E-08 | 0.2% | 2.2E-08 | 0.3% | 4.3E-09 | 0.5% |
| 8 | 2.6E-08 | 0.2% | 8.5E-09 | 0.1% | 2.7E-09 | 0.3% |
| 3 | 3.0E-07 | 1.8% | 1.1E-07 | 1.6% | 2.1E-08 | 2.3% |
| 5 | 1.4E-07 | 0.9% | 9.2E-08 | 1.3% | 1.0E-08 | 1.1% |
| 2 | 8.3E-08 | 0.5% | 4.6E-08 | 0.7% | 7.6E-09 | 0.8% |
| 1 | 5.0E-08 | 0.3% | 3.3E-08 | 0.5% | 5.1E-09 | 0.5% |
| 6D1 | 1.1E-06 | 6.6% | 6.0E-07 | 8.7% | 6.9E-08 | 7.4% |
| 6D19 | 7.2E-07 | 4.3% | 2.6E-07 | 3.8% | 2.6E-08 | 2.8% |
| 6D12 | 6.2E-07 | 3.7% | 2.6E-07 | 3.7% | 2.7E-08 | 2.9% |
| 4D4 | 9.7E-09 | 0.1% | 9.9E-09 | 0.1% | 1.3E-09 | 0.1% |
| 4D3 | 9.6E-09 | 0.1% | 9.9E-09 | 0.1% | 1.3E-09 | 0.1% |
| 5D1 | 1.1E-08 | 0.1% | 9.7E-09 | 0.1% | 1.5E-09 | 0.2% |
| 5D6 | 4.5E-08 | 0.3% | 4.7E-08 | 0.7% | 4.7E-09 | 0.5% |
| 5D5 | 4.1E-08 | 0.2% | 4.4E-08 | 0.6% | 4.6E-09 | 0.5% |
| 5D2 | 1.1E-08 | 0.1% | 1.0E-08 | 0.1% | 1.5E-09 | 0.2% |
| 5D3 | 1.9E-08 | 0.1% | 1.6E-08 | 0.2% | 2.5E-09 | 0.3% |
| S501 | 2.3E-08 | 0.1% | 2.9E-08 | 0.4% | 2.3E-09 | 0.2% |
| S502 | 1.9E-07 | 1.1% | 4.4E-08 | 0.6% | 9.0E-09 | 1.0% |
| 8D31 | 1.5E-08 | 0.1% | 1.1E-08 | 0.2% | 1.7E-09 | 0.2% |
| 1D4 | 3.6E-08 | 0.2% | 4.9E-08 | 0.7% | 3.2E-09 | 0.3% |
| 2D1 | 2.0E-08 | 0.1% | 1.4E-08 | 0.2% | 1.6E-09 | 0.2% |
| 3D1 | 1.9E-08 | 0.1% | 1.6E-08 | 0.2% | 1.1E-09 | 0.1% |
| 3D4 | 1.2E-08 | 0.1% | 1.8E-08 | 0.3% | 1.3E-09 | 0.1% |
| 3D5 | 5.4E-09 | 0.0% | 6.9E-09 | 0.1% | 7.0E-10 | 0.1% |
| 999D | 4.0E-06 | 24.2% | 1.2E-06 | 16.9% | 1.4E-07 | 14.7% |

**TABLE 31**
**POTENTIAL CARCINOGENIC RISK BASED ON 2013 PRODUCTION AT THE PMI, MEIW AND MEIR BY SOURCE AND PATHWAY**
Lehigh Southwest Cement Company
Cupertino Facility

| | Point of Maximum Impact (PMI) Receptor #12476 | | Maximum Exposed Individual Resident (MEIR) Receptor #2042 | | Maximum Exposed Individual Worker (MEIW) Receptor #5076 | |
|---|---|---|---|---|---|---|
| Source ID | 2013 | % Cont. | 2013 | % Cont. | 2013 | % Cont. |
| 7PD7 | 3.0E-07 | 1.8% | 1.5E-07 | 2.2% | 1.3E-08 | 1.4% |
| 6A | 5.7E-07 | 3.4% | 2.6E-07 | 3.8% | 3.1E-08 | 3.3% |
| 6B | 1.8E-07 | 1.1% | 1.4E-07 | 1.9% | 4.7E-08 | 5.0% |
| 6C | 3.0E-07 | 1.8% | 2.1E-07 | 3.0% | 2.9E-08 | 3.1% |
| 6D | 3.9E-07 | 2.3% | 3.7E-07 | 5.3% | 3.9E-08 | 4.2% |
| 4A | 1.1E-06 | 6.4% | 1.8E-07 | 2.6% | 4.7E-08 | 5.1% |
| 4B | 1.3E-06 | 7.9% | 2.1E-07 | 3.0% | 6.4E-08 | 6.8% |
| 4C | 7.6E-07 | 4.5% | 2.1E-07 | 3.1% | 4.3E-08 | 4.6% |
| 4D | 9.1E-07 | 5.4% | 3.1E-07 | 4.4% | 5.6E-08 | 6.1% |
| Inhalation Pathways | 1.6E-05 | 93% | 6.5E-06 | 93% | 8.2E-07 | 88% |
| Non-Inhalation Pathways | 1.1E-06 | 7% | 4.7E-07 | 7% | 1.1E-07 | 12% |
| TOTAL (including | 1.7E-05 | 100% | 7.0E-06 | 100% | 9.3E-07 | 100% |

Note
1. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime.

Abbreviations
LASF - Lifetime age sensitivity factor
-- = not applicable to adult worker receptor

# FIGURES


| | |
|---|---|
| JOB NO.: | 0111910000 |
| DATE: | 6/02/2010 |
| SCALE: | 1" = 10 kms |
| PROJ: | UTM Zone 10 |
| DATUM: | NAD 83 |



# Lehigh Southwest Cement Company
# Cupertino Facility

Facility Location

FIGURE 1

AMEC Geomatrix


**Explanation**

- Point Sources
- Building Outline

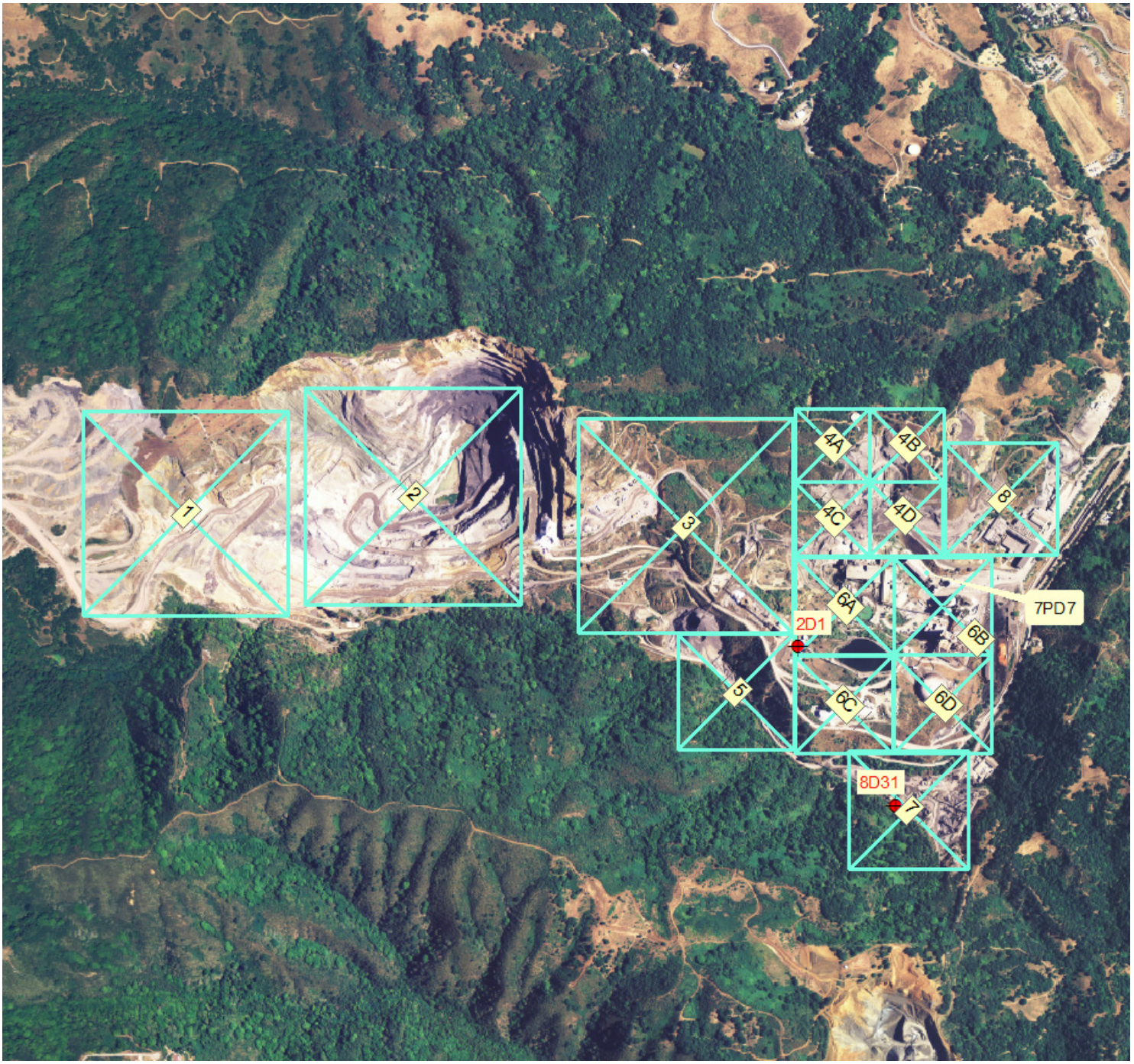
| | |
|---|---|
| JOB NO. | 01119100000 |
| DESIGN: | SO |
| DRAWN: | AMEC E&E |
| DATE: | 8/19/2010 |
| SCALE: | |

Lehigh Southwest Company – Cupertino Facility

Point Sources in the Main Operations Area and Buildings Used in the Air Dispersion Modeling

Figure 2A

AMEC Geomatrix



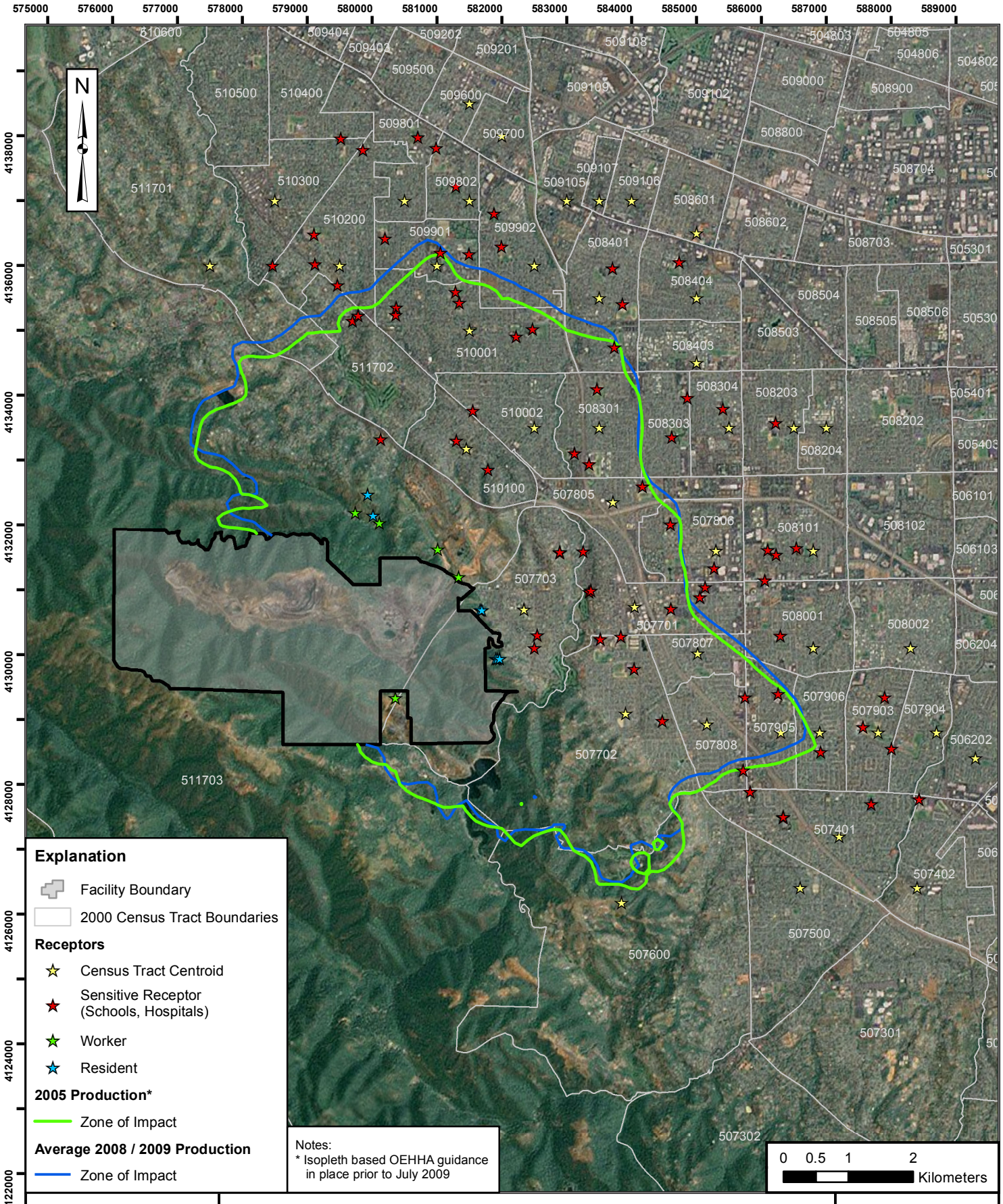

**Explanation**

2D1 and 8D31 Point Sources

Volume Sources including 7PD7

| | | | |
|---|---|---|---|
| JOB NO. | 01119100000 | Lehigh Southwest Company – Cupertino Facility | |
| DESIGN: | SO | | |
| DRAWN: | AMEC E&E | | |
| DATE: | 8/20/2010 | Volume Fugitive Sources and Point Sources Outside the Main Operations Area | Figure 2B |
| SCALE: | | | |

AMEC Geomatrix




**Explanation**

- Facility Boundary
- 2000 Census Tract Boundaries

**Receptors**

- Census Tract Centroid
- Sensitive Receptor (Schools, Hospitals)
- Worker
- Resident

**2005 Production***

- Zone of Impact

**Average 2008 / 2009 Production**

- Zone of Impact

Notes:
* Isopleth based OEHHA guidance in place prior to July 2009

| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 01/03/2011 |
| SCALE: | 1" = 2 km |

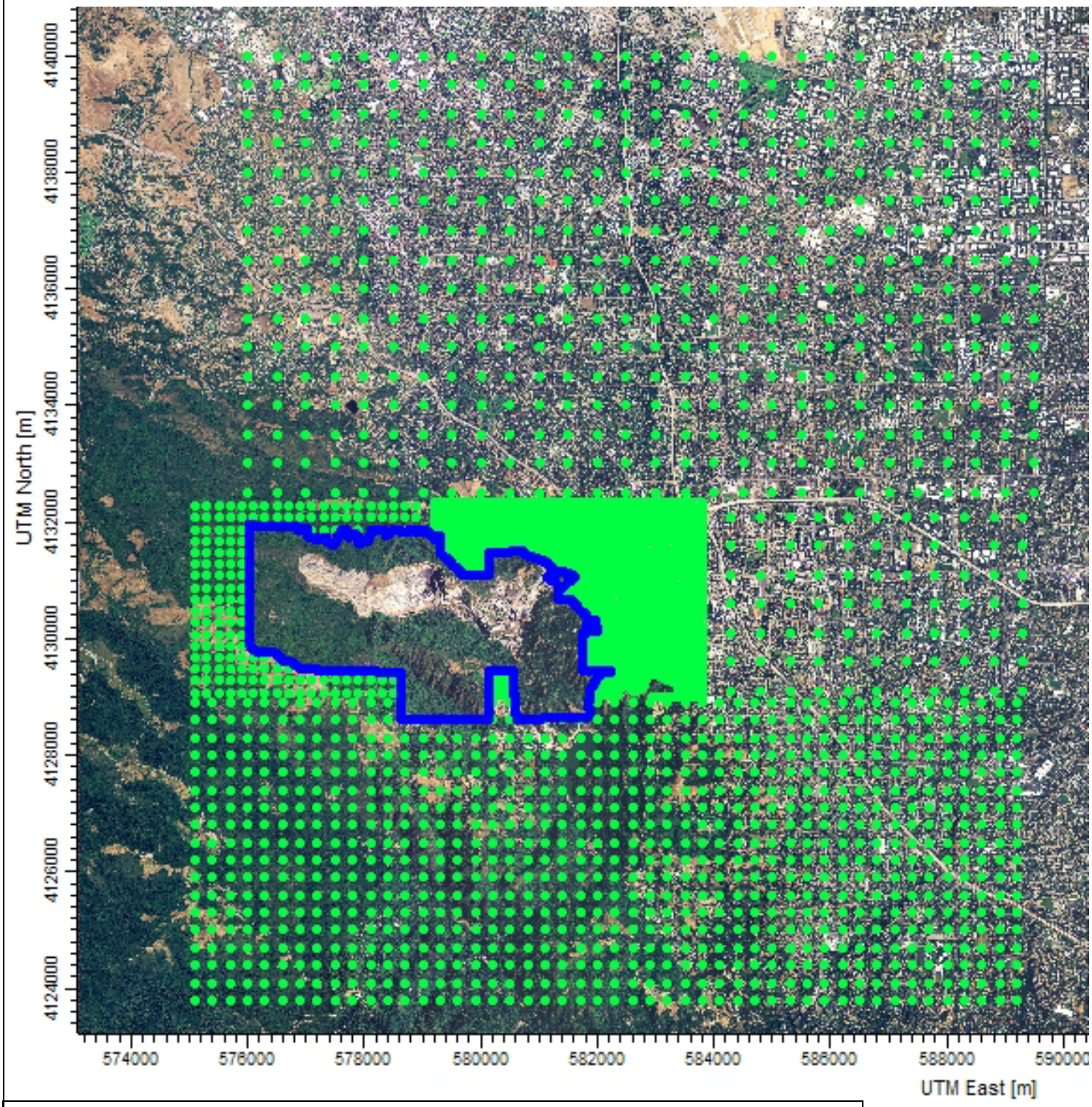
Lehigh Southwest Company - Cupertino Facility

Receptors Used in Air Dispersion Modeling
Key Receptors, Sensitive Receptors, Centroid Receptors

Figure 3A

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure3-A_01032011.mxd




**Explanation**

Receptor Types:

Grid  Fence line

Note: Areas on the figure that appear solid have a high density of receptors (30 meter x 30 meter). The spacing between these receptors cannot be seen at this scale.

| | |
|---|---|
| JOB NO. | 01119100000 |
| DESIGN: | SO |
| DRAWN : | AMEC E&E |
| DATE: | 3/23/2011 |
| SCALE: | |

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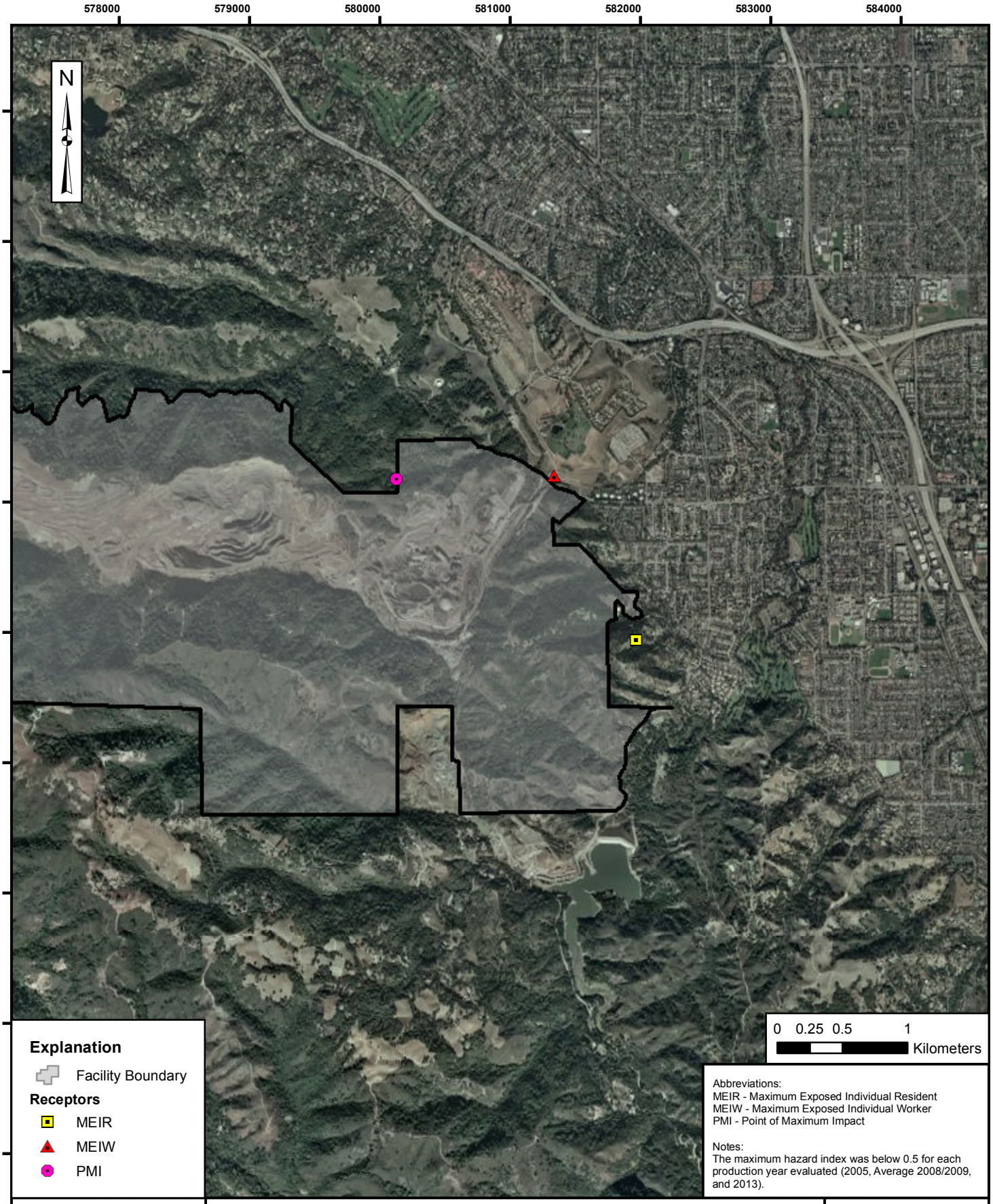
Receptor Locations Used in the Air Dispersion Modeling - Grid and Fence Line Receptors

Figure 3B

AMEC Geomatrix




**Explanation**

Facility Boundary

**Receptors**

MEIR

MEIW

PMI

Abbreviations:
MEIR - Maximum Exposed Individual Resident
MEIW - Maximum Exposed Individual Worker
PMI - Point of Maximum Impact

Notes:
The maximum hazard index was below 0.5 for each production year evaluated (2005, Average 2008/2009, and 2013).

| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 03/03/2011 |
| SCALE: | 1" = 2 km |

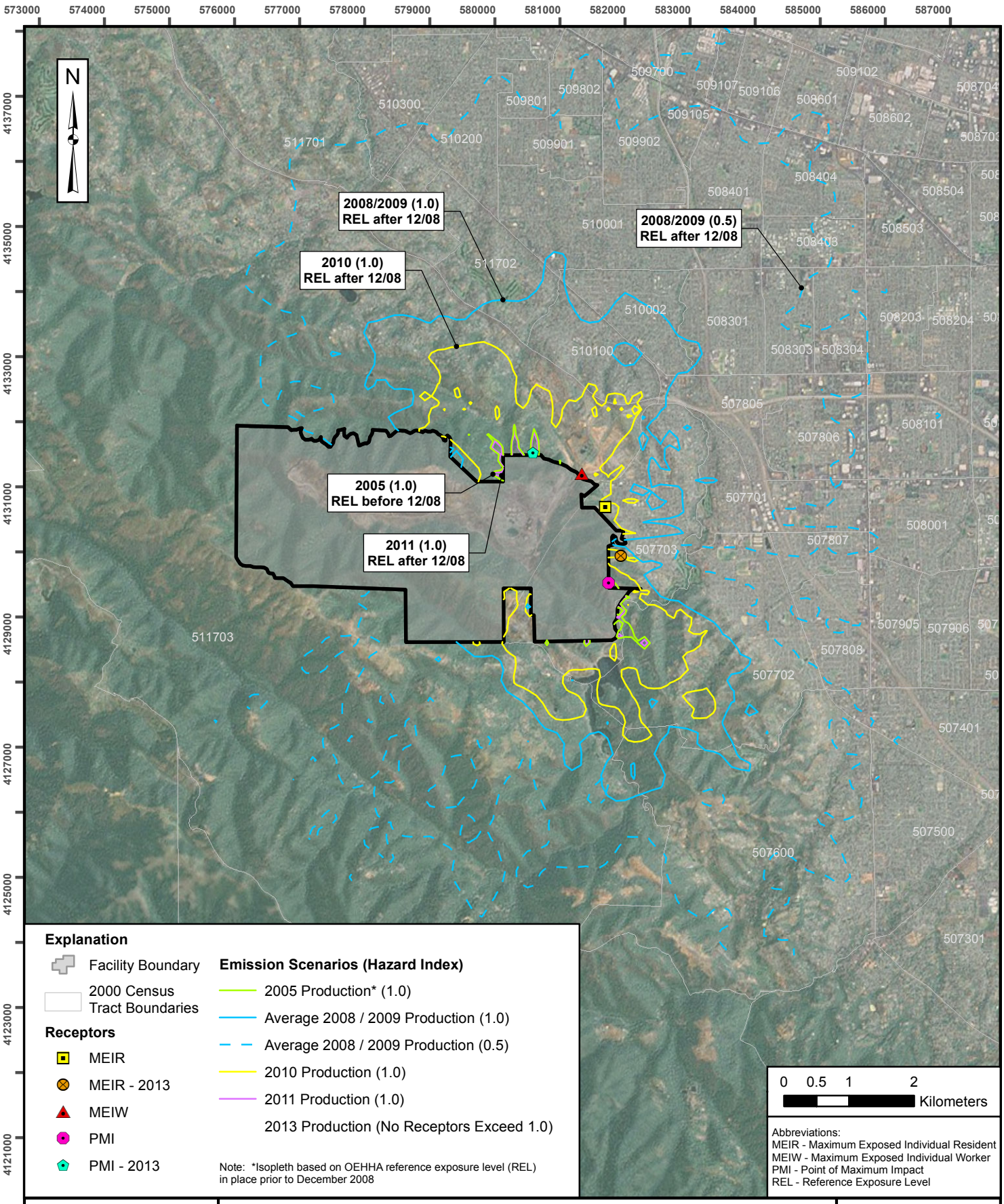
Lehigh Southwest Company - Cupertino Facility

Chronic Noncarcinogenic Hazard Index - Key Receptors

Figure 4

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure4_New.mxd




| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 03/03/2011 |
| SCALE: | 1" = 2 km |

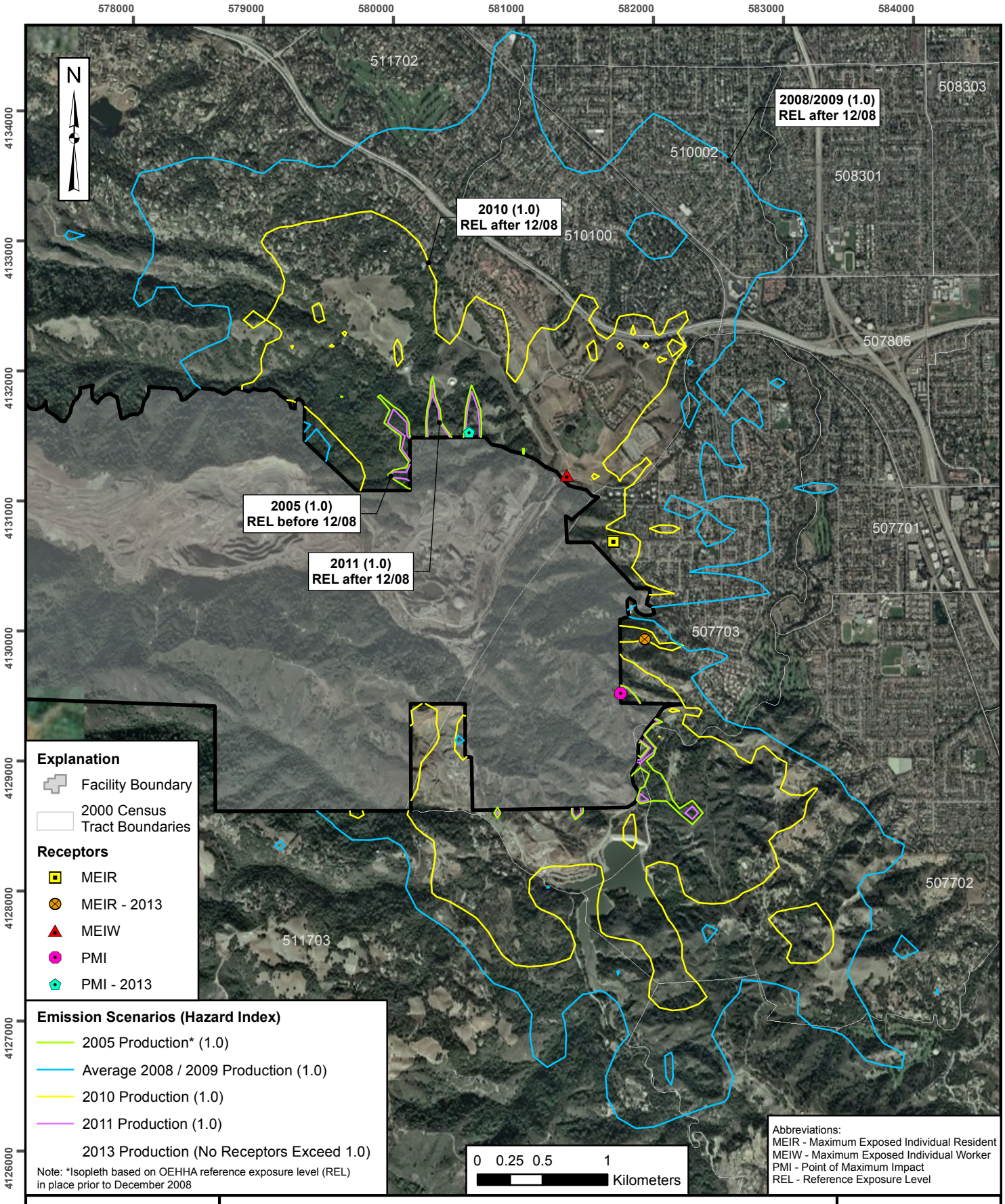
Lehigh Southwest Company - Cupertino Facility

Acute Noncarcinogenic Hazard Isopleths for Developmental Health Effects

Figure 5

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure5_New.mxd




| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 03/03/2011 |
| SCALE: | 1" = 2 km |

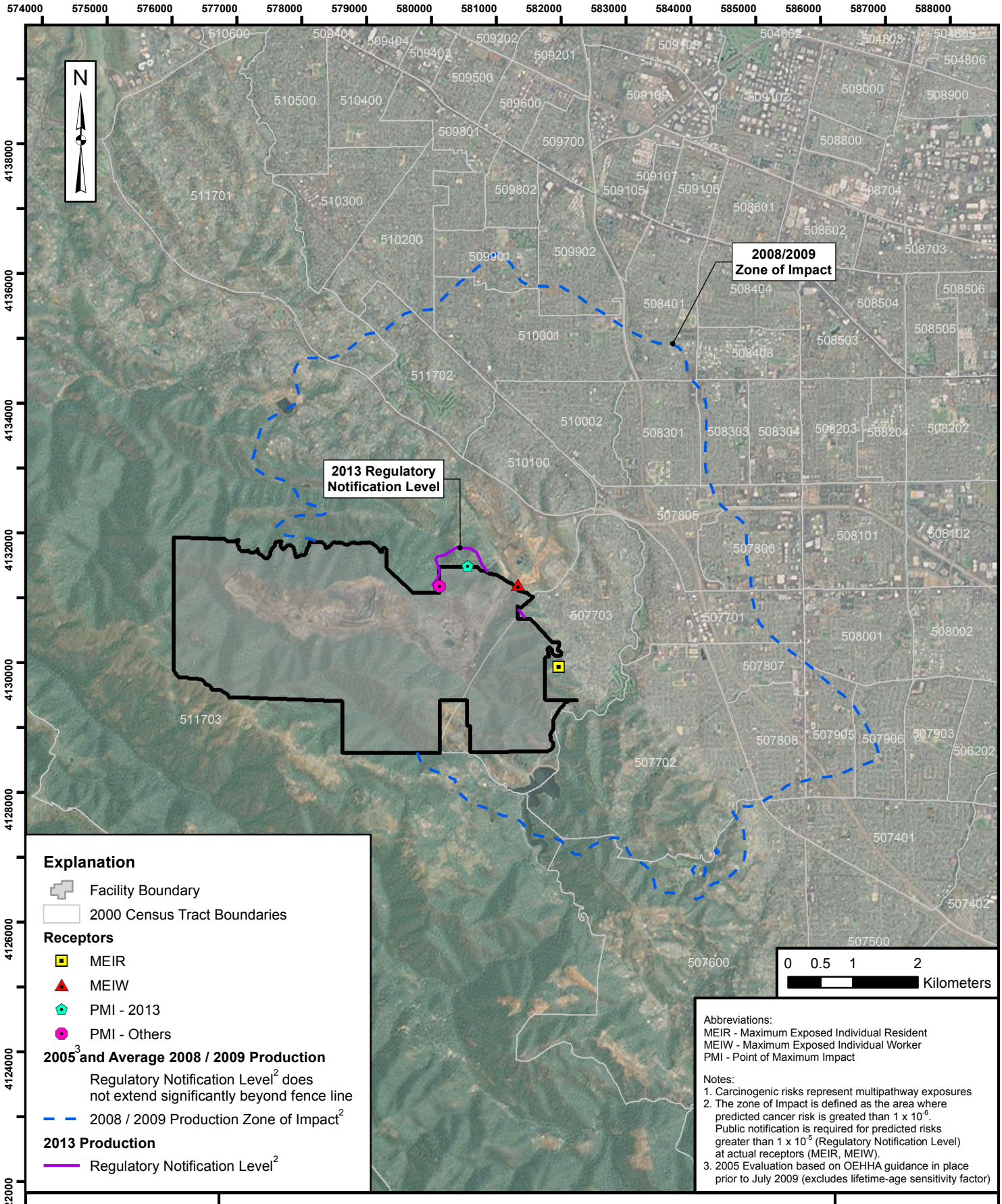
Lehigh Southwest Company - Cupertino Facility

Acute Noncarcinogenic Hazard Isopleths for Developmental Health Effects within 3 Kilometers of the Facility

Figure 5A

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure5a.mxd




| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 03/03/2011 |
| SCALE: | 1" = 2 km |

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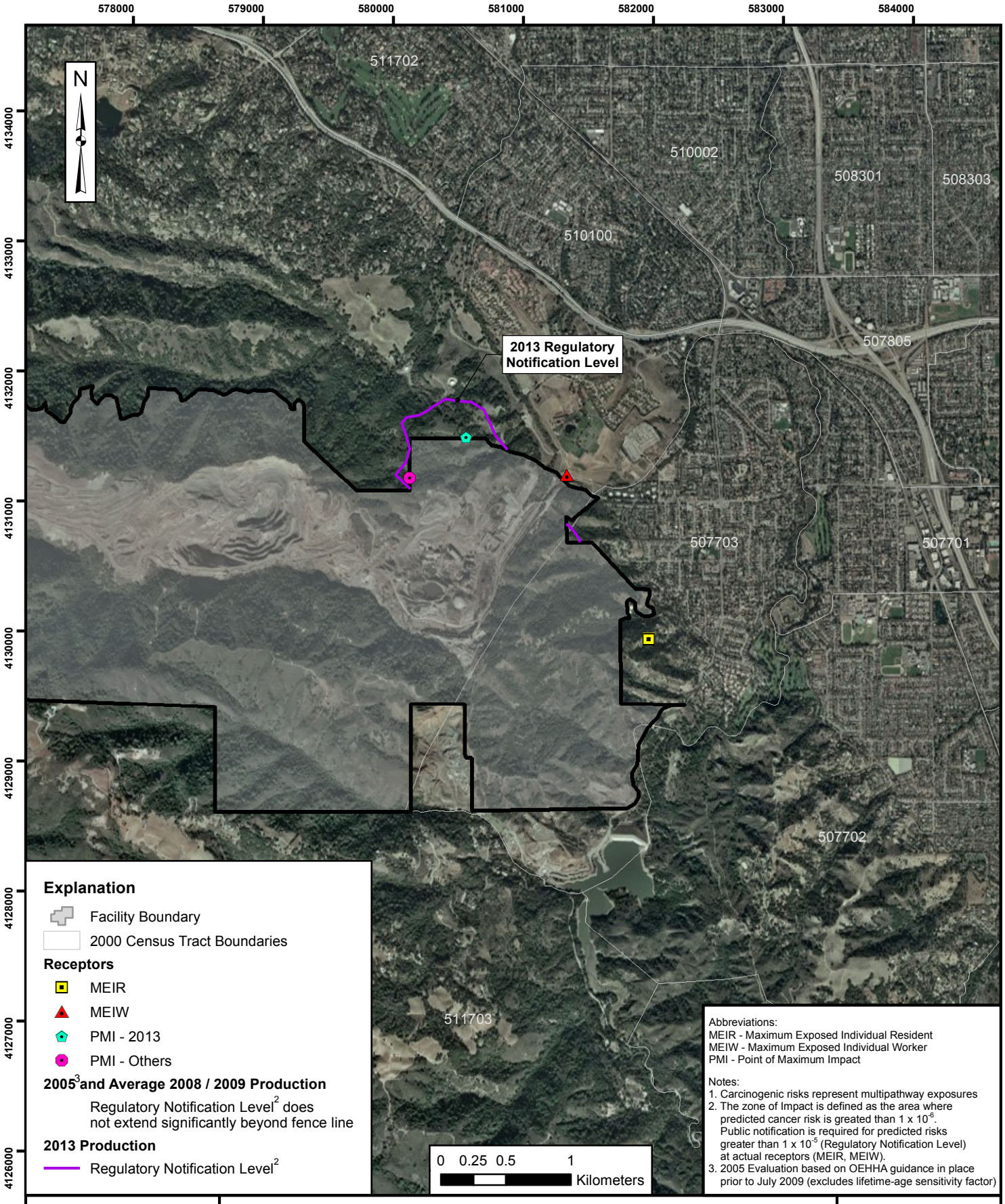
Carcinogenic Risk Isopleths[1]

Figure 6

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure6_New.mxd




| | |
|---|---|
| JOB NO. | 0111910000 |
| DESIGN: | SO |
| DRAWN: | AMEC GIS |
| DATE: | 03/03/2011 |
| SCALE: | 1" = 2 km |

Lehigh Southwest Company - Cupertino Facility

Carcinogenic Risk Isopleths within 3 Kilometers of the Facility[1]

Figure 6A

AMEC Geomatrix

Path: X:\Projects\0111910000\MXD\Figure6A.mxd

**APPENDIX A-J**

Included on enclosed CDs

*(see CD[1])*

[1] To download Acrobat Reader, go to http://www.adobe.com/ and click on “Get Adobe Reader.”