2013 Health Risk Assessment

Lehigh Southwest Cement Company
Cupertino, California

Prepared for:

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Cupertino, California

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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.

Cancer burden: A population-level cancer risk estimate where the population is multiplied by a cancer risk estimated for a representative location in the census tract. The result of this calculation is an estimate of the number of cancer cases expected from a 70-year exposure to estimated facility emissions.

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 incremental excess likelihood of developing 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 effects 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 the noncarcinogenic hazard index. Higher thresholds (cancer risk of 10^{-4} and a hazard index of 10) are used by BAAQMD to determine if emission reduction plans are required.

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 AB2588 health risk assessment. The regulatory notification level (see above) is the level at which public notification is required.

ABBREVIATIONS AND ACRONYMS

BAAQMD	Bay Area Air Quality Management District
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
GLC	Ground Level Concentrations
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

2013 HEALTH RISK ASSESSMENT
Lehigh Southwest Cement Company
Cupertino, California

EXECUTIVE SUMMARY

This report provides the results of a health risk assessment (HRA) conducted by AMEC Environment & Infrastructure, Inc. (AMEC) for Lehigh Southwest Cement Company (Lehigh), Permanente Plant, in Cupertino, California (the Facility). On September 19, 2012, the Bay Area Air Quality District (BAAQMD) adopted Regulation 9 Rule 13, requiring all Portland Cement Manufacturing facilities in their jurisdiction to comply with emission limits, operating practices, monitoring, reporting, and recordkeeping requirements adopted in the Rule by September 9, 2013. Rule 13 (Rule or Rule 13) establishes kiln and clinker cooler vent emissions limits, opacity limits for all point sources and miscellaneous operations, kiln stack continuous emissions monitoring (CEMS) requirements for NOx, and fugitive dust mitigation control measures. In addition, Rule 13 requires an HRA; therefore, the purpose of this HRA is to address the following Rule requirements:

9-13-303 Effective September 9, 2013, no person shall operate a Portland cement manufacturing facility unless emissions from the kiln are monitored as per Section 9-13-501 and enter the atmosphere from a point or points that, at maximum potential to emit, or maximum permitted emission level, when combined with other facility emissions, have been demonstrated not to exceed the notification threshold established under Air Toxics “Hot Spots” Information and Assessment Act requirements as codified in California Health and Safety Code Section 44300 et al. and the Districts’ Air Toxics Hot Spots program.

9-13-404 Health Risk Assessment: Prior to construction or modification to emission points from the kiln or clinker cooler, the operator of a Portland cement manufacturing facility shall complete and submit to the District a health risk assessment, conducted according to Health Risk Assessment Guidelines adopted by Cal/EPA’s Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics Hot Spots Program. District review of the HRA shall be conducted concurrent to review of application of authority to construct and permit to operate submitted for emission point modification(s).

Therefore, the adoption of BAAQMD Regulation 9 Rule 13 prompted this 2013 HRA. To comply with emissions monitoring requirements in the Rule, Lehigh must redesign both the kiln and clinker cooler to emit from single stacks. However, the HRA is required before construction on the kiln or clinker cooler can begin. Lehigh previously submitted a Final HRA to BAAQMD on March 3, 2011, *Revised AB2588 Health Risk Assessment for 2005, Average*

2008/2009, and 2013 Production Scenarios (AMEC, 2011b). The objectives of the 2011 HRA were to establish baseline risk estimates, evaluate off-site impacts considering new BAAQMD HRA guidance (BAAQMD, 2010), and present several interim scenarios to account for changes in annual production and emissions reduction measures for the kiln. In addition, this HRA presented a future scenario for projected emissions in 2013 assuming that production rates were at a maximum level (1,600,000 tons of clinker), emissions met National Emission Standards for Hazardous Air Pollutants (NESHAPs) requirements, and that the kiln at the Facility would be reconfigured to emit from a single 300 foot stack rather than the 32 rooftop stacks currently in place. Although a similar tall single kiln exhaust stack and emissions based on maximum production of 1,600,000 tons per year were presented in the 2011 HRA, the kiln stack design parameters and location were only projected; this HRA is updated with specific design plans of the kiln stack and clinker cooler stacks.

Lehigh anticipates that the kiln and clinker cooler stack construction will be completed by January 2015. Therefore, in negotiation with BAAQMD for the purposes of this HRA, Lehigh has agreed to estimate two years of exposure to the current Facility configuration and the remaining exposure duration to the future Facility configuration with the proposed single kiln and clinker cooler stacks. Exposure adjustment factors are applied to the long term health risks (carcinogenic risk and chronic noncarcinogenic hazards) in order to combine exposure over the duration of exposure specific to the receptor as follows:

- Resident: 2 / 70 year lifetime (current) and 68 / 70 year lifetime (future)
- Worker: 2 / 40 year occupational duration (current) and 38 / 40 year occupational duration (future)
- Student: 2 / 9 year duration (current) and 7 / 9 year duration (future)

The emission estimates are assumed to remain constant between the two different Facility configurations.

Revisions to AB2588 HRA based on Comments from BAAQMD on the Draft Modeling Protocol

A Draft Modeling Protocol (Modeling Protocol) for the AB2588 HRA Report was submitted to the BAAQMD on June 5, 2013 (AMEC, 2013). BAAQMD provided several comments to the Modeling Protocol via a letter dated September 3, 2013 (BAAQMD, 2013b) as summarized below:

1. Perform modeling with two meteorological data sets; a new 2010/2011 data set developed by BAAQMD and the 2006 data set proposed in the Protocol and used in the previous HRA;

2. Use higher resolution terrain data i.e., a 10-meter National Elevation Dataset (NED); and
3. Use tighter receptor grid spacing (10-15 meters) to supplement the proposed 30-meter grid in residential areas near the facility where modeled contaminant concentrations are 80% or more of AB2588 notification levels.

Results for Maximum Annual Production

The HRA evaluates off-site air concentrations and health risks associated with the substances emitted from the Facility based on maximum production rates and other permitted limits as detailed below in the HRA Report Summary. Specifically, the results presented assume that production rates are at a maximum level (1,600,000 tons of clinker) and that the proposed structural changes to the kiln and clinker cooler stacks are in place within a maximum of two years.

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 occurred in an open-space area north and east of the Facility where no permanent receptors are present. The requirement for notification under AB2588 was evaluated based on results at actual receptors (MEIR and MEIW), and was not based on conditions at the PMI given that a receptor was not present at that location. As presented in Table ES-1, 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 AB2588 "Air Toxics Hot Spots" program (OEHHA, 2003). The HRA was prepared as follows:

- Emissions were developed assuming maximum facility production (1,600,000 tons of clinker). Specifically, annual average and maximum hourly emissions are consistent with the "2013 Production Scenario" evaluated in the 2011 HRA (AMEC, 2011b), with the following exceptions:
    - Annual average emissions of benzene, hexavalent chromium, and mercury from the kiln were obtained from an HRA Addendum prepared by BAAQMD (BAAQMD, 2013a) and then scaled up to maximum production from the annual production in the year the emissions were calculated from:
        - Benzene: 1,600,000 tons / 999,774 tons (Average 2009, 2011, and 2012 clinker production)
        - Hexavalent chromium and mercury: 1,600,000 tons / 1,127,500 tons (2012 clinker production)

- Annual average and maximum hourly emissions from feed materials and stockpiles with analytical non-detect results for hexavalent chromium, were assumed to have zero hexavalent chromium emissions. The 2008 CEIR conservatively quantified hexavalent chromium in these sources at half the laboratory analytical reporting limit.
- Maximum hourly mercury emissions from the kiln were evaluated at the current permitted emission limit (0.064 lb/hour; Title V permit [BAAQMD, 2013c] and Permit to Construct [BAAQMD, 2013d]).

- Air dispersion coefficients developed as part of site-specific air dispersion modeling using AERMOD and presented herein were used to predict off-site ground level chemical concentrations; and
- The Hotspots Analysis and Reporting Program (HARP) model developed by the California Air Resources Board (ARB) was used to perform the calculations for carcinogenic, chronic noncarcinogenic, and acute noncarcinogenic health effects at the MEIR, MEIW, and PMI. The PMI in this case is in open space near the Facility and does not represent a location that is occupied or otherwise used by actual receptors

Sixty-nine chemicals regulated under AB2588 were identified as being emitted from 42 sources at the Facility. For the purpose of understanding where these chemicals originate in the cement manufacturing process, each chemical was assigned to a primary emission category. 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 maximum annual Facility production. 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, 2013).

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 $1x10^{-6}$ and impacts within this area must be quantified), to identify the potentially exposed populations, and to quantify potential health risks. The level of cancer risk used to define the ZOI is different from the BAAQMD regulatory notification level of $1.0x10^{-5}$, the cancer risk level above which public notification is generally required by BAAQMD.

Chronic Noncarcinogenic Health Hazards

To account for exposure to dispersion from both current and future stack configurations, the health hazards were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration
- Workers - 2 years / 40 years for the current stack configuration and 38 / 40 for the future stack configuration.

The highest target organ-specific chronic hazard index (HI) for the MEIR (receptor #13886) was 0.13. The highest target organ-specific chronic HI for the MEIW (receptor #65) was 0.13. The organ/system endpoint with the highest HI was the respiratory system. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

The predicted chronic noncarcinogenic HI at the PMI (receptor #1716) was 0.29. The organ/system endpoint with the highest chronic HI was the respiratory system. The predicted chronic noncarcinogenic HI is below the BAAQMD regulatory notification level of 1.0. The chemical contributing most significantly to predicted chronic HI is arsenic (63 percent), which occurs naturally in the raw materials used to make cement. The fugitive emissions from the cement plant processes contribute most significantly to the chronic HI (23 to 46 percent).

Acute Noncarcinogenic Health Hazards

Because acute noncarcinogenic effects are based on the predicted maximum one-hour concentrations, acute exposure is too short to estimate combined exposure from both Facility stack configurations. Therefore, the acute hazards are presented separately for both current and future stack configurations.

The highest predicted target organ-specific acute HIs for the MEIR (receptors #11396 and #12566) were 0.84 and 0.47, respectively, based on the current and future stack configuration scenarios. The highest target organ-specific chronic HIs for the MEIW (receptors #65 and #57) were 0.65 and 0.35, respectively, based on the current and future stack configuration scenarios. The organ/system endpoints with the highest HIs were the reproductive and developmental endpoints for the current Facility stack configuration and the immune system for the future Facility stack configuration. The values for the MEIW and MEIR were below the BAAQMD regulatory notification level of 1.0 for both the current and future stack configurations.

Predicted acute noncarcinogenic HI at the PMI (receptor #1637) was 1.8 and 0.66, respectively, based on the current and future stack configuration scenarios. For the current stack configuration, the predicted acute noncarcinogenic HI is greater than the BAAQMD regulatory notification level of 1.0 at the PMI. The chemical contributing most significantly to predicted acute hazard is mercury (96 to 97 percent), which occurs naturally in the raw materials used to make cement. Of all of the modeled sources at the Facility, the kiln contributes most significantly to the acute HI (98 to 99 percent). There is no actual off-site receptor at the location of the PMI, which is in open space at the northern Facility fence line. The AB2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility. In addition, for the proposed future stack configuration, the predicted acute noncarcinogenic HI of 0.66 is below the BAAQMD regulatory notification level of 1.0 at the PMI.

Potential Carcinogenic Risks

To account for exposure to dispersion from both current and future stack configurations, the carcinogenic risks were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration
- Workers - 2 years / 40 years for the current stack configuration and 38 / 40 for the future stack configuration
- Students – 2 years / 9 years for the current stack configuration and 7 / 9 for the future stack configuration

The theoretical carcinogenic risk for the MEIR (receptor #13886) was 9.5×10^{-6} based on the combined exposure to current and future stack configuration scenarios. The theoretical carcinogenic risk for the MEIW (receptor #65) was 1.0×10^{-6}. The lifetime age sensitivity factor (LASF) does not apply to an adult worker. The predicted risks for the MEIR and MEIW considering combined exposure to current and future stack configuration scenarios and maximum annual production are below the BAAQMD regulatory notification level of 1.0×10^{-5}.

Predicted cancer risk at the PMI (receptor #1716) was 1.8×10^{-5} including the LASF and was 1.1×10^{-5} excluding the LASF. The predicted cancer risk at the PMI for maximum annual production is slightly greater than the BAAQMD's 1.0×10^{-5} regulatory notification level. However, the AB2588 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 (76 to 82 percent) and arsenic (7 to 13 percent). Of the modeled sources at the Facility, the emissions from cement plant process fugitive emissions (Sources 4A through 4D) contribute most significantly to the cancer risk (18 to 42 percent).

Sensitive Receptors

Sensitive receptors include schools, day care centers, and hospitals. The carcinogenic risk estimated for these sensitive receptors ranged from 4.4×10^{-7} to 1.5×10^{-6} based on maximum Facility production rates. These cancer risk estimates are below the BAAQMD regulatory notification level of 1.0×10^{-5}.

Population Cancer Burden

The predicted excess cancer burden was 0.19 based on maximum permitted annual Facility production of 1,600,000 tons of clinker. These results are lower than 1, indicating that over a 70-year period under the worst-case exposure assumptions, there is less than a one-in-a-million chance that a 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 unacceptable increased incidence of cancer from emissions at the maximum production evaluated.

2013 HEALTH RISK ASSESSMENT
Lehigh Southwest Cement Company
Cupertino, California

1.0 INTRODUCTION

A health risk assessment (HRA) was conducted by AMEC Environment & Infrastructure, Inc. (AMEC) for Lehigh Southwest Cement Company (Lehigh), Permanente Plant, in Cupertino, California (the Facility). On September 19, 2012, the Bay Area Air Quality District (BAAQMD) adopted Regulation 9 Rule 13, requiring all Portland Cement Manufacturing facilities in their jurisdiction to comply with emission limits, operating practices, monitoring, reporting, and recordkeeping requirements adopted in the Rule by September 9, 2013. Rule 13 establishes kiln and clinker cooler vent emissions limits, opacity limits for all point sources and miscellaneous operations, kiln stack continuous emissions monitoring (CEMS) requirement for NOx, and fugitive dust mitigation control measures. In addition, Rule 13 requires an HRA; therefore, the purpose of this HRA is to address the following BAAQMD Rule requirements:

9-13-303 Effective September 9, 2013, no person shall operate a Portland cement manufacturing facility unless emissions from the kiln are monitored as per Section 9-13-501 and enter the atmosphere from a point or points that, at maximum potential to emit, or maximum permitted emission level, when combined with other facility emissions, have been demonstrated not to exceed the notification threshold established under Air Toxics "Hot Spots" Information and Assessment Act requirements as codified in California Health and Safety Code Section 44300 et al. and the Districts' Air Toxics Hot Spots program.

9-13-404 Health Risk Assessment: Prior to construction or modification to emission points from the kiln or clinker cooler, the operator of a Portland cement manufacturing facility shall complete and submit to the District a health risk assessment, conducted according to Health Risk Assessment Guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics Hot Spots Program. District review of the HRA shall be conducted concurrent to review of application of authority to construct and permit to operate submitted for emission point modification(s).

Emissions were developed assuming maximum facility production (1,600,000 tons of clinker) and compliance with specific emission limits in Regulation 9, Rule 13. A Comprehensive Emission Inventory Report (CEIR) for 2008 was primarily used as the basis for the AB2588 HRA (AMEC, 2009 and updated in Lehigh, 2009; AMEC, 2010 and 2011a) and scaled up to maximum production. Annual average emissions of benzene, hexavalent chromium, and mercury from the kiln were obtained from an HRA Addendum prepared by BAAQMD (BAAQMD, 2013a) and scaled up accordingly.

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 the maximum annual clinker production of 1,600,000 short tons per year.

This section provides the following additional information:

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

1.1 BACKGROUND ON AB2588 PROGRAM

The purpose of the AB2588 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 SUMMARY OF THE PREVIOUS AB2588 HRA

Lehigh previously submitted a Final HRA to BAAQMD on March 3, 2011, *Revised AB2588 Health Risk Assessment for 2005, Average 2008/2009, and 2013 Production Scenarios* (AMEC, 2011b). The objectives of the 2011 HRA were to establish baseline risk estimates, evaluate off-site impacts considering new BAAQMD HRA guidance (BAAQMD, 2010), and present several interim scenarios to account for changes in annual production and emissions reduction measures for the kiln. The HRA identified an annual production rate of 951,790 short tons of clinker that would result in predicted cancer risks just below the $1.0x10^{-5}$ notification level at the maximum exposed individual resident (MEIR) should operating conditions remain constant. In addition, this HRA presented a future scenario for projected emissions in 2013 assuming that production rates were at a maximum level (1,600,000 tons of clinker), emissions met National Emission Standards for Hazardous Air Pollutants (NESHAPs) requirements, and that the kiln at the Facility would be reconfigured to emit from a single 300 foot stack rather than the 32 rooftop stacks currently in place.

1.2 OBJECTIVES OF THE 2013 AB2588 HRA

The adoption of BAAQMD Regulation 9 Rule 13 prompted this HRA. To comply with emissions monitoring requirements in the Rule, Lehigh must redesign both the kiln and clinker cooler to emit from single stacks. However, the HRA is required before construction on the kiln or clinker cooler can begin. Although a similar tall single kiln stack and emissions based on maximum production of 1,600,000 tons per year were presented in the 2011 HRA to demonstrate compliance with federal standards, the kiln stack design parameters and location were projected; this HRA is updated with specific design plans of the kiln stack and clinker cooler and is designed to demonstrate compliance with Rule 13.

The specific objectives of this HRA are to: (1) estimate off-site air concentrations of the substances emitted from the Facility based on maximum production rates and specific emission limits in Regulation 9, Rule 13 or other permitted/potential to emit limits, (2) estimate off-site air concentrations based on the specific designs of the proposed single kiln stack and single clinker cooler stack, (3) evaluate potential exposures to the surrounding community, and (4) characterize the potential health risks to individuals and the exposed population associated with those levels of exposure.

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). Refined air dispersion models use more robust calculations than screening models and are capable of using local meteorological data to predict more representative estimates of off-site impacts.

1.3 REVISIONS TO THE AB2588 HRA BASED ON COMMENTS FROM BAAQMD

A Draft Modeling Protocol for the AB2588 HRA Report was submitted to the BAAQMD on June 5, 2013 (AMEC, 2013). BAAQMD provided several comments to the Modeling Protocol via a letter dated September 3, 2013 (BAAQMD, 2013b) as summarized below:

1. Perform modeling with two meteorological data sets; a new 2010/2011 data set developed by BAAQMD and the 2006 data set proposed in the Protocol and used in the previous HRA;
2. Use higher resolution terrain data: 10-meter National Elevation Dataset (NED); and
3. Use tighter receptor grid spacing (10-15 meters) in residential areas near the facility that are 80% or more of AB2588 notification levels to supplement the proposed 30-meter grid;

Therefore, AMEC obtained the 2010 meteorological data set from BAAQMD and modeled emissions using both the 2006 and 2010 data. This HRA presents the maximum results for each health effect endpoint (cancer, chronic hazards and acute hazards) based on the results from both the 2006 and 2010 data sets. In addition, the 10-meter NED data was used to import receptor elevations used in the air dispersion modeling. Lastly, a finer 15-meter residential receptor grid was added in areas that were above 80% of the AB2588 notification thresholds ($8x10^{-6}$ for cancer risk and an index of 0.8 for chronic and acute noncancer hazards) based on preliminary modeling. This resulted in more than doubling of the number of receptors modeled; a total of 30,956 receptors were evaluated, compared to 13,226 in the previous AB2588 HRA prepared for the Facility (AMEC, 2011b).

1.4 FACILITY DESCRIPTION

Raw materials are both 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 plant primary operations area and the majority of point sources are shown in Figure 2A, including the kiln and clinker cooler stack locations (designated “5D11_20” for the current location and “CLNKSTK” at the proposed location). Figure 2B presents a refined view of the proposed single kiln stack location (designated “kiln”) in relation to existing buildings and point sources. Figure 2C presents an expanded view of the Facility showing the mine area, point sources distant from the main operation area, and fugitive emission sources. The Facility is surrounded in the immediate vicinity by undeveloped land consisting of open space preserves and county parks. The nearest residence MEIR is located east of the Facility and the nearest commercial/industrial property MEIW] is located northeast of the Facility (Figure 3A).

The processes contributing to the release of AB2588 reportable chemicals include:

- Cement kiln (1 point source)
- Plant baghouses (24 point sources)
- Plant baghouses (1 volume source from inside a building)
- 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 that were used in the air dispersion model. In the current configuration, the kiln exhaust is passed through a dust collection system that has 32 individual emission points. In order to show compliance with the emissions monitoring requirements of BAAQMD Section 9-13-501, Lehigh is proposing to install a manifold and route the 32 individual emission points into a single exhaust stack. The proposed stack will be designed such that operation at the maximum capacity (1,600,000 short tons per year of cement clinker) and maximum permitted emission levels, when combined with other facility emissions, will not exceed the notification thresholds established under Air Toxics “Hot Spots” Information and Assessment Act. In addition to the kiln stack, a single clinker cooler vent stack will be installed. The clinker cooler vent is currently vented through 9 individual stacks. Per Lehigh, the new kiln stack will be constructed to the southeast of the kiln and will be completed in early 2015.

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

Section 7.0: References - This section presents the references used in this risk assessment.

2.0 HAZARD IDENTIFICATION

The regulations that implement the requirements of AB2588 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, 2010) and the Mercury Emission Protocol (AMEC, 2011a) did not change the number of chemicals, but resulted in 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 and maximum hourly emissions that are consistent with the “2013 Production Scenario” evaluated in the 2011 HRA (AMEC, 2011b), with specific exceptions noted in Section 3.1.2.

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: diesel particulate matter (stationary sources) and hexavalent chromium (byproduct of manufacturing).

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 groups (Table 3). In some cases emissions from fugitive sources occurred in two or three volume source groups. In these cases the emissions were divided evenly between the source groups with the exception of welding equipment. Emissions for welding equipment were apportioned based on the relative percent use in each of the volume source groups. 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 (with a refined view in Figure 2B) and Figure 2C 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.

The kiln and the clinker cooler exhaust stacks were modeled using two different configurations: current and future. Both set of input parameters are presented in Table 2. In the current configuration, the kiln exhaust is passed through a dust collection system that has 32 individual emission points on the kiln roof (18 meters in height). The future kiln emissions will be vented to a single exhaust stack that is 90 meters in height and located southeast of the kiln. In the current clinker cooler configuration, the emissions are vented through 9 individual horizontal stacks that are approximately 23 meters in height. The future clinker cooler emissions will be vented to a single vertical exhaust stack that is 45.7 meters in height and located slightly northeast of its current location (Figure 2A).

3.1.2 Emission Estimates

The "2013 Production Scenario" published in the 2011 HRA is the primary source of emission estimates used in this HRA. The emissions reported by Lehigh in the 2008 CEIR (AMEC, 2009 and updated in Lehigh, 2009; AMEC, 2010 and 2011a) reflected high production operating conditions based on production in 2005. Production rates for 2005 were used for the 2008 CEIR as requested by the BAAQMD. Production at the Facility in 2005 was among the highest production years over the previous ten years. The "2013 Production Scenario" presented in the 2011 HRA used the annual average emission estimates from the CEIR and increased them by a ratio of 1.14. This ratio was developed by dividing the maximum annual production of clinker (1,600,000 tons) by the 2005 annual production from the CEIR (1,399,692 tons). The ratio of 1.14 was applied to all Facility emissions related to cement and clinker production to estimate maximum emissions for those sources. Specifically, the ratio was applied to all controlled (e.g. permitted dust collectors) and fugitive dust emissions (e.g. process fugitives and dust entrainment) 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. The "2013 Production Scenario" presented in the 2011 HRA used the maximum hourly emission estimates from the 2008 CEIR, with the exception of mercury, which was adjusted to NESHAPs emission limits (AMEC, 2011a)

For the cement kiln and the finish mill baghouses, TAC source test data was available. For the other sources, including the clinker cooler, 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.

Specifically, annual average and maximum hourly emissions used in this 2013 HRA are consistent with the "2013 Production Scenario" evaluated in the 2011 HRA (AMEC, 2011b), with the following exceptions:

- Annual average emissions of benzene, hexavalent chromium, and mercury from the kiln were obtained from an HRA Addendum prepared by BAAQMD (BAAQMD, 2013a) and then scaled up to maximum production from the annual production in the year the emissions were calculated from:
    - Benzene: 1,600,000 tons / 999,774 tons (Average 2009, 2011, and 2012 clinker production)
    - Hexavalent chromium and mercury: 1,600,000 tons / 1,127,500 tons (2012 clinker production)
- Annual average and maximum hourly emissions from feed materials and stockpiles with analytical non-detect results for hexavalent chromium, were assumed to have zero hexavalent chromium emissions. The 2008 CEIR conservatively quantified hexavalent chromium in these sources at half the laboratory analytical reporting limit.
- Maximum hourly mercury emissions from the kiln were evaluated at the current permitted emission limit (0.064 lb/hour; Title V permit [BAAQMD, 2013c] and Permit to Construct [BAAQMD, 2013d]).

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

- Table 4A presents emissions from the kiln

- Table 4B presents emissions from the other point sources (dust collectors); and
- Table 4C presents emissions from volume sources and emergency diesel generators.

Maximum hourly emissions are presented in Tables 5A to 5C as follows:

- Table 5A presents emissions from the kiln;
- Table 5B presents emissions from the dust collector point sources; and
- Table 5C presents emissions from the volume sources and emergency diesel generators.

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 populations potentially exposed to the air emissions from the Facility. This analysis includes identification of the PMI 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 HIs or carcinogenic risk is referred to as the 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 evaluated 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 1200 meters east of the Facility operations near the property boundary. The nearest occupational receptors are approximately 1000 meters northeast of the Facility operations near the property boundary. The PMI, which is approximately 800 meters north of the Facility at the property fence line, was neither a residential or commercial/industrial receptor. Receptors also were placed on various grid spacing (30 to 500 meters) covering an area approximately 19 kilometers from east to west and 20 kilometers from north to south (Figure 3B). Per BAAQMD's request, a15-meter grid spacing was used in the residential area nearest the Facility (Figure 3C). The development of the receptor network is described in more detail in Section 3.3.1.4. 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 is shown on Figure 3A and is summarized in Table 6.

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 population numbers within geographic areas defined by census tracts. Based on modeling, the ZOI for the Facility included or intersected 26 census tracts (discussed further in Section 5.2.1). The residential population was obtained from the Year 2010 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 1.4f) developed by CARB (CARB, May 2012) 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 recommendations in a letter from Mr. Barry Young dated September 3, 2013.

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 12345, dated 12/17/2012) 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 13016; 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 13016; U.S. EPA, 2013) 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 proposed using the previously accepted receptor network but revised the receptor network based on BAAQMD comments on the modeling protocol. AMEC first ran a coarse nested receptor network and HARP to define the boundaries of the 80% hotspot thresholds. The receptor grid was defined as follows:

- Fenceline receptors were spaced at 50 meters;
- A rectangular bounding box around the fenceline was defined with receptor spacing of 50 meters;
- A 100 meter spaced grid from the bounding box out to 1 km;
- A 200 meter spaced grid from 1 km out to 2 km from the bounding box; and
- A 500 meter spaced grid from 2 km out to 5 km from the bounding box.

A revised receptor grid was then constructed based on the 80% hotspot isopleths extents in the northern, southern, western and eastern directions. Based on this analysis a receptor grid defined with an initial bounding box at an origin of 579321 UTM-N, 4128009 UTM-S and 3100 meter east west and 4200 meter north south distance. The resulting bounding box incorporated the 80% hotspot isopleths and the following nested grid was defined.

- Fenceline receptors were spaced at 10 meters;
- 15 meter spaced receptors within the bounding box;
- 30 meter spaced grid from the bounding box out to 90 meters;
- 50 meter spaced grid from 90 meters out to 250 from the bounding box;
- 100 meter spaced grid from 250 m out to 500 m from the bounding box;
- 250 meter spaced grid from 500 m out to 3 km from the bounding box; and
- 500 meter spaced grid from 3 km out to 8 km from the bounding box.

The final resulting receptor grid exceeded the maximum number of receptors allowed in HARP. Based on overlays of the 80% hotspot isopleths, receptors were removed from areas outside of the 80% hotspot isopleths. Select receptors were removed from the southwest, southeast, east and northeast sides of the 15 meter receptor grid. The resulting changes resulted in a mixed 15 meter and 30 meter spaced inner grid. The final grid met the BAAQMD request to have receptors within the 80% hotspot isopleths spaced from 10 to 15 meters.

Receptors were also added at the 2010 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 Figures 3B and 3C present the entire receptor grid and refined grid network used for the modeling analysis, respectively.

Receptor elevations were assigned by using U.S. EPA's AERMAP (version 11103; U.S. EPA, 2011) 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 12345; U.S. EPA, 2012) 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. The meteorological data used in the modeling was collected in 2006 and 2010, with the raw on-site data provided by Lehigh. A wind rose for the 2006 data is provided in Appendix A. 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 twelve compass sectors broken down as follows:

- Sector 1: 0° to 30°
- Sector 2: 30° to 60°
- Sector 3: 60° to 90°
- Sector 4: 90° to 120°
- Sector 5: 120° to 150°
- Sector 6: 150° to 180°
- Sector 7: 180° to 210°
- Sector 8: 210° to 240°
- Sector 9: 240° to 270°
- Sector 10: 270° to 300°
- Sector 11: 300° to 330°
- Sector 12: 330° to 360°

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, March, and April;
- Midsummer with lush vegetation: May, June and July; and
- Autumn with unharvested cropland: August, September and October.

Average surface moisture was assumed. AERSURFACE input and output files were provided on CDROM with the Modeling Protocol (AMEC, 2013) and have not been modified.

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 were provided on CDROM with the Modeling Protocol (AMEC, 2013) and have not been modified.

Based on the above approach, the data completeness for the 2006 data is 97.14 percent with 251 missing hours. The data meets the U.S. EPA completeness criteria of 90 percent.

BAAQMD also supplied a 2010 AERMET meteorological dataset. Details of the surface parameters from the AERSURFACE model and upper air, surface, and onsite meteorological data files were not provided. The data completeness for the 2010 data is 98.14 percent with 163 missing hours. The 2010 data also 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. Consistent with the previous HRA (AMEC, 2011b), 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) to simplify the modeling effort without materially changing the results. 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 presents a refined view of the proposed single kiln stack location (designated “kiln”) in relation to existing buildings and point sources. Figure 2C shows the location of fugitive volume sources, including Source 7PD7, and two point sources not located in the primary plant operations portion of the Facility.

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 2C.

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 B).

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. This is consistent with the operating schedule of the Facility; the operating schedule of specific sources is presented in Table 2.

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 (Appendix C).

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 (multipathway 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 multi-pathway 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). Residents are assumed to be exposed for 24 hours per day for 350 days per year for 70 years.

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). The student exposure scenario assumes that exposure occurs via inhalation, dermal absorption, and soil ingestion. The breathing rate is based on a 95th 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 HRA considers off-site impacts from two Facility configuration scenarios: current stacks and a future stack configuration which encompasses the proposed single kiln and clinker cooler stacks. The new stacks are expected to be constructed and operational in 2015. Therefore, in negotiation with BAAQMD for the purposes of this HRA, Lehigh has agreed to estimate two years of exposure to the current Facility configuration and the remaining exposure duration to the future Facility configuration with the proposed single kiln and clinker cooler stacks. Health endpoints evaluated over long-term exposure, carcinogenic and chronic noncarcinogenic effects, are evaluated for a combined exposure to both Facility configurations. Specifically, after being modeled separately in HARP, off-site impacts were added after applying the following exposure adjustment factors to estimate combined 70-year or 40-year exposure to both configurations:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration
- Workers - 2 years / 40 years for the current stack configuration and 38 / 40 for the future stack configuration

Since acute noncarcinogenic effects are evaluated over the short-term using maximum one-hour concentrations, exposure cannot be averaged, but must be considered separately for each Facility configuration.

This HRA presents the maximum results predicted between the 2006 and 2010 meteorological data sets depending on health endpoint and receptor. For carcinogenic and chronic noncarcinogenic effects which are based on annual average concentrations, 2006 was the year with highest impacts for almost 80 percent of all the receptors and two of the three key receptors (MEIW and PMI). For acute noncarcinogenic effects which are based on maximum one-hour concentrations, 2006 was the year with highest impacts for 55 to almost 70 percent of all the receptors for the future and current Facility stack configurations, respectively, but 2010 modeling resulted in the highest impacts for the key receptors (PMI, MEIW, and MEIR).

The MEIR for carcinogenic effects and chronic noncarcinogenic effects was identified as receptor #13886 (for combined current and future Facility stack configurations), for acute noncarcinogenic effects with the current Facility stack configuration was identified as receptor #11396, and for acute noncarcinogenic effects with the future Facility stack configuration was identified as receptor #12566. The MEIW for chronic and acute noncarcinogenic effects and carcinogenic effects was identified as receptor #65. However, the MEIW for acute noncarcinogenic effects with the future Facility stack configuration was identified as receptor #57. Predicted annual average air concentrations at the MEIW and MEIR, sensitive receptor, and census tract locations are presented in Table 8A for 2006 meteorological data modeling and Table 8B for 2010 meteorological data modeling. The values represent average concentrations for combined exposure because they were adjusted using the current and future adjustment factors described above. The maximum hourly air concentrations at the key receptors are presented in Table 9 for the 2010 meteorological data modeling. The values presented represent concentrations from the current Facility stack configuration modeling only since those impacts were estimated to be higher than the future configuration.

HARP modeling input and output is presented in Appendix C.

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, 23 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 health effect end point or organ system 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 chronic non-inhalation exposure was eliminated based on information from OEHHA provided by BAAQMD.

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 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, 2013). 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, 2013). 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 do not support applying a single 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 (Table 9) 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 crystalline silica at PMI (receptor #1716) 2006 meteorological data (Target organ: respiratory system)

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

Where:

$Hazard\ Quotient_{inh}$	=	Hazard quotient for crystalline silica for inhalation exposure pathways
$GLC_{crystalline\ silica}$	=	Ground-level air concentration of crystalline silica at receptor #1716 (0.0348 µg/m^3; Table 8A)
$REL_{crystalline\ silica}$	=	Inhalation reference exposure level for crystalline silica (3.0 µg/m^3; Table 11).

$$Hazard\ Quotient_{inh} = \frac{0.0348\ ug/m^3}{3.0\ ug/m^3}$$

$$= 0.012$$

Therefore, the chronic hazard quotient predicted from inhalation exposure to crystalline silica based on combined exposure to current and future stack configuration emissions at the PMI is 0.012 (Table 12) for effects on the respiratory 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., respiratory or reproductive 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 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 an appreciable 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 HI increases above 1 , the level of regulatory concern and potential need for control increases.

5.1.1 Chronic Noncarcinogenic Results

To account for exposure to dispersion from both current and future stack configurations, the health hazards were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration
- Workers - 2 years / 40 years for the current stack configuration and 38 / 40 for the future stack configuration.

Chemical emissions from the Facility are not expected to pose significant chronic noncarcinogenic health effects under the maximum production emission scenario evaluated. Results for chronic noncarcinogenic health effects are presented in Table 12 by chemical and in 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 required under the AB2588 program.

The highest target organ-specific chronic HI for the MEIR (receptor #13886) was 0.13. The highest target organ-specific chronic HI for the MEIW (receptor #65) was 0.13. The organ/system endpoint with the highest HI was the respiratory system and arsenic contributed most significantly at 57 and 56 percent for the MEIR and MEIW, respectively. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

Predicted chronic noncarcinogenic HI at the PMI (receptor #1716) was 0.29. The organ/system endpoint with the highest chronic HI was also the respiratory system. The predicted chronic noncarcinogenic HIs are below the BAAQMD regulatory notification level of 1.0. The chemical contributing most significantly to predicted chronic HI is arsenic (63 percent), which occurs naturally in the raw materials used to make cement. The fugitive emissions from the cement facility processes (Sources 4A through 4D; Table 13) contribute most significantly to the chronic HI (23 to 46 percent, depending on the receptor).

5.1.2 Acute Noncarcinogenic Results

Because acute noncarcinogenic effects are based on the predicted maximum one-hour concentrations, acute exposure is too short to estimate combined exposure from both Facility stack configurations. Therefore, the acute hazards are presented separately for both current and future stack configurations.

Because acute hazard indexes were predicted above 0.5 at some off-site receptors, a figure with an isopleth is required under the AB2588 program. Results for acute noncarcinogenic health effects are presented in Table 14 by chemical and in Table 15 by source. The geographical area exceeding an acute HI of 0.5 and 1.0 is shown on Figure 4A. Figure 4B presents the same results, but focuses on the geographical area in more detail close to the Facility by providing the map on a larger scale (1 inch = 1 kilometer instead of 1 inch = 2 kilometers in Figure 4A).

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptors #11396 and #12566) were 0.84 and 0.47, respectively, based on the current and future stack configuration scenarios. The highest target organ-specific chronic HIs for the MEIW (receptors #65 and #57) were 0.65 and 0.35, respectively, based on the current and future stack configuration scenarios. The organ/system endpoints with the highest hazard indexes were the reproductive and developmental systems for the current Facility stack configuration, and the immune system for the future Facility stack configuration. The values for the MEIW and MEIR were below the BAAQMD regulatory notification level of 1.0 for both the current and future stack configurations.

Predicted acute noncarcinogenic HI at the PMI (receptor #1637) was 1.8 and 0.66, respectively, based on the current and future stack configuration scenarios. For the current stack configuration, the predicted acute noncarcinogenic HI is greater than the BAAQMD regulatory notification level of 1.0 at the PMI. The chemical contributing most significantly to predicted HI under the current stack configuration is mercury (96 to 97 percent), which occurs naturally in the raw materials used to make cement. The existing kiln configuration is the source that contributes most significantly to the acute HI (98 to 99 percent). While the HI at the PMI exceeds the BAAQMD notification level, it is important to note that there is no specific off-site receptor at the location of the PMI, which is located in an open space area at the northern Facility fence line. The AB2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility. In addition, for the proposed future stack configuration, the predicted acute noncarcinogenic HI of 0.66 is below the BAAQMD regulatory notification level of 1.0 at the PMI. The chemical contributing most significantly to the predicted (immune system) HI under the future stack configuration is nickel (approximately 100 percent), which also occurs naturally in the raw materials used to make cement.

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 PMI, 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 was 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
$Dose_{inh}$	=	Dose through inhalation (mg/kg-d)
CPF_{Inh}	=	Cancer Potency Factor for inhalation $(mg/kg\text{-}d)^{-1}$
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 ($\mu g/m^3$; Table 8A)
DBR	=	Daily Breathing Rate (L/kg-day)
AF	=	Inhalation Absorption Factor (unitless)
EF	=	Exposure Frequency (days/yr)
ED	=	Exposure Duration (years)
10^{-6}	=	conversion factors (mg/µg and m^3/L)
AT	=	Averaging Time for carcinogens (25,550 days)

Under the Derived Adjusted Method, HARP calculates the chemical-specific 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 #13886) 2010 meteorological data

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

Using the above equation with previously defined parameters, the inhalation dose is calculated as follows:

$$\text{Dose}_{\text{inh}} = 2.69 \times 10^{-5} \times 302 \times 350 \text{ x } 70 \times 10^{-6}/25{,}550$$
$$= 7.79 \text{ x} 10^{-9} \text{ mg/kg-d}$$

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 #13886) ($7.79 x 10^{-9}$ 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)

Therefore:

$$\text{Cancer Risk}_{\text{inh}} = 7.79 \text{ x} 10^{-9} \, (mg/kg - d) \times 12 \, (mg/kg - \text{d}))^{-1} \times 1.7)$$
$$= 1.59 \text{x} 10^{-7}$$

For non-inhalation exposures, the theoretical upper-bound excess cancer risk is also estimated assuming that an individual is exposed continuously to a chemical over a 70-year lifetime. Once the lifetime oral dose from non-inhalation pathway is estimated, then the cancer risk is calculated for each carcinogenic TAC 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 $(mg/kg/day)^{-1}$, chemical specific

LASF = Lifetime Age Sensitivity Factor (unitless)

Example Calculation: Cancer Risk for Non-Inhalation Exposure to Arsenic at MEIR (receptor #13886)

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

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 #13886) ($2.41x10^{-7}$ mg/kg/day; the sum of dermal contact, ingestion of soil, and ingestion of vegetables pathways; Appendix C)

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

LASF = Lifetime age sensitivity factor (1.7)

Therefore:

$$Cancer\ Risk_{non-inh} = 2.52x10^{-7} \frac{mg}{kg-d} \times 1.5 \frac{kg-d}{mg} \times 1.7$$

$$= 6.14x10^{-7}$$

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

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

$$= 6.14x10^{-7} + 1.59x10^{-7}$$

$$=7.7x10^{-7}$$

Therefore, the cancer risk from exposure to arsenic at the MEIR (receptor #13886) based on combined exposure to the current and future stack configurations is $7.7x10^{-7}$ (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 are based on predicted cancer risks at the receptors and interpolation of the data between these receptors. 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 does not extend significantly beyond the property boundary (Figure 5A). More definition closer to the property boundary is provided in Figure 5B; as presented, the regulatory notification level only extends over open space immediately north of the fenceline, not any areas permanently occupied.

The modeling results indicated that the ZOI 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 C.

5.2.2 Estimated Theoretical Cancer Risks at Maximum Exposure Locations

To account for exposure to dispersion from both current and future stack configurations, the carcinogenic risks were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration
- Workers - 2 years / 40 years for the current stack configuration and 38 / 40 for the future stack configuration
- Students – 2 years / 9 years for the current stack configuration and 7 / 9 for the future stack configuration

Results for carcinogenic risk are presented in Table 16 by chemical and in Table 17 by source. The zone of impact and carcinogenic risk above the BAAQMD regulatory notification level for maximum annual production are shown on Figure 5A.

The theoretical carcinogenic risk for the MEIR (receptor #13886) was $9.5x10^{-6}$ based on the combined exposure to current and future stack configuration scenarios. The theoretical carcinogenic risk for the MEIW (receptor #65) was $1.0x10^{-6}$. The LASF does not apply to an adult worker. The predicted risks for the MEIR and MEIW considering combined exposure to current and future stack configuration scenarios and maximum annual production are below the BAAQMD regulatory notification level of $1.0x10^{-5}$.

Predicted cancer risk at the PMI (receptor #1716) was $1.8x10^{-5}$ including the LASF and was $1.1x10^{-5}$ excluding the LASF. The predicted cancer risk at the PMI for maximum annual production is slightly greater than the BAAQMD's $1.0x10^{-5}$ regulatory notification level. However, the AB2588 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 (76 to 82 percent) and arsenic (7 to 13 percent). The plant process fugitive emissions (Sources 4A through 4D) contribute most significantly to the cancer risk (18 to 42 percent).

5.2.3 Sensitive Receptors

To account for exposure to dispersion from both current and future stack configurations, the carcinogenic risks were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Students and child care facilities – 2 years / 9 years for the current stack configuration and 7 / 9 for the future stack configuration

Carcinogenic risks at the sensitive receptors within the ZOI for maximum annual production are presented in Table 18. Sensitive receptors include schools and day care centers. The predicted risks using 2006 meteorological data and maximum production rates ranged from $4.4x10^{-7}$ to $1.5x10^{-6}$ and include an age-specific sensitivity factor (ASF). 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 serve children less than 2 years, a weighted ASF was calculated based on the specific child ages accepted at the facility (Table 18). These resulting predicted risks are below $1x10^{-5}$, the level above which notification is required under BAAQMD guidelines.

5.2.4 Population Cancer Burden

To account for exposure to dispersion from both current and future stack configurations, the carcinogenic risks were modeled separately, and the results were added after applying the following exposure adjustment factors to estimate combined exposure:

- Residents - 2 years / 70 years for the current stack configuration; 68 / 70 for the future stack configuration

Consistent with AB2588 guidance, cancer burden was estimated within the ZOI for the Facility for maximum production. 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 the potential for increased cancer. Cancer burden estimates less than 1 indicate that no additional cases of cancer related to the exposure would likely be observed. 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 the population of the census tract. 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 tract is calculated in Table 19 as the product of the predicted cancer risk and the population as follows:

Census Tract Cancer Burden = Population × Predicted Risk at Census Tract Location

The total population cancer burden is the sum of the cancer burden across all census tract locations within the ZOI. There are 26 census tracts relevant to the ZOI for the Facility with a residential population of 130,216. 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 0.19 based on 2006 meteorological data and maximum production rates. Values less than one indicate that over a 70-year period under the worst-case exposure assumptions, there is less than a one-in-a-million chance that a member of the community would be expected to contract cancer based on exposure to Facility emissions.

6.0 CONCLUSIONS

Off-site impacts from maximum Facility production rates were evaluated for two meteorological data sets and two stack configurations (current and future). The HRA presents the maximum results between the 2006 and 2010 meteorological data sets depending on health endpoint (cancer, chronic hazards and acute hazards) and receptor. Since the proposed kiln and clinker cooler stacks are not yet constructed, cancer and chronic noncancer hazards were evaluated for combined exposure to the current and future stack configurations, while acute hazards were evaluated for both stack configurations. 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 HI for the MEIR (receptor #13886) was 0.13. The highest target organ-specific chronic HI for the MEIW (receptor #65) was 0.13. The organ/system endpoint with the highest chronic HI was the respiratory system. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0.

The predicted chronic noncarcinogenic HI at the PMI (receptor #1716) was 0.29. The organ/system endpoint with the highest chronic HI was the respiratory system. The predicted chronic noncarcinogenic HI is below the BAAQMD regulatory notification level of 1.0. The chemical contributing most significantly to predicted chronic HI is arsenic (63 percent), which occurs naturally in the raw materials used to make cement. The fugitive emissions from the cement plant processes contribute most significantly to the chronic HI (23 to 46 percent).

Acute Noncarcinogenic Health Hazards

The highest predicted target organ-specific acute hazard indexes for the MEIR (receptors #11396 and #12566) were 0.84 and 0.47, respectively, based on the current and future stack configuration scenarios. The highest target organ-specific chronic HIs for the MEIW (receptors #65 and #57) were 0.65 and 0.35, respectively, based on the current and future stack configuration scenarios. The organ/system endpoints with the highest hazard indexes were the reproductive and developmental endpoints for the current Facility stack configuration and the immune system for the future Facility stack configuration. The values for the MEIW and MEIR were below the BAAQMD regulatory notification level of 1.0 for both the current and future stack configurations.

Predicted acute noncarcinogenic HI at the PMI (receptor #1637) was 1.8 and 0.66, respectively, based on the current and future stack configuration scenarios. For the current stack configuration, the predicted acute noncarcinogenic HI 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 97 percent), which occurs naturally in the raw materials used to make cement. The kiln contributes most significantly to the acute HI (98 to 99 percent). There is no specific off-site receptor at the location of the PMI, which is in open space at the northern Facility fence line. The AB2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility. In addition, for the proposed future stack configuration, the predicted acute noncarcinogenic HI of 0.66 is below the BAAQMD regulatory notification level of 1.0 at the PMI.

Potential Carcinogenic Risks

The theoretical carcinogenic risk for the MEIR (receptor #13886) was 9.5×10^{-6} based on the combine exposure to current and future stack configuration scenarios. The theoretical carcinogenic risk for the MEIW (receptor #65) was 1.0×10^{-6}. The LASF does not apply to an adult worker. The predicted risks for the MEIR and MEIW considering combined exposure to current and future stack configuration scenarios and maximum annual production are below the BAAQMD regulatory notification level of 1.0×10^{-5}.

Predicted cancer risk at the PMI (receptor #1716) was 1.8×10^{-5} including the LASF and was 1.1×10^{-5} excluding the LASF. The predicted cancer risk at the PMI for maximum annual production is slightly greater than the BAAQMD's 1.0×10^{-5} regulatory notification level. However, the AB2588 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 (76 to 82 percent) and arsenic (7 to 13 percent). The emissions from cement plant process fugitives (Sources 4A through 4D) contribute most significantly to the cancer risk (18 to 42 percent).

Sensitive Receptors

The carcinogenic risk estimated for the sensitive receptors ranged from 4.4×10^{-7} to 1.5×10^{-6} based on maximum Facility production rates; emission estimates are below the BAAQMD regulatory notification level (1.0×10^{-5}). Sensitive receptors include schools, day care centers, and hospitals.

Population Cancer Burden

The predicted excess cancer burden was 0.19 based on maximum Facility production. These results are lower than 1, indicating that over a 70-year period under the worst-case exposure assumptions, there is less than a one-in-a-million chance that a 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 maximum production evaluated.

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.

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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		Chronic Noncancer Hazard Index		Acute Noncancer Hazard Index	
	2006 [1]	2010 [1]	2006 [1]	2010 [1]	2010 [1]	
	Average [3]	Average [3]	Average [3]	Average [3]	Current	Future
Regulatory Notification Level [2]	1E-05		1.0		1.0	
Maximum Exposed Individual Resident (MEIR)	--	9.5E-06	--	0.13	0.84	0.47
Does total exceed regulatory notification level?	--	No	--	No	No	No
Maximum Exposed Individual Worker (MEIW)	1.0E-06	--	0.13	--	0.65	0.35
Does total exceed regulatory notification level?	No	--	No	--	No	No
Point of Maximum Impact (PMI) [4]	1.8E-05	--	0.29	--	1.8	0.66
Does total exceed regulatory notification level?	Yes	--	No	--	Yes	No

Notes:

1. Represents the year of meteorological data used to estimate worst-case results for this receptor.
2. Regulatory notification level is the threshold above which public notification would be required by BAAQMD.
3. 70 year lifetime residential exposure was split between two years with the current kiln and clinker cooler stacks and 68 years with the proposed stack designs.
   For occupational exposure, the 40 year exposure duration was split between two years with the current kiln and clinker cooler stacks and 38 years with the proposed stack designs.
4. Notification would not be required at the PMI because a permanent receptor is not present at this location.

Abbreviations

-- = not applicable

TABLE ES-2

SUMMARY OF FACILITY EMISSION RATES

Lehigh Southwest Cement Company

Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
75070	Acetaldehyde	1.32E+03	1.68E-01
107028	Acrolein	5.13E+01	6.51E-03
7440382	Arsenic	2.62E+00	4.83E-04
56553	Benz[a]anthracene	1.50E-02	1.90E-06
71432	Benzene	7.47E+03	1.40E+00
50328	Benzo[a]pyrene	3.37E-04	4.27E-08
205992	Benzo[b]fluoranthene	2.14E-03	2.71E-07
207089	Benzo[k]fluoranthene	3.37E-04	4.27E-08
100447	Benzyl chloride	1.16E+02	1.47E-02
7440417	Beryllium	8.35E-01	1.47E-04
106990	1,3-Butadiene	1.05E+02	1.33E-02
7440439	Cadmium	1.17E+00	2.22E-04
56235	Carbon tetrachloride	7.04E+01	8.94E-03
108907	Chlorobenzene	6.33E+02	8.04E-02
67663	Chloroform	3.28E+01	4.16E-03
18540299	Chromium VI	2.54E+00	3.97E-04
218019	Chrysene	4.42E-02	5.60E-06
7440508	Copper	1.71E+01	3.44E-03
1175	Crystalline silica	1.15E+03	3.28E-01
53703	Dibenz[a,h]anthracene	3.37E-04	4.27E-08
106467	p-Dichlorobenzene	6.73E+01	8.54E-03
75343	1,1-Dichloroethane	2.27E+01	2.87E-03
78875	1,2-Dichloropropane	3.10E+01	3.94E-03
542756	1,3-Dichloropropene	1.27E+02	1.61E-02
9901	Diesel PM	2.47E+01	9.73E-01
75003	Ethyl chloride	4.43E+01	5.62E-03
100414	Ethylbenzene	1.10E+03	1.39E-01

amec

TABLE ES-2

SUMMARY OF FACILITY EMISSION RATES
Lehigh Southwest Cement Company
Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
106934	Ethylene dibromide	6.88E+01	8.73E-03
107062	Ethylene dichloride	2.72E+01	3.45E-03
50000	Formaldehyde	7.21E+01	9.15E-03
35822469	1,2,3,4,6,7,8-HpCDD	1.10E-05	1.40E-09
67562394	1,2,3,4,6,7,8-HpCDF	5.34E-06	6.77E-10
55673897	1,2,3,4,7,8,9-HpCDF	1.38E-06	1.75E-10
39227286	1,2,3,4,7,8-HxCDD	3.07E-06	3.90E-10
57653857	1,2,3,6,7,8-HxCDD	3.03E-06	3.85E-10
19408743	1,2,3,7,8,9-HxCDD	3.14E-06	3.98E-10
70648269	1,2,3,4,7,8-HxCDF	4.65E-06	5.90E-10
57117449	1,2,3,6,7,8-HxCDF	4.35E-06	5.52E-10
72918219	1,2,3,7,8,9-HxCDF	1.47E-06	1.86E-10
60851345	2,3,4,6,7,8-HxCDF	2.68E-06	3.40E-10
7647010	Hydrochloric acid	5.35E+04	7.75E+00
193395	Indeno[1,2,3-c,d] pyrene	2.50E-04	3.17E-08
7439921	Lead	2.20E+00	3.84E-04
7439965	Manganese	4.56E+00	5.79E-04
7439976	Mercury	1.69E+02	6.41E-02
74839	Methyl bromide	7.15E+02	9.07E-02
71556	Methyl chloroform (1,1,1-trichlorethane)	3.66E+01	4.65E-03
75092	Methylene chloride	1.48E+02	1.87E-02
91203	Naphthalene	1.58E+02	2.01E-02
7440020	Nickel	5.90E+01	1.04E-02
3268879	1,2,3,4,6,7,8,9-OCDD	2.31E-05	2.92E-09
39001020	1,2,3,4,6,7,8,9-OCDF	5.27E-06	6.69E-10

TABLE ES-2

SUMMARY OF FACILITY EMISSION RATES

Lehigh Southwest Cement Company
Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
40321764	1,2,3,7,8-PeCDD	2.71E-06	3.44E-10
57117416	1,2,3,7,8-PeCDF	2.10E-05	2.66E-09
57117314	2,3,4,7,8-PeCDF	3.14E-05	3.98E-09
127184	Perchloroethylene	6.07E+01	7.70E-03
7782492	Selenium	6.13E+00	8.99E-04
100425	Styrene	2.78E+02	3.52E-02
1746016	2,3,7,8-TCDD [1]	2.66E-06	3.38E-10
51207319	2,3,7,8-TCDF	1.32E-04	1.67E-08
79345	1,1,2,2-Tetrachloroethane	4.61E+01	5.85E-03
108883	Toluene	9.88E+03	1.25E+00
79005	1,1,2-Trichloroethane	6.11E+01	7.75E-03
79016	Trichloroethylene	4.81E+01	6.10E-03
1314621	Vanadium	1.68E+02	2.91E-02
75014	Vinyl chloride	1.62E+02	2.06E-02
75354	Vinylidene chloride	4.44E+01	5.64E-03
95476	o-Xylene	1.56E+03	1.97E-01
1330207	Xylenes (mixed)	7.94E+03	1.01E+00

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

TABLE ES-3

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company

Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
75070	Acetaldehyde	Kiln	•	•	•
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, hexavalent (& compounds)	Byproduct of manufacturing	•	•	
218019	Chrysene	Kiln	•		
7440508	Copper	Raw material			•
1175	Crystalline silica (respirable)	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	•		

TABLE ES-3

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company
Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
9901	Diesel engine exhaust, particulate matter (Diesel PM)	Stationary sources	•	•	
75003	Ethyl chloride (Chloroethane)	Kiln		•	
100414	Ethyl benzene	Kiln	•	•	
106934	Ethylene dibromide (EDB)	Kiln	•	•	
107062	Ethylene dichloride (EDC)	Kiln	•	•	
50000	Formaldehyde	Kiln	•	•	•
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	Kiln	•	•	
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Kiln	•	•	
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Kiln	•	•	
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran	Kiln	•	•	
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran	Kiln	•	•	
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran	Kiln	•	•	
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran	Kiln	•	•	

TABLE ES-3

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company

Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
7647010	Hydrochloric acid	Kiln		•	•
193395	Indeno[1,2,3-cd]pyrene	Kiln	•		
7439921	Lead	Raw material	•		
7439965	Manganese	Raw material		•	
7439976	Mercury	Raw material		•	•
74839	Methyl bromide (Bromomethane)	Kiln		•	•
71556	Methyl chloroform (1,1,1-Trichloroethane)	Kiln		•	•
75092	Methylene chloride (Dichloromethane)	Kiln	•	•	•
91203	Naphthalene	Kiln	•	•	
7440020	Nickel	Raw material	•	•	•
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Kiln	•	•	
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Kiln	•	•	
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	Kiln	•	•	
57117416	1,2,3,7,8-Pentachlorodibenzofuran	Kiln	•	•	
57117314	2,3,4,7,8-Pentachlorodibenzofuran	Kiln	•	•	
127184	Perchloroethylene (Tetrachloroethene)	Kiln	•	•	•
7782492	Selenium	Raw material		•	
100425	Styrene	Kiln		•	•

TABLE ES-3

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company
Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Kiln	•	•	
51207319	2,3,7,8-Tetrachlorodibenzofuran	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	•		•
75354	Vinylidene chloride	Kiln		•	
95476	o-Xylene	Kiln		•	•

TABLE ES-3

HEALTH EFFECT CATEGORIES 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. 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 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]	Maximum Annual Production Limit		
		Residential Cancer Risk[3,4]	Resident Population	Residential Cancer Burden[5]
Census Tract 507401	30151	6.3E-07	5624	3.5E-03
Census Tract 507600	8	7.2E-07	5563	4.0E-03
Census Tract 507701	4	1.7E-06	4039	6.9E-03
Census Tract 507702	6	2.0E-06	6126	1.2E-02
Census Tract 507703	3	4.2E-06	7706	3.2E-02
Census Tract 507805	2	1.7E-06	5397	9.1E-03
Census Tract 507806	15	1.1E-06	5889	6.5E-03
Census Tract 507807	5	1.4E-06	3219	4.5E-03
Census Tract 507808	7	1.4E-06	5508	8.0E-03
Census Tract 507905	17	1.1E-06	5784	6.3E-03
Census Tract 507906	16	9.6E-07	4460	4.3E-03
Census Tract 508001	30292	8.1E-07	7377	5.9E-03
Census Tract 508301	11	1.6E-06	4410	7.1E-03
Census Tract 508303	29527	1.1E-06	2562	2.9E-03
Census Tract 508304	30451	8.9E-07	7957	7.1E-03
Census Tract 508401	12	1.0E-06	6834	7.0E-03
Census Tract 508403	30513	9.3E-07	2817	2.6E-03
Census Tract 509901	19	1.1E-06	1934	2.2E-03
Census Tract 509902	9	1.0E-06	4838	4.9E-03
Census Tract 510001	18	1.5E-06	6116	9.3E-03
Census Tract 510002	10	2.1E-06	3553	7.3E-03
Census Tract 510100	1	2.9E-06	2948	8.4E-03
Census Tract 510200	14	9.9E-07	4328	4.3E-03
Census Tract 511701	13	8.2E-07	4017	3.3E-03
Census Tract 511702	30955	2.1E-06	2684	5.8E-03
Census Tract 511703	30954	2.2E-06	8526	1.8E-02
Total			130216	1.9E-01

TABLE ES-4

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

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. Cancer risk predicted using 2006 meterological data.
5. A cancer burden less than one indicates that over a 70-year period under the worst-case exposure assumptions, there is less than a one-in-a-million chance that a member of the community would be expected to contract cancer based on exposure to Facility emissions.

TABLE 1

TOTAL ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES
Lehigh Southwest Cement Company
Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
75070	Acetaldehyde	1.32E+03	1.68E-01
107028	Acrolein	5.13E+01	6.51E-03
7440382	Arsenic	2.62E+00	4.83E-04
56553	Benz[a]anthracene	1.50E-02	1.90E-06
71432	Benzene	7.47E+03	1.40E+00
50328	Benzo[a]pyrene	3.37E-04	4.27E-08
205992	Benzo[b]fluoranthene	2.14E-03	2.71E-07
207089	Benzo[k]fluoranthene	3.37E-04	4.27E-08
100447	Benzyl chloride	1.16E+02	1.47E-02
7440417	Beryllium	8.35E-01	1.47E-04
106990	1,3-Butadiene	1.05E+02	1.33E-02
7440439	Cadmium	1.17E+00	2.22E-04
56235	Carbon tetrachloride	7.04E+01	8.94E-03
108907	Chlorobenzene	6.33E+02	8.04E-02
67663	Chloroform	3.28E+01	4.16E-03
18540299	Chromium VI	2.54E+00	3.97E-04
218019	Chrysene	4.42E-02	5.60E-06
7440508	Copper	1.71E+01	3.44E-03
1175	Crystalline silica	1.15E+03	3.28E-01
53703	Dibenz[a,h]anthracene	3.37E-04	4.27E-08
106467	p-Dichlorobenzene	6.73E+01	8.54E-03
75343	1,1-Dichloroethane	2.27E+01	2.87E-03
78875	1,2-Dichloropropane	3.10E+01	3.94E-03
542756	1,3-Dichloropropene	1.27E+02	1.61E-02
9901	Diesel PM	2.47E+01	9.73E-01
75003	Ethyl chloride	4.43E+01	5.62E-03

TABLE 1

TOTAL ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES

Lehigh Southwest Cement Company
Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
100414	Ethylbenzene	1.10E+03	1.39E-01
106934	Ethylene dibromide	6.88E+01	8.73E-03
107062	Ethylene dichloride	2.72E+01	3.45E-03
50000	Formaldehyde	7.21E+01	9.15E-03
35822469	1,2,3,4,6,7,8-HpCDD	1.10E-05	1.40E-09
67562394	1,2,3,4,6,7,8-HpCDF	5.34E-06	6.77E-10
55673897	1,2,3,4,7,8,9-HpCDF	1.38E-06	1.75E-10
39227286	1,2,3,4,7,8-HxCDD	3.07E-06	3.90E-10
57653857	1,2,3,6,7,8-HxCDD	3.03E-06	3.85E-10
19408743	1,2,3,7,8,9-HxCDD	3.14E-06	3.98E-10
70648269	1,2,3,4,7,8-HxCDF	4.65E-06	5.90E-10
57117449	1,2,3,6,7,8-HxCDF	4.35E-06	5.52E-10
72918219	1,2,3,7,8,9-HxCDF	1.47E-06	1.86E-10
60851345	2,3,4,6,7,8-HxCDF	2.68E-06	3.40E-10
7647010	Hydrochloric acid	5.35E+04	7.75E+00
193395	Indeno[1,2,3-c,d] pyrene	2.50E-04	3.17E-08
7439921	Lead	2.20E+00	3.84E-04
7439965	Manganese	4.56E+00	5.79E-04
7439976	Mercury	1.69E+02	6.41E-02
74839	Methyl bromide	7.15E+02	9.07E-02
71556	Methyl chloroform (1,1,1-trichlorethane)	3.66E+01	4.65E-03
75092	Methylene chloride	1.48E+02	1.87E-02
91203	Naphthalene	1.58E+02	2.01E-02
7440020	Nickel	5.90E+01	1.04E-02
3268879	1,2,3,4,6,7,8,9-OCDD	2.31E-05	2.92E-09

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TABLE 1

TOTAL ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES
Lehigh Southwest Cement Company
Cupertino Facility

CAS No.	Chemical	Annual Average Emissions (lbs/yr)	Maximum Hourly Emissions (lbs/hr)
39001020	1,2,3,4,6,7,8,9-OCDF	5.27E-06	6.69E-10
40321764	1,2,3,7,8-PeCDD	2.71E-06	3.44E-10
57117416	1,2,3,7,8-PeCDF	2.10E-05	2.66E-09
57117314	2,3,4,7,8-PeCDF	3.14E-05	3.98E-09
127184	Perchloroethylene	6.07E+01	7.70E-03
7782492	Selenium	6.13E+00	8.99E-04
100425	Styrene	2.78E+02	3.52E-02
1746016	2,3,7,8-TCDD	2.66E-06	3.38E-10
51207319	2,3,7,8-TCDF	1.32E-04	1.67E-08
79345	1,1,2,2-Tetrachloroethane	4.61E+01	5.85E-03
108883	Toluene	9.88E+03	1.25E+00
79005	1,1,2-Trichloroethane	6.11E+01	7.75E-03
79016	Trichloroethylene	4.81E+01	6.10E-03
1314621	Vanadium	1.68E+02	2.91E-02
75014	Vinyl chloride	1.62E+02	2.06E-02
75354	Vinylidene chloride	4.44E+01	5.64E-03
95476	o-Xylene	1.56E+03	1.97E-01
1330207	Xylenes (mixed)	7.94E+03	1.01E+00

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

TABLE 2

POINT SOURCE INPUT PARAMETERS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Dust Collector BAAQMD Permit #	DC ID	Model ID	Source Description	Material	Operating Schedule [2] weeks/ year	days/ week	hours/ day	UTM NAD83 Coordinates X (meters)	Y (meters)	Stack ID	Stack Height [2] (ft)	Stack Height [2] (m)	Stack Orientation [3] (V/H)	Stack Shape (Round / Rect)	Stack Dimensions (in)	(in)	Stack Diameter [4] (ft)	(m)	Temp [2] (°F)	(K)	Stack Flow [2] (acfm)	Exit Velocity [5] (m/s)
A-114	1-DC-4	1D4	Additive Bin Transfer Facilities Area	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	5% Additive 53% High Grade 42% Mid 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												
Pending	4-DC-7 to 4-DC-38	Kiln						580605.94	4130307.33	--	295	90	V	Round	--	--	15	4.6	312	428.7	631,800	18.16
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
Pending	5-DC-11/20	CLNKSTK						580603.77	4130492.05	--	117	35.7	V	Round	--	--	7.0	2.1	392	473.2	177,000	23.4
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

TABLE 2

POINT SOURCE INPUT PARAMETERS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Dust Collector BAAQMD Permit #	DC ID	Model ID	Source Description	Material	Operating Schedule [2] weeks/year	days/week	hours/day	UTM NAD83 Coordinates X (meters)	Y (meters)	Stack ID	Stack Height [2] (ft)	Stack Height [2] (m)	Stack Orientation [3] (V/H)	Stack Shape (Round / Rect)	Stack Dimensions (in)	(in)	Stack Diameter [4] (ft)	(m)	Temp [2] (°F)	(K)	Stack Flow [2] (acfm)	Exit Velocity [5] (m/s)
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, Finish Mill 6GM3	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	15,000	97.02
--	999-DC	999D	Pseudo Stack for Remaining Dust Collector Emissions [7]	--	--	--	--	580446.50	4130451.60	--	58	17.6	H	--	--	--	--	0.35	100	310.9	4270	7.80

Notes

1. Input parameters were provided by the facility; AMEC has not measured any source parameters. Includes both current and future configuration parameters for the kiln and clinker cooler.
2. Information obtained from Hanson Permanente Cement Inspection Report #562, March 10, 2005.
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. 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

-- = not applicable
DC = Dust collector
ft = feet
in = inches
Pending = Proposed future kiln and clinker cooler parameters that are not yet permitted.
Rect = Rectangular
UTM NAD 83 = Universal Transverse Mercator; North American Datum 1983

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			230.0 230.0	53.5 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
-- = not applicable
UTM NAD 83 = Universal Transverse Mercator; North American Datum 1983

TABLE 4A

ANNUAL AVERAGE EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per year (lbs/yr)

CAS No.	Chemical	2005 Production (2008 CEIR)	BAAQMD May 2013 HRA Addendum	Maximum Production Emissions[1] - Used in HRA	Source of Baseline Emissions[2]
75070	Acetaldehyde	1.16E+03	--	1.32E+03	2008 CEIR
107028	Acrolein	4.49E+01	--	5.13E+01	2008 CEIR
7440382	Arsenic	7.60E-01	--	8.69E-01	2008 CEIR
56553	Benz[a]anthracene	1.31E-02	--	1.50E-02	2008 CEIR
71432	Benzene	9.65E+03	4.67E+03	7.47E+03	BAAQMD, 2013
50328	Benzo[a]pyrene	2.95E-04	--	3.37E-04	2008 CEIR
205992	Benzo[b]fluoranthene	1.87E-03	--	2.14E-03	2008 CEIR
207089	Benzo[k]fluoranthene	2.95E-04	--	3.37E-04	2008 CEIR
100447	Benzyl chloride	1.01E+02	--	1.16E+02	2008 CEIR
7440417	Beryllium	3.80E-01	--	4.35E-01	2008 CEIR
106990	1,3-Butadiene	9.18E+01	--	1.05E+02	2008 CEIR
7440439	Cadmium	3.80E-01	--	4.35E-01	2008 CEIR
56235	Carbon tetrachloride	6.16E+01	--	7.04E+01	2008 CEIR
108907	Chlorobenzene	5.54E+02	--	6.33E+02	2008 CEIR
67663	Chloroform	2.87E+01	--	3.28E+01	2008 CEIR
18540299	Chromium VI	3.36E-01	3.18E-01	4.51E-01	BAAQMD, 2013
218019	Chrysene	3.86E-02	--	4.42E-02	2008 CEIR
7440508	Copper	4.24E+00	--	4.85E+00	2008 CEIR
1175	Crystalline silica	--	--	--	--
53703	Dibenz[a,h]anthracene	2.95E-04	--	3.37E-04	2008 CEIR
106467	p-Dichlorobenzene	5.89E+01	--	6.73E+01	2008 CEIR
75343	1,1-Dichloroethane	1.98E+01	--	2.27E+01	2008 CEIR
78875	1,2-Dichloropropane	2.71E+01	--	3.10E+01	2008 CEIR
542756	1,3-Dichloropropene	1.11E+02	--	1.27E+02	2008 CEIR
9901	Diesel PM	--	--	--	--
75003	Ethyl chloride	3.87E+01	--	4.43E+01	2008 CEIR
100414	Ethylbenzene	9.59E+02	--	1.10E+03	2008 CEIR
106934	Ethylene dibromide	6.02E+01	--	6.88E+01	2008 CEIR

TABLE 4A

ANNUAL AVERAGE EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per year (lbs/yr)

CAS No.	Chemical	2005 Production (2008 CEIR)	BAAQMD May 2013 HRA Addendum	Maximum Production Emissions[1] - Used in HRA	Source of Baseline Emissions[2]
107062	Ethylene dichloride	2.38E+01	--	2.72E+01	2008 CEIR
50000	Formaldehyde	6.31E+01	--	7.21E+01	2008 CEIR
35822469	1,2,3,4,6,7,8-HpCDD	9.63E-06	--	1.10E-05	2008 CEIR
67562394	1,2,3,4,6,7,8-HpCDF	4.67E-06	--	5.34E-06	2008 CEIR
55673897	1,2,3,4,7,8,9-HpCDF	1.20E-06	--	1.38E-06	2008 CEIR
39227286	1,2,3,4,7,8-HxCDD	2.69E-06	--	3.07E-06	2008 CEIR
57653857	1,2,3,6,7,8-HxCDD	2.65E-06	--	3.03E-06	2008 CEIR
19408743	1,2,3,7,8,9-HxCDD	2.75E-06	--	3.14E-06	2008 CEIR
70648269	1,2,3,4,7,8-HxCDF	4.07E-06	--	4.65E-06	2008 CEIR
57117449	1,2,3,6,7,8-HxCDF	3.81E-06	--	4.35E-06	2008 CEIR
72918219	1,2,3,7,8,9-HxCDF	1.28E-06	--	1.47E-06	2008 CEIR
60851345	2,3,4,6,7,8-HxCDF	2.34E-06	--	2.68E-06	2008 CEIR
7647010	Hydrochloric acid	1.07E+05	--	5.35E+04	AMEC, 2011a, 2011b
193395	Indeno[1,2,3-c,d] pyrene	2.19E-04	--	2.50E-04	2008 CEIR
7439921	Lead	8.86E-01	--	1.01E+00	2008 CEIR
7439965	Manganese	3.99E+00	--	4.56E+00	2008 CEIR
7439976	Mercury	1.28E+03	1.19E+02	1.68E+02	BAAQMD, 2013
74839	Methyl bromide	6.25E+02	--	7.15E+02	2008 CEIR
71556	Methyl chloroform	3.21E+01	--	3.66E+01	2008 CEIR
75092	Methylene chloride	1.29E+02	--	1.48E+02	2008 CEIR
91203	Naphthalene	1.39E+02	--	1.58E+02	2008 CEIR
7440020	Nickel	6.53E+00	--	7.46E+00	2008 CEIR
3268879	1,2,3,4,6,7,8,9-OCDD	2.02E-05	--	2.31E-05	2008 CEIR
39001020	1,2,3,4,6,7,8,9-OCDF	4.61E-06	--	5.27E-06	2008 CEIR
40321764	1,2,3,7,8-PeCDD	2.37E-06	--	2.71E-06	2008 CEIR
57117416	1,2,3,7,8-PeCDF	1.83E-05	--	2.10E-05	2008 CEIR

TABLE 4A

ANNUAL AVERAGE EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per year (lbs/yr)

CAS No.	Chemical	2005 Production (2008 CEIR)	BAAQMD May 2013 HRA Addendum	Maximum Production Emissions[1] - Used in HRA	Source of Baseline Emissions[2]
57117314	2,3,4,7,8-PeCDF	2.74E-05	--	3.14E-05	2008 CEIR
127184	Perchloroethylene	5.31E+01	--	6.07E+01	2008 CEIR
7782492	Selenium	4.25E+00	--	4.86E+00	2008 CEIR
100425	Styrene	2.43E+02	--	2.78E+02	2008 CEIR
1746016	2,3,7,8-TCDD	2.33E-06	--	2.66E-06	2008 CEIR
51207319	2,3,7,8-TCDF	1.15E-04	--	1.32E-04	2008 CEIR
79345	1,1,2,2-Tetrachloroethane	4.03E+01	--	4.61E+01	2008 CEIR
108883	Toluene	8.65E+03	--	9.88E+03	2008 CEIR
79005	1,1,2-Trichloroethane	5.34E+01	--	6.11E+01	2008 CEIR
79016	Trichloroethylene	4.21E+01	--	4.81E+01	2008 CEIR
1314621	Vanadium	3.80E+00	--	4.35E+00	2008 CEIR
75014	Vinyl chloride	1.42E+02	--	1.62E+02	2008 CEIR
75354	Vinylidene chloride	3.89E+01	--	4.44E+01	2008 CEIR
95476	o-Xylene	1.36E+03	--	1.56E+03	2008 CEIR
1330207	Xylenes (mixed)	6.94E+03	--	7.94E+03	2008 CEIR

Notes:

1. HRA emissions were estimated (scaled up) for the maximum permitted clinker production of 1,600,000 tons per year) from the following production factors:
   1.14 = 1,600,000 / 1,399,692 (2008 CEIR - 2005 clinker production)
   1.60 = 1,600,000 / 999,774 (Average 2009, 2011, and 2012 clinker production: BAAQMD, 2013; only benzene)
   1.42 = 1,600,000 / 1,127,500 (2012 clinker production; BAAQMD, 2013; hexavalent chromium and mercury)
2. Emissions were scaled up from the 2008 CEIR unless amended or revised in the BAAQMD HRA Addendum as noted.

References:

AMEC, 2011a, Final Revised Protocol for Revisions to Mercury Emissions and Development of a 2013 Production Scenario, Lehigh Southwest Cement Company, Cupertino, California, February 18.

AMEC, 2011b, Revised AB2588 Health Risk Assessment for 2005, Average 2008/2009, and 2013 Production Scenarios, Lehigh Southwest Cement Company, Cupertino, California, March 30.

TABLE 4B

ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR DUST COLLECTORS

Lehigh Southwest Cement Company

Cupertino Facility

Emissions reported in pounds per year (lbs/yr)

		Maximum Production [1]																								
CAS No.	**Chemical**	**1D4**	**2D1**	**3D1**	**3D4**	**3D5**	**4D3**	**4D4**	**5D1**	**5D2**	**5D3**	**5D5**	**5D6**	**5D11_20 / CLNKSTK**	**5D23**	**5D27**	**5D28**	**6D17**	**6D19**	**6D2**	**6D12**	**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
18540299	Chromium VI	0.00E+00	3.50E-03	1.62E-03	3.51E-03	0.00E+00	1.94E-03	1.98E-03	2.52E-03	2.52E-03	4.53E-03	0.00E+00	0.00E+00	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	0.00E+00	4.44E-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

Notes:

1. Production-based emissions from the 2008 CEIR were scaled up to the maximum permitted clinker production of 1,600,000 tons per year from the 2005 production of 1,399,692 tons/year used in the 2008 CEIR; the factor is 1.14 (1,600,000 / 1,399,692).

TABLE 4C

ANNUAL AVERAGE EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES

Lehigh Southwest Cement Company

Cupertino Facility

Emissions reported in pounds per year (lbs/yr)

CAS No.	Chemical	Maximum Production [1]															
		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	-	-	3.07E-03	3.07E-03	9.09E-03	3.73E-02	3.73E-02	3.73E-02	3.73E-02	-	2.52E-02	2.52E-02	2.52E-02	2.52E-02	-	-
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	-

Notes:

1. Production-based (vs. wind-based) emissions from the 2008 CEIR were scaled up to the maximum permitted clinker production of 1,600,000 tons per year.

TABLE 5A

MAXIMUM HOURLY EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per hour (lbs/hr)

CAS No.	Chemical	Maximum Hourly - Used in HRA	Source of Emissions[1]
75070	Acetaldehyde	1.68E-01	2008 CEIR
107028	Acrolein	6.51E-03	2008 CEIR
7440382	Arsenic	1.10E-04	2008 CEIR
56553	Benz[a]anthracene	1.90E-06	2008 CEIR
71432	Benzene	1.40E+00	2008 CEIR
50328	Benzo[a]pyrene	4.27E-08	2008 CEIR
205992	Benzo[b]fluoranthene	2.71E-07	2008 CEIR
207089	Benzo[k]fluoranthene	4.27E-08	2008 CEIR
100447	Benzyl chloride	1.47E-02	2008 CEIR
7440417	Beryllium	5.52E-05	2008 CEIR
106990	1,3-Butadiene	1.33E-02	2008 CEIR
7440439	Cadmium	5.52E-05	2008 CEIR
56235	Carbon tetrachloride	8.94E-03	2008 CEIR
108907	Chlorobenzene	8.04E-02	2008 CEIR
67663	Chloroform	4.16E-03	2008 CEIR
18540299	Chromium VI	4.87E-05	2008 CEIR
218019	Chrysene	5.60E-06	2008 CEIR
7440508	Copper	6.15E-04	2008 CEIR
1175	Crystalline silica	0.00E+00	--
53703	Dibenz[a,h]anthracene	4.27E-08	2008 CEIR
106467	p-Dichlorobenzene	8.54E-03	2008 CEIR
75343	1,1-Dichloroethane	2.87E-03	2008 CEIR
78875	1,2-Dichloropropane	3.94E-03	2008 CEIR
542756	1,3-Dichloropropene	1.61E-02	2008 CEIR
9901	Diesel PM	0.00E+00	--
75003	Ethyl chloride	5.62E-03	2008 CEIR
100414	Ethylbenzene	1.39E-01	2008 CEIR

TABLE 5A

MAXIMUM HOURLY EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per hour (lbs/hr)

CAS No.	Chemical	Maximum Hourly - Used in HRA	Source of Emissions[1]
106934	Ethylene dibromide	8.73E-03	2008 CEIR
107062	Ethylene dichloride	3.45E-03	2008 CEIR
50000	Formaldehyde	9.15E-03	2008 CEIR
35822469	1,2,3,4,6,7,8-HpCDD	1.40E-09	2008 CEIR
67562394	1,2,3,4,6,7,8-HpCDF	6.77E-10	2008 CEIR
55673897	1,2,3,4,7,8,9-HpCDF	1.75E-10	2008 CEIR
39227286	1,2,3,4,7,8-HxCDD	3.90E-10	2008 CEIR
57653857	1,2,3,6,7,8-HxCDD	3.85E-10	2008 CEIR
19408743	1,2,3,7,8,9-HxCDD	3.98E-10	2008 CEIR
70648269	1,2,3,4,7,8-HxCDF	5.90E-10	2008 CEIR
57117449	1,2,3,6,7,8-HxCDF	5.52E-10	2008 CEIR
72918219	1,2,3,7,8,9-HxCDF	1.86E-10	2008 CEIR
60851345	2,3,4,6,7,8-HxCDF	3.40E-10	2008 CEIR
7647010	Hydrochloric acid	7.75E+00	AMEC, 2011a, 2011b
193395	Indeno[1,2,3-c,d] pyrene	3.17E-08	2008 CEIR
7439921	Lead	1.28E-04	2008 CEIR
7439965	Manganese	5.79E-04	2008 CEIR
7439976	Mercury	6.40E-02	Title V permit limit
74839	Methyl bromide	9.07E-02	2008 CEIR
71556	Methyl chloroform	4.65E-03	2008 CEIR
75092	Methylene chloride	1.87E-02	2008 CEIR
91203	Naphthalene	2.01E-02	2008 CEIR
7440020	Nickel	9.46E-04	2008 CEIR
3268879	1,2,3,4,6,7,8,9-OCDD	2.92E-09	2008 CEIR
39001020	1,2,3,4,6,7,8,9-OCDF	6.69E-10	2008 CEIR

TABLE 5A

MAXIMUM HOURLY EMISSION RATES FOR THE KILN

Lehigh Southwest Cement Company
Cupertino Facility

Emissions reported in pounds per hour (lbs/hr)

CAS No.	Chemical	Maximum Hourly - Used in HRA	Source of Emissions[1]
40321764	1,2,3,7,8-PeCDD	3.44E-10	2008 CEIR
57117416	1,2,3,7,8-PeCDF	2.66E-09	2008 CEIR
57117314	2,3,4,7,8-PeCDF	3.98E-09	2008 CEIR
127184	Perchloroethylene	7.70E-03	2008 CEIR
7782492	Selenium	6.17E-04	2008 CEIR
100425	Styrene	3.52E-02	2008 CEIR
1746016	2,3,7,8-TCDD	3.38E-10	2008 CEIR
51207319	2,3,7,8-TCDF	1.67E-08	2008 CEIR
79345	1,1,2,2-Tetrachloroethane	5.85E-03	2008 CEIR
108883	Toluene	1.25E+00	2008 CEIR
79005	1,1,2-Trichloroethane	7.75E-03	2008 CEIR
79016	Trichloroethylene	6.10E-03	2008 CEIR
1314621	Vanadium	5.52E-04	2008 CEIR
75014	Vinyl chloride	2.06E-02	2008 CEIR
75354	Vinylidene chloride	5.64E-03	2008 CEIR
95476	o-Xylene	1.97E-01	2008 CEIR
1330207	Xylenes (mixed)	1.01E+00	2008 CEIR

Notes:

1. Emissions were selected from the 2008 CEIR unless amended, as noted.

References:

AMEC, 2011a, Final Revised Protocol for Revisions to Mercury Emissions and Development of a 2013 Production Scenario, Lehigh Southwest Cement Company, Cupertino, California, February 18.

AMEC, 2011b, Revised AB2588 Health Risk Assessment for 2005, Average 2008/2009, and 2013 Production Scenarios, Lehigh Southwest Cement Company, Cupertino, California, March 30.

TABLE 5B

MAXIMUM HOURLY EMISSION RATES BY SOURCE GROUP FOR DUST COLLECTORS

Lehigh Southwest Cement Company

Cupertino Facility

Emissions reported in pounds per hour (lbs/hr)

CAS No.	Chemical	Maximum Hourly [1]												
		1D4	2D1	3D1	3D4	3D5	4D3	4D4	5D1	5D2	5D3	5D5	5D6	5D11_20 / CLNKSTK
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
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
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
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
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
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
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
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
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
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
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

CAS No.	Chemical	Maximum Hourly [1] (cont.)											
		5D23	5D27	5D28	6D17	6D19	6D2	6D12	6D1	6D8	7PD7	8D31	999DC
7440382	Arsenic	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	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	1.07E-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
18540299	Chromium VI	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	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	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	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	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	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	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	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. Consistent with emissions reported in the 2008 CEIR.

TABLE 5C

MAXIMUM HOURLY EMISSION RATES BY SOURCE GROUP FOR FUGITIVE AND OTHER POINT SOURCES

Lehigh Southwest Cement Company

Cupertino Facility

Emissions reported in pounds per hour (lbs/hr)

CAS No.	Chemical	Maximum Hourly [1]															
		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	9.21E-06	9.21E-06	9.21E-06	9.21E-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	-

Note:

1. Consistent with emissions reported in the 2008 CEIR.

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TABLE 6

LOCATION OF KEY OFF-SITE RECEPTORS

Lehigh Southwest Cement Company
Cupertino Facility

Model ID#	Receptor Type	Description	Elevation (meters)	UTM Coordinates[1]
1	Census Location	Census Tract 510100	78.67	581455.28 , 4133175.3
2	Census Location	Census Tract 507805	85.9	583712.23 , 4132349.8
3	Census Location	Census Tract 507703	124.36	582339.32 , 4130693.2
4	Census Location	Census Tract 507701	100.17	584046.13 , 4130743.2
5	Census Location	Census Tract 507807	88.63	585016.92 , 4130016.4
6	Census Location	Census Tract 507702	125.44	583904.0 , 4129096.1
7	Census Location	Census Tract 507808	97.04	585157.51 , 4128925.4
8	Census Location	Census Tract 507600	267.43	583844.05 , 4126181.2
9	Census Location	Census Tract 509902	50.54	582500 , 4136000
10	Census Location	Census Tract 510002	70.67	582500 , 4133500
11	Census Location	Census Tract 508301	70.74	583500 , 4133500
12	Census Location	Census Tract 508401	55.46	583500 , 4135500
13	Census Location	Census Tract 511701	141.38	577500 , 4136000
14	Census Location	Census Tract 510200	58.69	579500 , 4136000
15	Census Location	Census Tract 507806	76.6	585300 , 4131600
16	Census Location	Census Tract 507906	80.03	586900 , 4128800
17	Census Location	Census Tract 507905	81	586300 , 4128800
18	Census Location	Census Tract 510001	60.96	581500 , 4135000
19	Census Location	Census Tract 509901	50.52	581000 , 4136000
29527	Census Location	Census Tract 508303	64.4	584541 , 4133479
30151	Census Location	Census Tract 507401	91.36	587321 , 4127009
30292	Census Location	Census Tract 508001	71.45	586821 , 4130009
30451	Census Location	Census Tract 508304	60.67	585321 , 4133509
30513	Census Location	Census Tract 508403	52.78	584821 , 4134509
30954	Census Location	Census Tract 511703	143.72	579150.38 , 4133424.4
30955	Census Location	Census Tract 511702	95.04	580171.62 , 4134226.7
20	Daycare	De Anza College Child Development Center 21250 Stevens Creek Boulevard, Cupertino 95014	91.53	584608 , 4130709

TABLE 6

LOCATION OF KEY OFF-SITE RECEPTORS

Lehigh Southwest Cement Company

Cupertino Facility

Model ID#	Receptor Type	Description	Elevation (meters)	UTM Coordinates[1]
21	Daycare	Kindercare Learning Center 1515 S. De Anza Boulevard	92.22	585720.8 , 4128214.5
22	Preschool	Children's House of Los Altos 770 Berry Avenue, Los Altos 94024	59.09	580371.2 , 4135348.2
23	Preschool	Foothill Preschool 2100 Woods Lane, Los Altos 94024	84.23	581783.8 , 4132851.4
24	Preschool	Los Altos Christian Preschool 625 Magdalena Avenue, Los Altos 94024	60.44	579699 , 4135147.9
25	Preschool	Los Altos United Methodist Children's Center 655 Magdalena Avenue, Los Altos 94024	59.67	579789.9 , 4135231.1
26	Preschool	Play & Learn Preschool Daycare 10067 Byrne Avenue, Cupertino 95014	103.18	583372.6 , 4130990.7
27	School-Age Care	Happy Childhood Education 1091 S. DeAnza Boulevard, San Jose 95129	82.16	585749.2 , 4129341.2
28	School	Blach Intermediate School 1120 Covington Rd, Los Altos 94024	54.45	581289 , 4135590
29	School	Creekside Private School 10300 Creston Dr. Cupertino 95014	76.73	583251 , 4132945
30	School	Cupertino Junior High School 1650 S. Bernardo Ave, Sunnyvale 94087	77.93	583348 , 4132945
31	School	Garden Gate Elementary School 10500 Ann Arbor Avenue, Cupertino 95014	79.87	584603 , 4132007
32	School	Homestead High School 21370 Homestead Rd, Cupertino 95014	78.03	584167 , 4132593
33	School	Kennedy Middle School 821 Bubb Rd, Cupertino 95014	107.03	584043 , 4129779
34	School	Lincoln Elementary School 21710 McClellan Road, Cupertino 95014	107.17	583832.3 , 4130282.4
35	School	Loyola School 770 Berry Avenue, Los Altos 94024	59.72	580364 , 4135237

TABLE 6

LOCATION OF KEY OFF-SITE RECEPTORS

Lehigh Southwest Cement Company

Cupertino Facility

Model ID#	Receptor Type	Description	Elevation (meters)	UTM Coordinates[1]
36	School	Meyerholz Elementary School 6990 Melvin Drive, San Jose 95129	76.93	586259.71 , 4129392.5
37	School	Miramonte School 1175 Altamead Drive, Los Altos 94024	55.16	581344 , 4135423
38	School	Montclaire Elementary and School-Age Child Development Center 1160 St. Joseph Avenue, Los Altos 94024	79.15	581300.9 , 4133301.3
39	School	Mountain View High School 3535 Truman Avenue, Mountain View 94040	58.18	582475.84 , 4135015.5
40	School	Oak Elementary School 1501 Oak Avenue, Los Altos 94024	59.29	582218 , 4134902
41	School	Regnart Elementary and CDC 1180 Yorkshire Drive, Cupertino 95014	113.78	584472 , 4128982.4
42	School	South Peninsula Hebrew Day School 1030 Astoria Drive, Sunnyvale 94087	64.35	583463.85 , 4134098.5
43	School	St. Francis High School 1885 Miramonte Avenue, Mountain View 94040	48.25	581051.67 , 4136201
44	School	St. Simon Elementary School 1840 Grant Road, Los Altos 94024	71.06	581553 , 4133763
45	School	Stevens Creek Elementary School 10300 Ainsworth Drive, Cupertino 95014	99.48	582896 , 4131568
46	School	Stratford School 1196 Lime Drive, Sunnyvale 94087	57.71	583735.67 , 4134738.1
47	School	Waldorf School-Peninsula 11311 Mora Drive, Los Altos 94024	100.27	580133 , 4133320
48	School	West Valley Elementary School 1635 Belleville Way, Sunnyvale 94087	73.89	583118 , 4133107
66	Worker	County Buildings on St. Joseph Avenue	127.14	581015 , 4131626
63	Residence	MROSD Ranger Residence/Facility (Rancho San Antonio)	123.62	580014 , 4132099
30956	Residence	MROSD Ranger Residence east of Stevens Creek Canyon Road	126.81	582006 , 4129129

TABLE 6

LOCATION OF KEY OFF-SITE RECEPTORS

Lehigh Southwest Cement Company
Cupertino Facility

Model ID#	Receptor Type	Description	Elevation (meters)	UTM Coordinates[1]
11396	MEIR - Acute Current	Residential area near west end of El Cerrito Road	264.15	581871 , 4129749
12566	MEIR - Acute Future	Residential area near west end of San Felipe Road	165.16	581961 , 4130184
13886	MEIR - Cancer/chronic	Residential area near west end of Voss Avenue	200.47	581556 , 4130679
65	MEIW	County Buildings on St. Joseph Avenue (North of Permanente Rd.)	151.08	581334 , 4131199
57	MEIW - Acute Future Only	MROSD Preserve Facility (Rancho San Antonio)	117.72	580116 , 4132035
1637	PMI - Acute	Fenceline	193.92	580615 , 4131492
1716	PMI - Cancer/chronic	Fenceline	249.7	580124 , 4131191

Note
1. Universal Transverse Mercator Coordinate System

Abbreviations
MEIW = Maximum Exposed Individual Worker
MEIR = Maximum Exposed Individual Resident
MROSD = Midpenisula Regional Open Space District
PMI = Point of Maximum Impact

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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 - 2006 METEOROLOGICAL DATA
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (μg/m3)

Chemical	Key Receptors 1[1] CS 510100	2 CS 507805	3 CS 507703	4 CS 507701	5 CS 507807	6 CS 507702	7 CS 507808	8 CS 507600	9 CS 509902	10 CS 510002	11 CS 508301	12 CS 508401	13 CS 511701	14 CS 510200	15 CS 507806	16 CS 507906	17 CS 507905
Acetaldehyde	1.12E-04	9.15E-05	1.61E-04	8.84E-05	8.15E-05	1.35E-04	1.06E-04	1.04E-04	6.26E-05	8.84E-05	7.61E-05	5.72E-05	7.60E-05	7.11E-05	6.97E-05	7.73E-05	8.62E-05
Acrolein	4.35E-06	3.56E-06	6.27E-06	3.44E-06	3.17E-06	5.26E-06	4.14E-06	4.04E-06	2.44E-06	3.44E-06	2.96E-06	2.22E-06	2.96E-06	2.77E-06	2.71E-06	3.01E-06	3.36E-06
Arsenic	8.79E-06	5.25E-06	1.30E-05	5.51E-06	4.46E-06	6.44E-06	4.57E-06	2.35E-06	3.22E-06	6.19E-06	4.78E-06	3.17E-06	2.92E-06	3.40E-06	3.50E-06	3.04E-06	3.42E-06
Benz[a]anthracene	1.27E-09	1.04E-09	1.84E-09	1.00E-09	9.26E-10	1.53E-09	1.21E-09	1.18E-09	7.12E-10	1.01E-09	8.66E-10	6.49E-10	8.64E-10	8.07E-10	7.92E-10	8.80E-10	9.79E-10
Benzene	6.34E-04	5.18E-04	9.14E-04	5.00E-04	4.60E-04	7.63E-04	6.03E-04	5.87E-04	3.55E-04	4.99E-04	4.31E-04	3.24E-04	4.30E-04	4.03E-04	3.94E-04	4.38E-04	4.88E-04
Benzo[a]pyrene	2.86E-11	2.34E-11	4.12E-11	2.25E-11	2.08E-11	3.44E-11	2.71E-11	2.64E-11	1.60E-11	2.25E-11	1.94E-11	1.46E-11	1.94E-11	1.82E-11	1.78E-11	1.97E-11	2.20E-11
Benzo[b]fluoranthene	1.81E-10	1.48E-10	2.62E-10	1.43E-10	1.32E-10	2.19E-10	1.72E-10	1.68E-10	1.02E-10	1.43E-10	1.23E-10	9.27E-11	1.23E-10	1.15E-10	1.13E-10	1.25E-10	1.40E-10
Benzo[k]fluoranthene	2.86E-11	2.34E-11	4.12E-11	2.25E-11	2.08E-11	3.44E-11	2.71E-11	2.64E-11	1.60E-11	2.25E-11	1.94E-11	1.46E-11	1.94E-11	1.82E-11	1.78E-11	1.97E-11	2.20E-11
Benzyl chloride	9.82E-06	8.04E-06	1.42E-05	7.77E-06	7.15E-06	1.19E-05	9.34E-06	9.09E-06	5.51E-06	7.78E-06	6.69E-06	5.03E-06	6.68E-06	6.25E-06	6.12E-06	6.82E-06	7.56E-06
Beryllium	2.10E-06	1.26E-06	3.14E-06	1.34E-06	1.08E-06	1.58E-06	1.11E-06	5.69E-07	7.73E-07	1.48E-06	1.14E-06	7.57E-07	7.51E-07	8.46E-07	8.46E-07	7.31E-07	8.25E-07
1,3-Butadiene	8.90E-06	7.29E-06	1.29E-05	7.02E-06	6.45E-06	1.08E-05	8.45E-06	8.25E-06	4.99E-06	7.02E-06	6.04E-06	4.55E-06	6.05E-06	5.66E-06	5.54E-06	6.15E-06	6.86E-06
Cadmium	3.86E-06	2.31E-06	5.73E-06	2.44E-06	1.96E-06	2.87E-06	2.01E-06	1.05E-06	1.41E-06	2.70E-06	2.08E-06	1.38E-06	1.36E-06	1.54E-06	1.54E-06	1.33E-06	1.51E-06
Carbon tetrachloride	5.96E-06	4.89E-06	8.60E-06	4.71E-06	4.33E-06	7.20E-06	5.66E-06	5.52E-06	3.35E-06	4.71E-06	4.06E-06	3.05E-06	4.05E-06	3.79E-06	3.71E-06	4.13E-06	4.60E-06
Chlorobenzene	5.38E-05	4.39E-05	7.75E-05	4.25E-05	3.91E-05	6.48E-05	5.11E-05	4.97E-05	3.02E-05	4.24E-05	3.65E-05	2.75E-05	3.65E-05	3.41E-05	3.35E-05	3.72E-05	4.14E-05
Chloroform	2.77E-06	2.28E-06	4.02E-06	2.19E-06	2.02E-06	3.35E-06	2.65E-06	2.57E-06	1.56E-06	2.19E-06	1.89E-06	1.42E-06	1.89E-06	1.77E-06	1.73E-06	1.92E-06	2.14E-06
Chromium, hexavalent	9.31E-06	5.34E-06	1.34E-05	5.46E-06	4.46E-06	6.39E-06	4.54E-06	2.21E-06	3.25E-06	6.66E-06	5.08E-06	3.27E-06	2.50E-06	3.07E-06	3.46E-06	3.02E-06	3.40E-06
Chrysene	3.74E-09	3.07E-09	5.42E-09	2.95E-09	2.72E-09	4.53E-09	3.56E-09	3.47E-09	2.09E-09	2.96E-09	2.54E-09	1.92E-09	2.55E-09	2.38E-09	2.33E-09	2.59E-09	2.89E-09
Copper	6.67E-05	4.00E-05	9.95E-05	4.22E-05	3.37E-05	4.88E-05	3.42E-05	1.79E-05	2.42E-05	4.66E-05	3.60E-05	2.38E-05	2.35E-05	2.66E-05	2.65E-05	2.26E-05	2.56E-05
Crystalline silica (respirable)	7.26E-03	4.34E-03	1.07E-02	4.62E-03	3.61E-03	5.31E-03	3.61E-03	1.93E-03	2.65E-03	5.00E-03	3.84E-03	2.59E-03	3.02E-03	3.20E-03	2.89E-03	2.37E-03	2.70E-03
Dibenz[a,h]anthracene	2.86E-11	2.34E-11	4.12E-11	2.25E-11	2.08E-11	3.44E-11	2.71E-11	2.64E-11	1.60E-11	2.25E-11	1.94E-11	1.46E-11	1.94E-11	1.82E-11	1.78E-11	1.97E-11	2.20E-11
p-Dichlorobenzene	5.71E-06	4.66E-06	8.24E-06	4.50E-06	4.15E-06	6.89E-06	5.42E-06	5.28E-06	3.19E-06	4.51E-06	3.88E-06	2.92E-06	3.88E-06	3.63E-06	3.55E-06	3.95E-06	4.39E-06
1,1-Dichloroethane	1.92E-06	1.57E-06	2.78E-06	1.52E-06	1.40E-06	2.32E-06	1.83E-06	1.78E-06	1.08E-06	1.52E-06	1.31E-06	9.81E-07	1.31E-06	1.22E-06	1.20E-06	1.33E-06	1.48E-06
1,2-Dichloropropane	2.62E-06	2.15E-06	3.79E-06	2.08E-06	1.91E-06	3.17E-06	2.50E-06	2.43E-06	1.47E-06	2.07E-06	1.79E-06	1.34E-06	1.78E-06	1.67E-06	1.64E-06	1.82E-06	2.02E-06
1,3-Dichloropropene	1.08E-05	8.80E-06	1.55E-05	8.49E-06	7.82E-06	1.30E-05	1.02E-05	9.97E-06	6.03E-06	8.51E-06	7.31E-06	5.50E-06	7.31E-06	6.85E-06	6.71E-06	7.44E-06	8.29E-06
Diesel particulate matter	1.54E-04	1.20E-04	2.85E-04	1.18E-04	9.30E-05	1.43E-04	9.60E-05	2.78E-05	5.17E-05	1.16E-04	1.51E-04	5.25E-05	6.03E-05	7.31E-05	7.71E-05	6.14E-05	6.92E-05
Ethyl chloride (Chloroethane)	3.75E-06	3.07E-06	5.42E-06	2.97E-06	2.73E-06	4.53E-06	3.57E-06	3.48E-06	2.11E-06	2.97E-06	2.56E-06	1.92E-06	2.55E-06	2.38E-06	2.34E-06	2.60E-06	2.89E-06
Ethyl benzene	9.33E-05	7.64E-05	1.34E-04	7.35E-05	6.79E-05	1.13E-04	8.86E-05	8.64E-05	5.23E-05	7.35E-05	6.34E-05	4.76E-05	6.34E-05	5.93E-05	5.81E-05	6.44E-05	7.19E-05
Ethylene dibromide (EDB)	5.82E-06	4.77E-06	8.42E-06	4.60E-06	4.24E-06	7.03E-06	5.53E-06	5.40E-06	3.27E-06	4.60E-06	3.97E-06	2.98E-06	3.96E-06	3.71E-06	3.63E-06	4.03E-06	4.49E-06
Ethylene dichloride (EDC)	2.30E-06	1.89E-06	3.33E-06	1.82E-06	1.68E-06	2.78E-06	2.19E-06	2.13E-06	1.29E-06	1.82E-06	1.57E-06	1.18E-06	1.57E-06	1.47E-06	1.43E-06	1.60E-06	1.78E-06
Formaldehyde	6.10E-06	5.00E-06	8.82E-06	4.83E-06	4.44E-06	7.37E-06	5.81E-06	5.65E-06	3.43E-06	4.82E-06	4.16E-06	3.12E-06	4.16E-06	3.89E-06	3.81E-06	4.23E-06	4.71E-06
1,2,3,4,6,7,8-HpCDD	9.33E-13	7.64E-13	1.34E-12	7.35E-13	6.79E-13	1.13E-12	8.86E-13	8.64E-13	5.23E-13	7.35E-13	6.34E-13	4.76E-13	6.34E-13	5.93E-13	5.81E-13	6.44E-13	7.19E-13
1,2,3,4,6,7,8-HpCDF	4.52E-13	3.70E-13	6.54E-13	3.57E-13	3.29E-13	5.45E-13	4.30E-13	4.19E-13	2.54E-13	3.57E-13	3.07E-13	2.31E-13	3.07E-13	2.88E-13	2.81E-13	3.13E-13	3.49E-13
1,2,3,4,7,8,9-HpCDF	1.17E-13	9.56E-14	1.69E-13	9.23E-14	8.51E-14	1.41E-13	1.11E-13	1.08E-13	6.55E-14	9.24E-14	7.95E-14	5.97E-14	7.95E-14	7.44E-14	7.28E-14	8.08E-14	9.00E-14
1,2,3,4,7,8-HxCDD	2.60E-13	2.13E-13	3.75E-13	2.06E-13	1.89E-13	3.14E-13	2.47E-13	2.41E-13	1.46E-13	2.05E-13	1.77E-13	1.33E-13	1.77E-13	1.66E-13	1.62E-13	1.80E-13	2.00E-13
1,2,3,6,7,8-HxCDD	2.57E-13	2.11E-13	3.70E-13	2.03E-13	1.87E-13	3.10E-13	2.44E-13	2.38E-13	1.44E-13	2.03E-13	1.75E-13	1.31E-13	1.74E-13	1.63E-13	1.60E-13	1.78E-13	1.98E-13
1,2,3,7,8,9-HxCDD	2.66E-13	2.18E-13	3.84E-13	2.10E-13	1.93E-13	3.21E-13	2.53E-13	2.46E-13	1.49E-13	2.10E-13	1.81E-13	1.36E-13	1.81E-13	1.69E-13	1.66E-13	1.84E-13	2.05E-13
1,2,3,4,7,8-HxCDF	3.94E-13	3.22E-13	5.69E-13	3.11E-13	2.87E-13	4.75E-13	3.74E-13	3.65E-13	2.21E-13	3.11E-13	2.68E-13	2.01E-13	2.68E-13	2.51E-13	2.45E-13	2.73E-13	3.04E-13
1,2,3,6,7,8-HxCDF	3.69E-13	3.01E-13	5.32E-13	2.91E-13	2.68E-13	4.46E-13	3.51E-13	3.41E-13	2.07E-13	2.91E-13	2.51E-13	1.88E-13	2.51E-13	2.35E-13	2.30E-13	2.55E-13	2.84E-13
1,2,3,7,8,9-HxCDF	1.24E-13	1.02E-13	1.80E-13	9.83E-14	9.07E-14	1.50E-13	1.18E-13	1.15E-13	6.99E-14	9.82E-14	8.47E-14	6.37E-14	8.46E-14	7.92E-14	7.76E-14	8.63E-14	9.58E-14
2,3,4,6,7,8-HxCDF	2.27E-13	1.86E-13	3.28E-13	1.79E-13	1.65E-13	2.74E-13	2.16E-13	2.11E-13	1.27E-13	1.79E-13	1.55E-13	1.16E-13	1.54E-13	1.44E-13	1.42E-13	1.57E-13	1.75E-13
Hydrochloric acid	4.53E-03	3.70E-03	6.54E-03	3.57E-03	3.30E-03	5.48E-03	4.30E-03	4.20E-03	2.54E-03	3.58E-03	3.09E-03	2.31E-03	3.08E-03	2.88E-03	2.82E-03	3.13E-03	3.49E-03
Indeno[1,2,3-cd]pyrene	2.12E-11	1.73E-11	3.06E-11	1.67E-11	1.54E-11	2.56E-11	2.01E-11	1.96E-11	1.19E-11	1.67E-11	1.44E-11	1.08E-11	1.43E-11	1.35E-11	1.32E-11	1.47E-11	1.63E-11
Lead	6.24E-06	3.79E-06	9.62E-06	4.00E-06	3.20E-06	4.71E-06	3.28E-06	1.57E-06	2.25E-06	4.41E-06	3.42E-06	2.23E-06	2.08E-06	2.38E-06	2.51E-06	2.16E-06	2.45E-06
Manganese	3.86E-07	3.16E-07	5.59E-07	3.05E-07	2.81E-07	4.67E-07	3.67E-07	3.58E-07	2.17E-07	3.05E-07	2.63E-07	1.97E-07	2.63E-07	2.46E-07	2.41E-07	2.68E-07	2.98E-07
Mercury	1.58E-05	1.26E-05	2.29E-05	1.22E-05	1.11E-05	1.84E-05	1.44E-05	1.36E-05	8.54E-06	1.23E-05	1.05E-05	7.81E-06	1.02E-05	9.63E-06	9.47E-06	1.04E-05	1.16E-05
Methyl bromide	6.05E-05	4.96E-05	8.74E-05	4.79E-05	4.40E-05	7.32E-05	5.76E-05	5.61E-05	3.39E-05	4.78E-05	4.12E-05	3.10E-05	4.12E-05	3.85E-05	3.77E-05	4.19E-05	4.67E-05
Methyl chloroform	3.10E-06	2.53E-06	4.48E-06	2.45E-06	2.25E-06	3.74E-06	2.95E-06	2.87E-06	1.74E-06	2.45E-06	2.11E-06	1.58E-06	2.11E-06	1.97E-06	1.93E-06	2.14E-06	2.39E-06
Methylene chloride	1.25E-05	1.03E-05	1.81E-05	9.89E-06	9.12E-06	1.51E-05	1.19E-05	1.16E-05	7.04E-06	9.91E-06	8.52E-06	6.43E-06	8.52E-06	7.97E-06	7.81E-06	8.68E-06	9.67E-06
Naphthalene	1.35E-05	1.10E-05	1.94E-05	1.06E-05	9.82E-06	1.63E-05	1.28E-05	1.25E-05	7.56E-06	1.06E-05	9.17E-06	6.90E-06	9.15E-06	8.57E-06	8.40E-06	9.32E-06	1.04E-05
Nickel	2.01E-04	1.25E-04	3.03E-04	1.30E-04	1.10E-04	1.72E-04	1.23E-04	5.45E-05	7.86E-05	1.45E-04	1.15E-04	7.56E-05	6.64E-05	7.94E-05	8.55E-05	8.03E-05	8.93E-05
1,2,3,4,6,7,8,9-OCDD	1.96E-12	1.60E-12	2.82E-12	1.54E-12	1.42E-12	2.36E-12	1.86E-12	1.81E-12	1.10E-12	1.55E-12	1.33E-12	1.00E-12	1.33E-12	1.24E-12	1.22E-12	1.35E-12	1.51E-12
1,2,3,4,6,7,8,9-OCDF	4.46E-13	3.66E-13	6.45E-13	3.53E-13	3.25E-13	5.40E-13	4.24E-13	4.14E-13	2.50E-13	3.52E-13	3.05E-13	2.28E-13	3.03E-13	2.84E-13	2.78E-13	3.09E-13	3.44E-13
1,2,3,7,8-PeCDD	2.30E-13	1.88E-13	3.32E-13	1.81E-13	1.67E-13	2.77E-13	2.18E-13	2.13E-13	1.29E-13	1.81E-13	1.56E-13	1.17E-13	1.56E-13	1.46E-13	1.43E-13	1.59E-13	1.77E-13
1,2,3,7,8-PeCDF	1.78E-12	1.45E-12	2.57E-12	1.40E-12	1.29E-12	2.15E-12	1.69E-12	1.65E-12	9.97E-13	1.41E-12	1.21E-12	9.09E-13	1.21E-12	1.13E-12	1.11E-12	1.23E-12	1.37E-12
2,3,4,7,8-PeCDF	2.66E-12	2.18E-12	3.84E-12	2.10E-12	1.93E-12	3.21E-12	2.53E-12	2.46E-12	1.49E-12	2.10E-12	1.81E-12	1.36E-12	1.81E-12	1.69E-12	1.66E-12	1.84E-12	2.05E-12
Perchloroethylene	5.15E-06	4.21E-06	7.43E-06	4.06E-06	3.75E-06	6.21E-06	4.87E-06	4.77E-06	2.88E-06	4.06E-06	3.50E-06	2.63E-06	3.49E-06	3.27E-06	3.20E-06	3.56E-06	3.97E-06
Selenium	6.80E-06	4.12E-06	9.83E-06	4.30E-06	3.51E-06	5.19E-06	3.69E-06	2.09E-06	2.57E-06	4.79E-06	3.72E-06	2.50E-06	2.55E-06	2.82E-06	2.78E-06	2.46E-06	2.77E-06
Styrene	2.35E-05	1.93E-05	3.40E-05	1.86E-05	1.71E-05	2.85E-05	2.24E-05	2.18E-05	1.32E-05	1.86E-05	1.60E-05	1.20E-05	1.60E-05	1.50E-05	1.47E-05	1.63E-05	1.81E-05
2,3,7,8-TCDD	2.25E-13	1.84E-13	3.25E-13	1.78E-13	1.64E-13	2.72E-13	2.14E-13	2.09E-13	1.26E-13	1.78E-13	1.54E-13	1.15E-13	1.53E-13	1.44E-13	1.40E-13	1.56E-13	1.74E-13
2,3,7,8-TCDF	1.12E-11	9.15E-12	1.61E-11	8.84E-12	8.15E-12	1.35E-11	1.06E-11	1.04E-11	6.26E-12	8.84E-12	7.61E-12	5.72E-12	7.60E-12	7.11E-12	6.97E-12	7.73E-12	8.62E-12
1,1,2,2-Tetrachloroethane	3.90E-06	3.20E-06	5.64E-06	3.08E-06	2.85E-06	4.72E-06	3.71E-06	3.62E-06	2.19E-06	3.09E-06	2.65E-06	2.00E-06	2.66E-06	2.49E-06	2.43E-06	2.70E-06	3.01E-06
Toluene	8.38E-04	6.85E-04	1.21E-03	6.60E-04	6.09E-04	1.01E-03	7.95E-04	7.77E-04	4.70E-04	6.62E-04	5.69E-04	4.28E-04	5.69E-04	5.33E-04	5.22E-04	5.81E-04	6.45E-04
1,1,2-Trichloroethane	5.18E-06	4.24E-06	7.48E-06	4.09E-06	3.77E-06	6.25E-06	4.92E-06	4.80E-06	2.90E-06	4.09E-06	3.52E-06	2.65E-06	3.52E-06	3.29E-06	3.22E-06	3.58E-06	3.99E-06
Trichloroethylene	4.07E-06	3.34E-06	5.87E-06	3.22E-06	2.97E-06	4.93E-06	3.87E-06	3.77E-06	2.28E-06	3.22E-06	2.78E-06	2.09E-06	2.77E-06	2.60E-06	2.54E-06	2.82E-06	3.14E-06
Vanadium	6.26E-04	3.85E-04	9.39E-04	3.99E-04	3.37E-04	5.22E-04	3.75E-04	1.66E-04	2.40E-04	4.52E-04	3.54E-04	2.32E-04	1.92E-04	2.35E-04	2.60E-04	2.45E-04	2.72E-04
Vinyl chloride	1.37E-05	1.12E-05	1.98E-05	1.08E-05	9.98E-06	1.66E-05	1.30E-05	1.27E-05	7.69E-06	1.08E-05	9.34E-06	7.02E-06	9.33E-06	8.73E-06	8.55E-06	9.49E-06	1.06E-05
Vinylidene chloride	3.76E-06	3.08E-06	5.42E-06	2.97E-06	2.74E-06	4.54E-06	3.57E-06	3.49E-06	2.11E-06	2.97E-06	2.56E-06	1.92E-06	2.55E-06	2.39E-06	2.34E-06	2.60E-06	2.90E-06
o-Xylene	1.32E-04	1.08E-04	1.91E-04	1.04E-04	9.61E-05	1.60E-04	1.26E-04	1.22E-04	7.41E-05	1.04E-04	8.98E-05	6.74E-05	8.98E-05	8.42E-05	8.23E-05	9.15E-05	1.02E-04
Xylenes (mixed)	6.73E-04	5.51E-04	9.74E-04	5.32E-04	4.89E-04	8.15E-04	6.40E-04	6.23E-04	3.77E-04	5.32E-04	4.58E-04	3.44E-04	4.57E-04	4.29E-04	4.19E-04	4.66E-04	5.19E-04

Chemical	18 CS 510001	19 CS 509901	20 Daycare	21 Daycare	22 Preschool	23 Preschool	24 Preschool	25 Preschool	26 Preschool	27 School-Age Care	28 School	29 School	30 School	31 School	32 School	33 School
Acetaldehyde	7.98E-05	7.36E-05	7.70E-05	7.67E-05	7.82E-05	1.14E-04	8.51E-05	8.03E-05	1.07E-04	8.54E-05	7.12E-05	8.83E-05	8.51E-05	7.91E-05	8.43E-05	1.26E-04
Acrolein	3.11E-06	2.87E-06	3.01E-06	2.98E-06	3.05E-06	4.45E-06	3.31E-06	3.13E-06	4.17E-06	3.33E-06	2.77E-06	3.45E-06	3.31E-06	3.08E-06	3.28E-06	4.88E-06
Arsenic	4.64E-06	3.60E-06	4.53E-06	3.36E-06	4.39E-06	9.23E-06	4.48E-06	4.36E-06	7.19E-06	3.97E-06	3.95E-06	5.67E-06	5.48E-06	4.12E-06	4.39E-06	6.83E-06
Benz[a]anthracene	9.06E-10	8.35E-10	8.76E-10	8.73E-10	8.87E-10	1.30E-09	9.67E-10	9.12E-10	1.22E-09	9.71E-10	8.08E-10	1.00E-09	9.66E-10	8.98E-10	9.60E-10	1.43E-09
Benzene	4.52E-04	4.16E-04	4.37E-04	4.34E-04	4.43E-04	6.48E-04	4.81E-04	4.53E-04	6.05E-04	4.84E-04	4.03E-04	5.00E-04	4.81E-04	4.47E-04	4.77E-04	7.09E-04
Benzo[a]pyrene	2.04E-11	1.88E-11	1.97E-11	1.96E-11	2.00E-11	2.92E-11	2.17E-11	2.05E-11	2.73E-11	2.18E-11	1.82E-11	2.26E-11	2.17E-11	2.02E-11	2.16E-11	3.20E-11
Benzo[b]fluoranthene	1.29E-10	1.19E-10	1.25E-10	1.24E-10	1.27E-10	1.85E-10	1.38E-10	1.30E-10	1.74E-10	1.39E-10	1.16E-10	1.43E-10	1.38E-10	1.28E-10	1.37E-10	2.03E-10
Benzo[k]fluoranthene	2.04E-11	1.88E-11	1.97E-11	1.96E-11	2.00E-11	2.92E-11	2.17E-11	2.05E-11	2.73E-11	2.18E-11	1.82E-11	2.26E-11	2.17E-11	2.02E-11	2.16E-11	3.20E-11
Benzyl chloride	7.01E-06	6.45E-06	6.79E-06	6.73E-06	6.88E-06	1.01E-05	7.48E-06	7.04E-06	9.43E-06	7.51E-06	6.24E-06	7.76E-06	7.46E-06	6.94E-06	7.41E-06	1.10E-05
Beryllium	1.11E-06	8.69E-07	1.09E-06	8.25E-07	1.06E-06	2.20E-06	1.11E-06	1.08E-06	1.73E-06	9.50E-07	9.50E-07	1.36E-06	1.32E-06	9.95E-07	1.06E-06	1.63E-06
1,3-Butadiene	6.35E-06	5.86E-06	6.13E-06	6.08E-06	6.21E-06	9.10E-06	6.77E-06	6.38E-06	8.50E-06	6.82E-06	5.66E-06	7.03E-06	6.76E-06	6.30E-06	6.70E-06	1.00E-05
Cadmium	2.03E-06	1.58E-06	2.00E-06	1.50E-06	1.93E-06	4.05E-06	2.02E-06	1.96E-06	3.16E-06	1.74E-06	1.73E-06	2.49E-06	2.40E-06	1.81E-06	1.93E-06	2.97E-06
Carbon tetrachloride	4.26E-06	3.92E-06	4.11E-06	4.09E-06	4.18E-06	6.10E-06	4.53E-06	4.28E-06	5.73E-06	4.56E-06	3.80E-06	4.71E-06	4.53E-06	4.22E-06	4.51E-06	6.70E-06
Chlorobenzene	3.83E-05	3.53E-05	3.70E-05	3.68E-05	3.76E-05	5.51E-05	4.08E-05	3.85E-05	5.14E-05	4.11E-05	3.42E-05	4.25E-05	4.08E-05	3.79E-05	4.06E-05	6.03E-05
Chloroform	1.98E-06	1.83E-06	1.92E-06	1.91E-06	1.95E-06	2.84E-06	2.11E-06	1.99E-06	2.66E-06	2.12E-06	1.77E-06	2.20E-06	2.11E-06	1.97E-06	2.10E-06	3.12E-06
Chromium, hexavalent	4.84E-06	3.60E-06	4.41E-06	3.17E-06	4.43E-06	9.91E-06	4.13E-06	4.09E-06	7.50E-06	4.00E-06	4.09E-06	5.90E-06	5.72E-06	4.16E-06	4.35E-06	7.27E-06
Chrysene	2.67E-09	2.47E-09	2.59E-09	2.57E-09	2.62E-09	3.83E-09	2.84E-09	2.69E-09	3.59E-09	2.86E-09	2.38E-09	2.96E-09	2.85E-09	2.65E-09	2.83E-09	4.20E-09
Copper	3.50E-05	2.71E-05	3.46E-05	2.57E-05	3.34E-05	7.00E-05	3.49E-05	3.39E-05	5.47E-05	2.96E-05	2.98E-05	4.28E-05	4.14E-05	3.12E-05	3.34E-05	5.07E-05
Crystalline silica (respirable)	3.86E-03	3.03E-03	3.81E-03	2.84E-03	3.82E-03	7.49E-03	4.18E-03	4.05E-03	5.89E-03	3.09E-03	3.32E-03	4.59E-03	4.45E-03	3.40E-03	3.64E-03	5.23E-03
Dibenz[a,h]anthracene	2.04E-11	1.88E-11	1.97E-11	1.96E-11	2.00E-11	2.92E-11	2.17E-11	2.05E-11	2.73E-11	2.18E-11	1.82E-11	2.26E-11	2.17E-11	2.02E-11	2.16E-11	3.20E-11
p-Dichlorobenzene	4.07E-06	3.74E-06	3.94E-06	3.91E-06	3.99E-06	5.83E-06	4.33E-06	4.09E-06	5.47E-06	4.36E-06	3.63E-06	4.51E-06	4.33E-06	4.03E-06	4.30E-06	6.40E-06
1,1-Dichloroethane	1.37E-06	1.27E-06	1.33E-06	1.32E-06	1.35E-06	1.97E-06	1.46E-06	1.38E-06	1.84E-06	1.47E-06	1.22E-06	1.52E-06	1.46E-06	1.36E-06	1.45E-06	2.16E-06
1,2-Dichloropropane	1.88E-06	1.73E-06	1.81E-06	1.80E-06	1.84E-06	2.69E-06	2.00E-06	1.88E-06	2.52E-06	2.01E-06	1.67E-06	2.08E-06	2.00E-06	1.86E-06	1.98E-06	2.95E-06
1,3-Dichloropropene	7.70E-06	7.08E-06	7.41E-06	7.36E-06	7.52E-06	1.10E-05	8.18E-06	7.72E-06	1.03E-05	8.24E-06	6.83E-06	8.50E-06	8.16E-06	7.61E-06	8.12E-06	1.21E-05
Diesel particulate matter	1.24E-04	7.84E-05	9.59E-05	7.14E-05	1.09E-04	1.46E-04	9.75E-05	9.63E-05	1.55E-04	8.20E-05	9.08E-05	1.67E-04	1.57E-04	9.29E-05	1.00E-04	1.45E-04
Ethyl chloride (Chloroethane)	2.68E-06	2.47E-06	2.59E-06	2.57E-06	2.63E-06	3.83E-06	2.85E-06	2.69E-06	3.59E-06	2.87E-06	2.39E-06	2.96E-06	2.85E-06	2.65E-06	2.83E-06	4.22E-06
Ethyl benzene	6.64E-05	6.12E-05	6.44E-05	6.39E-05	6.52E-05	9.52E-05	7.10E-05	6.68E-05	8.92E-05	7.12E-05	5.93E-05	7.36E-05	7.10E-05	6.60E-05	7.03E-05	1.05E-04
Ethylene dibromide (EDB)	4.16E-06	3.84E-06	4.02E-06	4.00E-06	4.08E-06	5.97E-06	4.43E-06	4.18E-06	5.58E-06	4.46E-06	3.71E-06	4.61E-06	4.43E-06	4.12E-06	4.40E-06	6.54E-06
Ethylene dichloride (EDC)	1.64E-06	1.51E-06	1.59E-06	1.58E-06	1.61E-06	2.36E-06	1.75E-06	1.65E-06	2.21E-06	1.76E-06	1.47E-06	1.82E-06	1.75E-06	1.63E-06	1.74E-06	2.59E-06
Formaldehyde	4.36E-06	4.01E-06	4.21E-06	4.19E-06	4.27E-06	6.25E-06	4.65E-06	4.38E-06	5.84E-06	4.67E-06	3.89E-06	4.83E-06	4.64E-06	4.32E-06	4.61E-06	6.84E-06
1,2,3,4,6,7,8-HpCDD	6.64E-13	6.12E-13	6.44E-13	6.39E-13	6.52E-13	9.52E-13	7.10E-13	6.68E-13	8.92E-13	7.12E-13	5.93E-13	7.36E-13	7.10E-13	6.60E-13	7.03E-13	1.05E-12
1,2,3,4,6,7,8-HpCDF	3.23E-13	2.97E-13	3.12E-13	3.10E-13	3.17E-13	4.63E-13	3.44E-13	3.25E-13	4.33E-13	3.46E-13	2.88E-13	3.58E-13	3.44E-13	3.20E-13	3.41E-13	5.08E-13
1,2,3,4,7,8,9-HpCDF	8.35E-14	7.70E-14	8.07E-14	8.01E-14	8.18E-14	1.19E-13	8.90E-14	8.38E-14	1.12E-13	8.93E-14	7.43E-14	9.26E-14	8.90E-14	8.28E-14	8.83E-14	1.31E-13
1,2,3,4,7,8-HxCDD	1.86E-13	1.71E-13	1.80E-13	1.78E-13	1.82E-13	2.65E-13	1.98E-13	1.86E-13	2.49E-13	1.99E-13	1.65E-13	2.06E-13	1.98E-13	1.84E-13	1.96E-13	2.92E-13
1,2,3,6,7,8-HxCDD	1.83E-13	1.69E-13	1.77E-13	1.76E-13	1.80E-13	2.62E-13	1.95E-13	1.84E-13	2.46E-13	1.96E-13	1.64E-13	2.03E-13	1.95E-13	1.82E-13	1.94E-13	2.88E-13
1,2,3,7,8,9-HxCDD	1.90E-13	1.75E-13	1.83E-13	1.82E-13	1.86E-13	2.72E-13	2.02E-13	1.91E-13	2.54E-13	2.03E-13	1.69E-13	2.10E-13	2.02E-13	1.88E-13	2.01E-13	2.99E-13
1,2,3,4,7,8-HxCDF	2.81E-13	2.59E-13	2.71E-13	2.70E-13	2.76E-13	4.03E-13	3.00E-13	2.83E-13	3.77E-13	3.01E-13	2.51E-13	3.12E-13	2.99E-13	2.78E-13	2.98E-13	4.41E-13
1,2,3,6,7,8-HxCDF	2.63E-13	2.43E-13	2.54E-13	2.53E-13	2.58E-13	3.77E-13	2.80E-13	2.64E-13	3.53E-13	2.82E-13	2.35E-13	2.91E-13	2.80E-13	2.60E-13	2.78E-13	4.14E-13
1,2,3,7,8,9-HxCDF	8.89E-14	8.19E-14	8.59E-14	8.53E-14	8.73E-14	1.27E-13	9.47E-14	8.93E-14	1.19E-13	9.52E-14	7.94E-14	9.84E-14	9.46E-14	8.80E-14	9.38E-14	1.40E-13
2,3,4,6,7,8-HxCDF	1.62E-13	1.49E-13	1.57E-13	1.56E-13	1.59E-13	2.32E-13	1.72E-13	1.63E-13	2.17E-13	1.74E-13	1.45E-13	1.79E-13	1.73E-13	1.61E-13	1.71E-13	2.55E-13
Hydrochloric acid	3.24E-03	2.99E-03	3.13E-03	3.10E-03	3.17E-03	4.63E-03	3.44E-03	3.25E-03	4.34E-03	3.47E-03	2.89E-03	3.58E-03	3.45E-03	3.21E-03	3.42E-03	5.08E-03
Indeno[1,2,3-cd]pyrene	1.51E-11	1.39E-11	1.46E-11	1.45E-11	1.48E-11	2.16E-11	1.61E-11	1.52E-11	2.03E-11	1.62E-11	1.35E-11	1.67E-11	1.61E-11	1.50E-11	1.60E-11	2.38E-11
Lead	3.25E-06	2.51E-06	3.27E-06	2.42E-06	3.06E-06	6.61E-06	3.14E-06	3.06E-06	5.25E-06	2.83E-06	2.77E-06	4.07E-06	3.93E-06	2.97E-06	3.15E-06	4.93E-06
Manganese	2.75E-07	2.54E-07	2.67E-07	2.64E-07	2.70E-07	3.95E-07	2.93E-07	2.77E-07	3.70E-07	2.96E-07	2.46E-07	3.05E-07	2.94E-07	2.73E-07	2.91E-07	4.32E-07
Mercury	1.09E-05	9.97E-06	1.06E-05	1.04E-05	1.07E-05	1.62E-05	1.16E-05	1.09E-05	1.49E-05	1.16E-05	9.70E-06	1.22E-05	1.18E-05	1.08E-05	1.15E-05	1.72E-05
Methyl bromide	4.32E-05	3.99E-05	4.18E-05	4.15E-05	4.24E-05	6.20E-05	4.60E-05	4.35E-05	5.79E-05	4.63E-05	3.86E-05	4.79E-05	4.60E-05	4.28E-05	4.57E-05	6.80E-05
Methyl chloroform	2.21E-06	2.04E-06	2.14E-06	2.12E-06	2.17E-06	3.17E-06	2.35E-06	2.22E-06	2.97E-06	2.37E-06	1.97E-06	2.46E-06	2.36E-06	2.20E-06	2.34E-06	3.48E-06
Methylene chloride	8.95E-06	8.24E-06	8.65E-06	8.58E-06	8.79E-06	1.28E-05	9.53E-06	8.99E-06	1.20E-05	9.60E-06	8.00E-06	9.90E-06	9.52E-06	8.86E-06	9.48E-06	1.41E-05
Naphthalene	9.60E-06	8.86E-06	9.30E-06	9.23E-06	9.42E-06	1.38E-05	1.02E-05	9.66E-06	1.29E-05	1.03E-05	8.58E-06	1.07E-05	1.02E-05	9.53E-06	1.02E-05	1.51E-05
Nickel	1.11E-04	8.78E-05	1.08E-04	8.71E-05	1.03E-04	2.11E-04	1.06E-04	1.01E-04	1.70E-04	1.03E-04	9.43E-05	1.37E-04	1.31E-04	9.94E-05	1.06E-04	1.77E-04
1,2,3,4,6,7,8,9-OCDD	1.40E-12	1.29E-12	1.35E-12	1.34E-12	1.37E-12	2.00E-12	1.49E-12	1.40E-12	1.88E-12	1.50E-12	1.25E-12	1.55E-12	1.49E-12	1.39E-12	1.48E-12	2.20E-12
1,2,3,4,6,7,8,9-OCDF	3.18E-13	2.93E-13	3.08E-13	3.06E-13	3.12E-13	4.57E-13	3.39E-13	3.20E-13	4.28E-13	3.41E-13	2.85E-13	3.53E-13	3.39E-13	3.16E-13	3.37E-13	5.00E-13
1,2,3,7,8-PeCDD	1.64E-13	1.51E-13	1.58E-13	1.57E-13	1.61E-13	2.35E-13	1.74E-13	1.65E-13	2.20E-13	1.76E-13	1.46E-13	1.81E-13	1.75E-13	1.62E-13	1.73E-13	2.58E-13
1,2,3,7,8-PeCDF	1.27E-12	1.17E-12	1.23E-12	1.22E-12	1.25E-12	1.82E-12	1.35E-12	1.28E-12	1.70E-12	1.36E-12	1.13E-12	1.41E-12	1.35E-12	1.26E-12	1.34E-12	2.00E-12
2,3,4,7,8-PeCDF	1.90E-12	1.75E-12	1.83E-12	1.82E-12	1.86E-12	2.72E-12	2.02E-12	1.91E-12	2.54E-12	2.03E-12	1.69E-12	2.10E-12	2.02E-12	1.88E-12	2.01E-12	2.99E-12
Perchloroethylene	3.67E-06	3.38E-06	3.54E-06	3.52E-06	3.60E-06	5.25E-06	3.91E-06	3.69E-06	4.92E-06	3.94E-06	3.28E-06	4.07E-06	3.91E-06	3.64E-06	3.88E-06	5.77E-06
Selenium	3.68E-06	2.91E-06	3.55E-06	2.74E-06	3.53E-06	7.09E-06	3.69E-06	3.58E-06	5.54E-06	3.15E-06	3.15E-06	4.40E-06	4.26E-06	3.26E-06	3.47E-06	5.32E-06
Styrene	1.68E-05	1.55E-05	1.63E-05	1.61E-05	1.65E-05	2.41E-05	1.79E-05	1.69E-05	2.26E-05	1.80E-05	1.50E-05	1.86E-05	1.79E-05	1.67E-05	1.78E-05	2.64E-05
2,3,7,8-TCDD	1.61E-13	1.48E-13	1.55E-13	1.54E-13	1.58E-13	2.31E-13	1.71E-13	1.62E-13	2.15E-13	1.72E-13	1.43E-13	1.78E-13	1.71E-13	1.59E-13	1.70E-13	2.53E-13
2,3,7,8-TCDF	7.98E-12	7.36E-12	7.70E-12	7.67E-12	7.82E-12	1.14E-11	8.51E-12	8.03E-12	1.07E-11	8.54E-12	7.12E-12	8.83E-12	8.51E-12	7.91E-12	8.43E-12	1.26E-11
1,1,2,2-Tetrachloroethane	2.79E-06	2.57E-06	2.69E-06	2.68E-06	2.74E-06	3.99E-06	2.96E-06	2.80E-06	3.74E-06	2.99E-06	2.49E-06	3.09E-06	2.97E-06	2.76E-06	2.95E-06	4.39E-06
Toluene	5.98E-04	5.51E-04	5.78E-04	5.75E-04	5.86E-04	8.55E-04	6.36E-04	6.01E-04	8.02E-04	6.39E-04	5.32E-04	6.61E-04	6.36E-04	5.92E-04	6.32E-04	9.40E-04
1,1,2-Trichloroethane	3.70E-06	3.41E-06	3.57E-06	3.54E-06	3.62E-06	5.29E-06	3.93E-06	3.71E-06	4.96E-06	3.96E-06	3.30E-06	4.09E-06	3.94E-06	3.66E-06	3.91E-06	5.81E-06
Trichloroethylene	2.91E-06	2.68E-06	2.81E-06	2.79E-06	2.85E-06	4.17E-06	3.10E-06	2.93E-06	3.90E-06	3.12E-06	2.59E-06	3.22E-06	3.10E-06	2.89E-06	3.07E-06	4.57E-06
Vanadium	3.40E-04	2.66E-04	3.29E-04	2.62E-04	3.12E-04	6.61E-04	3.14E-04	3.02E-04	5.27E-04	3.16E-04	2.87E-04	4.22E-04	4.06E-04	3.03E-04	3.23E-04	5.46E-04
Vinyl chloride	9.80E-06	9.03E-06	9.47E-06	9.42E-06	9.61E-06	1.40E-05	1.04E-05	9.85E-06	1.31E-05	1.05E-05	8.73E-06	1.09E-05	1.04E-05	9.71E-06	1.04E-05	1.54E-05
Vinylidene chloride	2.69E-06	2.47E-06	2.59E-06	2.58E-06	2.63E-06	3.85E-06	2.86E-06	2.69E-06	3.61E-06	2.88E-06	2.40E-06	2.98E-06	2.86E-06	2.66E-06	2.84E-06	4.22E-06
o-Xylene	9.43E-05	8.70E-05	9.11E-05	9.05E-05	9.24E-05	1.35E-04	1.01E-04	9.47E-05	1.27E-04	1.01E-04	8.42E-05	1.04E-04	1.01E-04	9.35E-05	9.97E-05	1.48E-04
Xylenes (mixed)	4.81E-04	4.43E-04	4.65E-04	4.62E-04	4.72E-04	6.90E-04	5.12E-04	4.82E-04	6.46E-04	5.17E-04	4.29E-04	5.33E-04	5.11E-04	4.76E-04	5.08E-04	7.56E-04

TABLE 8A

SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2006 METEOROLOGICAL DATA
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (µg/m3)

	Key Receptors																															
	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	57	63	65	66	1637	1716	11396	12566	13886	29527	30151	30292	30451	30513	30954	30955	30956
Chemical	School	School	School	School	School	School	School	School	School	School	School	School	School	School	School	MEIW - Acute (Future)	Residence	MEIW	Worker	PMI - Acute	PMI - Cancer/ chronic	MEIR - Acute (Current)	MEIR - Acute (Future)	MEIR - Cancer/ chronic	CS 508303	CS 507401	CS 508001	CS 508304	CS 508403	CS 511703	CS 511702	Residence
Acetaldehyde	1.04E-04	8.15E-05	7.42E-05	7.07E-05	1.19E-04	6.94E-05	7.55E-05	1.19E-04	6.75E-05	6.89E-05	9.56E-05	1.14E-04	6.53E-05	1.26E-04	8.44E-05	1.96E-04	1.98E-04	2.83E-04	2.41E-04	3.87E-04	5.65E-04	3.83E-04	2.86E-04	3.11E-04	6.54E-05	5.38E-05	5.63E-05	6.05E-05	5.93E-05	1.22E-04	9.64E-05	2.03E-04
Acrolein	4.07E-06	3.17E-06	2.89E-06	2.76E-06	4.66E-06	2.70E-06	2.94E-06	4.62E-06	2.62E-06	2.67E-06	3.72E-06	4.45E-06	2.54E-06	4.91E-06	3.28E-06	7.64E-06	7.70E-06	1.10E-05	9.38E-06	1.50E-05	2.20E-05	1.49E-05	1.11E-05	1.21E-05	2.54E-06	2.10E-06	2.20E-06	2.36E-06	2.31E-06	4.73E-06	3.75E-06	7.93E-06
Arsenic	6.53E-06	4.57E-06	3.45E-06	4.12E-06	8.70E-06	4.07E-06	4.41E-06	5.39E-06	4.24E-06	3.39E-06	6.89E-06	7.99E-06	3.61E-06	9.81E-06	5.75E-06	2.28E-05	2.12E-05	2.64E-05	2.55E-05	4.40E-05	6.93E-05	1.37E-05	2.05E-05	2.69E-05	3.51E-06	2.08E-06	2.66E-06	2.87E-06	2.95E-06	8.10E-06	6.55E-06	1.19E-05
Benz[a]anthracene	1.19E-09	9.25E-10	8.44E-10	8.07E-10	1.36E-09	7.87E-10	8.56E-10	1.35E-09	7.66E-10	7.81E-10	1.09E-09	1.30E-09	7.42E-10	1.43E-09	9.58E-10	2.23E-09	2.25E-09	3.22E-09	2.73E-09	4.39E-09	6.43E-09	4.34E-09	3.25E-09	3.53E-09	7.41E-10	6.12E-10	6.39E-10	6.88E-10	6.73E-10	1.38E-09	1.10E-09	2.31E-09
Benzene	5.92E-04	4.62E-04	4.19E-04	4.01E-04	6.75E-04	3.93E-04	4.27E-04	6.71E-04	3.81E-04	3.89E-04	5.40E-04	6.46E-04	3.70E-04	7.15E-04	4.78E-04	1.11E-03	1.12E-03	1.60E-03	1.36E-03	2.18E-03	3.20E-03	2.16E-03	1.62E-03	1.76E-03	3.69E-04	3.05E-04	3.19E-04	3.43E-04	3.36E-04	6.88E-04	5.46E-04	1.15E-03
Benzo[a]pyrene	2.67E-11	2.08E-11	1.89E-11	1.81E-11	3.05E-11	1.77E-11	1.93E-11	3.03E-11	1.72E-11	1.76E-11	2.44E-11	2.92E-11	1.67E-11	3.22E-11	2.15E-11	5.00E-11	5.05E-11	7.23E-11	6.15E-11	9.84E-11	1.44E-10	9.77E-11	7.31E-11	7.93E-11	1.67E-11	1.37E-11	1.44E-11	1.55E-11	1.51E-11	3.10E-11	2.46E-11	5.20E-11
Benzo[b]fluoranthene	1.69E-10	1.32E-10	1.20E-10	1.15E-10	1.94E-10	1.13E-10	1.22E-10	1.92E-10	1.09E-10	1.11E-10	1.55E-10	1.86E-10	1.06E-10	2.04E-10	1.37E-10	3.18E-10	3.21E-10	4.59E-10	3.91E-10	6.27E-10	9.18E-10	6.19E-10	4.63E-10	5.04E-10	1.06E-10	8.73E-11	9.12E-11	9.81E-11	9.62E-11	1.97E-10	1.56E-10	3.30E-10
Benzo[k]fluoranthene	2.67E-11	2.08E-11	1.89E-11	1.81E-11	3.05E-11	1.77E-11	1.93E-11	3.03E-11	1.72E-11	1.76E-11	2.44E-11	2.92E-11	1.67E-11	3.22E-11	2.15E-11	5.00E-11	5.05E-11	7.23E-11	6.15E-11	9.84E-11	1.44E-10	9.77E-11	7.31E-11	7.93E-11	1.67E-11	1.37E-11	1.44E-11	1.55E-11	1.51E-11	3.10E-11	2.46E-11	5.20E-11
Benzyl chloride	9.19E-06	7.15E-06	6.52E-06	6.23E-06	1.05E-05	6.11E-06	6.62E-06	1.04E-05	5.94E-06	6.04E-06	8.40E-06	1.00E-05	5.74E-06	1.11E-05	7.41E-06	1.72E-05	1.74E-05	2.49E-05	2.12E-05	3.39E-05	4.96E-05	3.36E-05	2.51E-05	2.73E-05	5.73E-06	4.73E-06	4.95E-06	5.32E-06	5.21E-06	1.07E-05	8.46E-06	1.79E-05
Beryllium	1.58E-06	1.10E-06	8.25E-07	9.90E-07	2.08E-06	9.74E-07	1.05E-06	1.32E-06	1.01E-06	8.18E-07	1.65E-06	1.94E-06	8.59E-07	2.39E-06	1.38E-06	5.46E-06	5.16E-06	6.38E-06	6.01E-06	9.83E-06	1.36E-05	3.17E-06	4.93E-06	6.61E-06	8.50E-07	5.10E-07	6.44E-07	6.94E-07	7.10E-07	2.10E-06	1.58E-06	3.03E-06
1,3-Butadiene	8.32E-06	6.49E-06	5.91E-06	5.63E-06	9.48E-06	5.52E-06	5.99E-06	9.42E-06	5.36E-06	5.47E-06	7.60E-06	9.11E-06	5.19E-06	1.00E-05	6.72E-06	1.56E-05	1.57E-05	2.25E-05	1.91E-05	3.07E-05	4.50E-05	3.04E-05	2.28E-05	2.47E-05	5.19E-06	4.28E-06	4.48E-06	4.81E-06	4.71E-06	9.69E-06	7.67E-06	1.62E-05
Cadmium	2.88E-06	2.01E-06	1.50E-06	1.80E-06	3.83E-06	1.78E-06	1.92E-06	2.40E-06	1.85E-06	1.49E-06	3.02E-06	3.53E-06	1.57E-06	4.38E-06	2.51E-06	1.02E-05	9.67E-06	1.17E-05	1.12E-05	1.86E-05	2.84E-05	5.91E-06	8.92E-06	1.19E-05	1.55E-06	9.25E-07	1.18E-06	1.27E-06	1.30E-06	3.82E-06	2.89E-06	5.48E-06
Carbon tetrachloride	5.56E-06	4.34E-06	3.95E-06	3.78E-06	6.37E-06	3.70E-06	4.03E-06	6.31E-06	3.60E-06	3.66E-06	5.09E-06	6.11E-06	3.48E-06	6.73E-06	4.50E-06	1.04E-05	1.05E-05	1.51E-05	1.28E-05	2.06E-05	3.02E-05	2.04E-05	1.53E-05	1.66E-05	3.47E-06	2.87E-06	3.00E-06	3.23E-06	3.16E-06	6.49E-06	5.15E-06	1.09E-05
Chlorobenzene	5.02E-05	3.92E-05	3.56E-05	3.40E-05	5.73E-05	3.34E-05	3.62E-05	5.69E-05	3.24E-05	3.30E-05	4.58E-05	5.50E-05	3.13E-05	6.05E-05	4.04E-05	9.43E-05	9.49E-05	1.36E-04	1.16E-04	1.85E-04	2.72E-04	1.84E-04	1.37E-04	1.49E-04	3.13E-05	2.59E-05	2.71E-05	2.90E-05	2.85E-05	5.84E-05	4.63E-05	9.78E-05
Chloroform	2.60E-06	2.02E-06	1.84E-06	1.76E-06	2.97E-06	1.72E-06	1.87E-06	2.94E-06	1.68E-06	1.71E-06	2.38E-06	2.85E-06	1.62E-06	3.13E-06	2.09E-06	4.87E-06	4.92E-06	7.05E-06	5.99E-06	9.59E-06	1.40E-05	9.48E-06	7.09E-06	7.73E-06	1.62E-06	1.34E-06	1.40E-06	1.50E-06	1.48E-06	3.02E-06	2.40E-06	5.06E-06
Chromium, hexavalent	6.70E-06	4.63E-06	3.44E-06	4.33E-06	9.29E-06	4.15E-06	4.62E-06	5.35E-06	4.48E-06	3.39E-06	7.43E-06	8.52E-06	3.70E-06	9.88E-06	6.17E-06	2.06E-05	1.84E-05	2.64E-05	2.53E-05	4.57E-05	5.99E-05	1.49E-05	2.39E-05	2.86E-05	3.52E-06	1.95E-06	2.52E-06	2.80E-06	2.90E-06	6.57E-06	6.84E-06	1.20E-05
Chrysene	3.50E-09	2.73E-09	2.48E-09	2.38E-09	4.00E-09	2.32E-09	2.52E-09	3.97E-09	2.26E-09	2.30E-09	3.19E-09	3.83E-09	2.19E-09	4.22E-09	2.83E-09	6.55E-09	6.63E-09	9.50E-09	8.05E-09	1.29E-08	1.89E-08	1.28E-08	9.59E-09	1.04E-08	2.19E-09	1.81E-09	1.89E-09	2.03E-09	1.98E-09	4.07E-09	3.23E-09	6.80E-09
Copper	4.96E-05	3.49E-05	2.58E-05	3.11E-05	6.59E-05	3.06E-05	3.31E-05	4.07E-05	3.19E-05	2.56E-05	5.21E-05	6.13E-05	2.70E-05	7.59E-05	4.33E-05	1.78E-04	1.67E-04	2.02E-04	1.95E-04	3.25E-04	4.99E-04	1.01E-04	1.54E-04	2.07E-04	2.67E-05	1.58E-05	2.02E-05	2.19E-05	2.23E-05	6.62E-05	5.03E-05	9.34E-05
Crystalline silica (respirable)	5.33E-03	3.96E-03	2.69E-03	3.46E-03	7.17E-03	3.36E-03	3.60E-03	4.38E-03	3.45E-03	2.86E-03	5.71E-03	6.70E-03	2.90E-03	8.79E-03	4.62E-03	1.98E-02	1.93E-02	2.03E-02	1.91E-02	2.89E-02	3.48E-02	9.69E-03	1.58E-02	2.18E-02	2.94E-03	1.77E-03	2.22E-03	2.42E-03	2.42E-03	8.73E-03	5.79E-03	1.08E-02
Dibenz[a,h]anthracene	2.67E-11	2.08E-11	1.89E-11	1.81E-11	3.05E-11	1.77E-11	1.93E-11	3.03E-11	1.72E-11	1.76E-11	2.44E-11	2.92E-11	1.67E-11	3.22E-11	2.15E-11	5.00E-11	5.05E-11	7.23E-11	6.15E-11	9.84E-11	1.44E-10	9.77E-11	7.31E-11	7.93E-11	1.67E-11	1.37E-11	1.44E-11	1.55E-11	1.51E-11	3.10E-11	2.46E-11	5.20E-11
p-Dichlorobenzene	5.32E-06	4.16E-06	3.78E-06	3.61E-06	6.09E-06	3.54E-06	3.84E-06	6.04E-06	3.43E-06	3.50E-06	4.87E-06	5.83E-06	3.32E-06	6.42E-06	4.30E-06	1.00E-05	1.01E-05	1.45E-05	1.23E-05	1.97E-05	2.88E-05	1.95E-05	1.46E-05	1.59E-05	3.32E-06	2.74E-06	2.87E-06	3.09E-06	3.02E-06	6.20E-06	4.92E-06	1.04E-05
1,1-Dichloroethane	1.80E-06	1.40E-06	1.28E-06	1.22E-06	2.05E-06	1.19E-06	1.30E-06	2.04E-06	1.16E-06	1.18E-06	1.64E-06	1.97E-06	1.12E-06	2.17E-06	1.45E-06	3.37E-06	3.40E-06	4.88E-06	4.14E-06	6.64E-06	9.72E-06	6.56E-06	4.92E-06	5.35E-06	1.12E-06	9.26E-07	9.70E-07	1.04E-06	1.02E-06	2.09E-06	1.66E-06	3.50E-06
1,2-Dichloropropane	2.46E-06	1.91E-06	1.74E-06	1.66E-06	2.80E-06	1.63E-06	1.77E-06	2.78E-06	1.58E-06	1.61E-06	2.24E-06	2.69E-06	1.53E-06	2.96E-06	1.98E-06	4.60E-06	4.64E-06	6.65E-06	5.66E-06	9.07E-06	1.33E-05	8.96E-06	6.72E-06	7.31E-06	1.53E-06	1.26E-06	1.32E-06	1.42E-06	1.39E-06	2.86E-06	2.27E-06	4.77E-06
1,3-Dichloropropene	1.01E-05	7.85E-06	7.15E-06	6.82E-06	1.15E-05	6.67E-06	7.25E-06	1.14E-05	6.49E-06	6.60E-06	9.20E-06	1.10E-05	6.27E-06	1.21E-05	8.10E-06	1.89E-05	1.90E-05	2.73E-05	2.32E-05	3.72E-05	5.43E-05	3.68E-05	2.75E-05	2.99E-05	6.29E-06	5.18E-06	5.42E-06	5.82E-06	5.71E-06	1.17E-05	9.28E-06	1.96E-05
Diesel particulate matter	1.38E-04	1.15E-04	7.06E-05	9.89E-05	2.33E-04	6.49E-05	6.88E-05	1.16E-04	1.30E-04	7.12E-05	1.36E-04	1.84E-04	9.73E-05	2.36E-04	1.82E-04	4.16E-04	3.83E-04	7.75E-04	4.76E-04	1.58E-03	5.07E-04	2.07E-04	4.79E-04	6.64E-04	9.31E-05	4.25E-05	5.44E-05	6.59E-05	8.58E-05	1.59E-04	1.76E-04	3.29E-04
Ethyl chloride (Chloroethane)	3.50E-06	2.73E-06	2.49E-06	2.38E-06	4.00E-06	2.32E-06	2.53E-06	3.98E-06	2.26E-06	2.31E-06	3.21E-06	3.85E-06	2.19E-06	4.23E-06	2.83E-06	6.59E-06	6.64E-06	9.50E-06	8.09E-06	1.29E-05	1.90E-05	1.28E-05	9.59E-06	1.04E-05	2.19E-06	1.81E-06	1.89E-06	2.03E-06	1.99E-06	4.08E-06	3.23E-06	6.84E-06
Ethyl benzene	8.71E-05	6.78E-05	6.18E-05	5.91E-05	9.94E-05	5.79E-05	6.29E-05	9.87E-05	5.62E-05	5.73E-05	7.95E-05	9.52E-05	5.43E-05	1.05E-04	7.03E-05	1.63E-04	1.65E-04	2.36E-04	2.00E-04	3.22E-04	4.72E-04	3.18E-04	2.38E-04	2.59E-04	5.44E-05	4.49E-05	4.70E-05	5.05E-05	4.95E-05	1.01E-04	8.03E-05	1.69E-04
Ethylene dibromide (EDB)	5.45E-06	4.25E-06	3.87E-06	3.70E-06	6.23E-06	3.62E-06	3.93E-06	6.18E-06	3.52E-06	3.59E-06	4.98E-06	5.95E-06	3.40E-06	6.57E-06	4.39E-06	1.02E-05	1.03E-05	1.48E-05	1.25E-05	2.01E-05	2.95E-05	1.99E-05	1.49E-05	1.62E-05	3.40E-06	2.81E-06	2.93E-06	3.15E-06	3.09E-06	6.34E-06	5.02E-06	1.06E-05
Ethylene dichloride (EDC)	2.15E-06	1.68E-06	1.53E-06	1.46E-06	2.46E-06	1.43E-06	1.55E-06	2.44E-06	1.39E-06	1.42E-06	1.97E-06	2.35E-06	1.35E-06	2.59E-06	1.74E-06	4.04E-06	4.07E-06	5.84E-06	4.97E-06	7.96E-06	1.16E-05	7.88E-06	5.89E-06	6.41E-06	1.35E-06	1.11E-06	1.16E-06	1.25E-06	1.22E-06	2.50E-06	1.99E-06	4.19E-06
Formaldehyde	5.70E-06	4.45E-06	4.05E-06	3.87E-06	6.52E-06	3.79E-06	4.12E-06	6.48E-06	3.68E-06	3.76E-06	5.23E-06	6.24E-06	3.57E-06	6.89E-06	4.60E-06	1.07E-05	1.08E-05	1.55E-05	1.31E-05	2.11E-05	3.09E-05	2.09E-05	1.56E-05	1.70E-05	3.56E-06	2.94E-06	3.08E-06	3.30E-06	3.24E-06	6.65E-06	5.26E-06	1.11E-05
1,2,3,4,6,7,8-HpCDD	8.71E-13	6.78E-13	6.18E-13	5.91E-13	9.94E-13	5.79E-13	6.29E-13	9.87E-13	5.62E-13	5.73E-13	7.95E-13	9.52E-13	5.43E-13	1.05E-12	7.03E-13	1.63E-12	1.65E-12	2.36E-12	2.00E-12	3.22E-12	4.72E-12	3.18E-12	2.38E-12	2.59E-12	5.44E-13	4.49E-13	4.70E-13	5.05E-13	4.95E-13	1.01E-12	8.03E-13	1.69E-12
1,2,3,4,6,7,8-HpCDF	4.23E-13	3.30E-13	3.00E-13	2.86E-13	4.82E-13	2.81E-13	3.05E-13	4.80E-13	2.73E-13	2.78E-13	3.86E-13	4.63E-13	2.64E-13	5.10E-13	3.41E-13	7.94E-13	8.00E-13	1.15E-12	9.72E-13	1.56E-12	2.29E-12	1.54E-12	1.16E-12	1.26E-12	2.64E-13	2.18E-13	2.28E-13	2.45E-13	2.40E-13	4.92E-13	3.90E-13	8.25E-13
1,2,3,4,7,8,9-HpCDF	1.09E-13	8.52E-14	7.76E-14	7.42E-14	1.25E-13	7.26E-14	7.88E-14	1.24E-13	7.06E-14	7.20E-14	9.98E-14	1.19E-13	6.83E-14	1.32E-13	8.81E-14	2.05E-13	2.07E-13	2.96E-13	2.52E-13	4.02E-13	5.90E-13	3.98E-13	2.99E-13	3.25E-13	6.81E-14	5.63E-14	5.89E-14	6.33E-14	6.21E-14	1.27E-13	1.01E-13	2.13E-13
1,2,3,4,7,8-HxCDD	2.43E-13	1.89E-13	1.72E-13	1.65E-13	2.78E-13	1.61E-13	1.75E-13	2.76E-13	1.57E-13	1.60E-13	2.22E-13	2.66E-13	1.52E-13	2.93E-13	1.96E-13	4.56E-13	4.60E-13	6.59E-13	5.59E-13	8.96E-13	1.31E-12	8.89E-13	6.64E-13	7.23E-13	1.52E-13	1.25E-13	1.31E-13	1.41E-13	1.38E-13	2.83E-13	2.24E-13	4.73E-13
1,2,3,6,7,8-HxCDD	2.40E-13	1.87E-13	1.70E-13	1.63E-13	2.74E-13	1.59E-13	1.73E-13	2.72E-13	1.55E-13	1.58E-13	2.19E-13	2.62E-13	1.50E-13	2.90E-13	1.94E-13	4.50E-13	4.54E-13	6.51E-13	5.54E-13	8.85E-13	1.30E-12	8.77E-13	6.56E-13	7.14E-13	1.50E-13	1.23E-13	1.29E-13	1.39E-13	1.36E-13	2.79E-13	2.21E-13	4.67E-13
1,2,3,7,8,9-HxCDD	2.49E-13	1.94E-13	1.76E-13	1.69E-13	2.84E-13	1.65E-13	1.79E-13	2.82E-13	1.60E-13	1.64E-13	2.27E-13	2.72E-13	1.55E-13	3.00E-13	2.01E-13	4.67E-13	4.71E-13	6.73E-13	5.73E-13	9.18E-13	1.34E-12	9.07E-13	6.79E-13	7.38E-13	1.55E-13	1.28E-13	1.34E-13	1.44E-13	1.41E-13	2.89E-13	2.29E-13	4.85E-13
1,2,3,4,7,8-HxCDF	3.68E-13	2.87E-13	2.61E-13	2.49E-13	4.20E-13	2.44E-13	2.66E-13	4.17E-13	2.37E-13	2.43E-13	3.37E-13	4.03E-13	2.30E-13	4.44E-13	2.97E-13	6.92E-13	6.97E-13	9.97E-13	8.47E-13	1.36E-12	1.99E-12	1.34E-12	1.01E-12	1.10E-12	2.30E-13	1.90E-13	1.98E-13	2.13E-13	2.09E-13	4.28E-13	3.40E-13	7.18E-13
1,2,3,6,7,8-HxCDF	3.45E-13	2.69E-13	2.45E-13	2.34E-13	3.94E-13	2.28E-13	2.49E-13	3.91E-13	2.23E-13	2.27E-13	3.15E-13	3.77E-13	2.15E-13	4.16E-13	2.78E-13	6.45E-13	6.51E-13	9.33E-13	7.93E-13	1.27E-12	1.86E-12	1.26E-12	9.43E-13	1.02E-12	2.15E-13	1.77E-13	1.86E-13	1.99E-13	1.96E-13	4.01E-13	3.18E-13	6.70E-13
1,2,3,7,8,9-HxCDF	1.16E-13	9.06E-14	8.24E-14	7.90E-14	1.33E-13	7.72E-14	8.40E-14	1.32E-13	7.51E-14	7.67E-14	1.06E-13	1.27E-13	7.27E-14	1.40E-13	9.39E-14	2.18E-13	2.20E-13	3.15E-13	2.68E-13	4.28E-13	6.29E-13	4.24E-13	3.18E-13	3.46E-13	7.28E-14	5.99E-14	6.26E-14	6.74E-14	6.61E-14	1.35E-13	1.07E-13	2.27E-13
2,3,4,6,7,8-HxCDF	2.12E-13	1.66E-13	1.50E-13	1.44E-13	2.42E-13	1.41E-13	1.53E-13	2.41E-13	1.37E-13	1.40E-13	1.94E-13	2.33E-13	1.33E-13	2.56E-13	1.71E-13	3.98E-13	4.02E-13	5.77E-13	4.90E-13	7.83E-13	1.15E-12	7.75E-13	5.82E-13	6.32E-13	1.32E-13	1.09E-13	1.14E-13	1.23E-13	1.20E-13	2.47E-13	1.95E-13	4.13E-13
Hydrochloric acid	4.24E-03	3.30E-03	3.01E-03	2.88E-03	4.85E-03	2.81E-03	3.05E-03	4.81E-03	2.73E-03	2.78E-03	3.87E-03	4.64E-03	2.64E-03	5.11E-03	3.42E-03	7.94E-03	8.03E-03	1.15E-02	9.76E-03	1.56E-02	2.29E-02	1.55E-02	1.16E-02	1.26E-02	2.64E-03	2.18E-03	2.28E-03	2.45E-03	2.40E-03	4.93E-03	3.91E-03	8.25E-03
Indeno[1,2,3-cd]pyrene	1.98E-11	1.54E-11	1.40E-11	1.34E-11	2.26E-11	1.31E-11	1.43E-11	2.25E-11	1.28E-11	1.30E-11	1.81E-11	2.17E-11	1.24E-11	2.38E-11	1.60E-11	3.71E-11	3.75E-11	5.37E-11	4.56E-11	7.30E-11	1.07E-10	7.22E-11	5.41E-11	5.90E-11	1.24E-11	1.02E-11	1.07E-11	1.15E-11	1.12E-11	2.30E-11	1.83E-11	3.86E-11
Lead	4.75E-06	3.19E-06	2.44E-06	2.89E-06	6.16E-06	2.86E-06	3.10E-06	3.92E-06	3.02E-06	2.37E-06	4.87E-06	5.89E-06	2.54E-06	6.86E-06	4.12E-06	1.57E-05	1.46E-05	1.95E-05	1.82E-05	3.05E-05	4.09E-05	9.50E-06	1.56E-05	2.06E-05	2.51E-06	1.49E-06	1.89E-06	2.05E-06	2.09E-06	5.68E-06	4.58E-06	9.15E-06
Manganese	3.61E-07	2.82E-07	2.56E-07	2.45E-07	4.12E-07	2.40E-07	2.61E-07	4.09E-07	2.33E-07	2.38E-07	3.30E-07	3.95E-07	2.26E-07	4.35E-07	2.91E-07	6.78E-07	6.84E-07	9.79E-07	8.32E-07	1.33E-06	1.95E-06	1.32E-06	9.88E-07	1.07E-06	2.26E-07	1.86E-07	1.94E-07	2.09E-07	2.04E-07	4.20E-07	3.33E-07	7.02E-07
Mercury	1.44E-05	1.11E-05	1.01E-05	9.69E-06	1.67E-05	9.51E-06	1.04E-05	1.61E-05	9.29E-06	9.31E-06	1.33E-05	1.59E-05	8.93E-06	1.77E-05	1.17E-05	2.92E-05	2.91E-05	4.15E-05	3.59E-05	5.82E-05	8.84E-05	5.11E-05	4.00E-05	4.46E-05	8.90E-06	7.23E-06	7.63E-06	8.19E-06	8.06E-06	1.69E-05	1.33E-05	2.81E-05
Methyl bromide	5.65E-05	4.41E-05	4.02E-05	3.85E-05	6.47E-05	3.76E-05	4.09E-05	6.44E-05	3.66E-05	3.72E-05	5.18E-05	6.19E-05	3.53E-05	6.83E-05	4.57E-05	1.06E-04	1.07E-04	1.53E-04	1.30E-04	2.09E-04	3.06E-04	2.07E-04	1.55E-04	1.68E-04	3.54E-05	2.91E-05	3.06E-05	3.28E-05	3.22E-05	6.59E-05	5.22E-05	1.10E-04
Methyl chloroform	2.90E-06	2.26E-06	2.05E-06	1.97E-06	3.31E-06	1.92E-06	2.09E-06	3.29E-06	1.87E-06	1.91E-06	2.65E-06	3.17E-06	1.81E-06	3.49E-06	2.34E-06	5.43E-06	5.48E-06	7.87E-06	6.68E-06	1.07E-05	1.57E-05	1.06E-05	7.91E-06	8.63E-06	1.81E-06	1.49E-06	1.56E-06	1.67E-06	1.64E-06	3.37E-06	2.67E-06	5.65E-06
Methylene chloride	1.17E-05	9.13E-06	8.30E-06	7.96E-06	1.34E-05	7.77E-06	8.45E-06	1.33E-05	7.55E-06	7.70E-06	1.07E-05	1.28E-05	7.31E-06	1.41E-05	9.44E-06	2.20E-05	2.22E-05	3.18E-05	2.70E-05	4.31E-05	6.33E-05	4.28E-05	3.20E-05	3.49E-05	7.31E-06	6.04E-06	6.32E-06	6.79E-06	6.66E-06	1.36E-05	1.08E-05	2.28E-05
Naphthalene	1.26E-05	9.82E-06	8.92E-06	8.55E-06	1.44E-05	8.36E-06	9.08E-06	1.43E-05	8.13E-06	8.29E-06	1.15E-05	1.38E-05	7.84E-06	1.52E-05	1.02E-05	2.36E-05	2.38E-05	3.41E-05	2.90E-05	4.65E-05	6.82E-05	4.61E-05	3.44E-05	3.74E-05	7.85E-06	6.48E-06	6.79E-06	7.29E-06	7.14E-06	1.46E-05	1.16E-05	2.45E-05
Nickel	1.58E-04	1.09E-04	8.95E-05	9.75E-05	2.02E-04	9.75E-05	1.06E-04	1.43E-04	1.01E-04	8.21E-05	1.59E-04	1.81E-04	8.76E-05	2.23E-04	1.37E-04	4.75E-04	4.46E-04	6.19E-04	5.57E-04	9.42E-04	1.24E-03	3.44E-04	5.21E-04	6.23E-04	8.42E-05	5.26E-05	6.52E-05	6.77E-05	7.26E-05	1.79E-04	1.51E-04	3.13E-04
1,2,3,4,6,7,8,9-OCDD	1.83E-12	1.43E-12	1.30E-12	1.24E-12	2.09E-12	1.21E-12	1.32E-12	2.07E-12	1.18E-12	1.20E-12	1.67E-12	2.00E-12	1.14E-12	2.21E-12	1.47E-12	3.43E-12	3.47E-12	4.95E-12	4.21E-12	6.75E-12	9.90E-12	6.68E-12	4.99E-12	5.43E-12	1.14E-12	9.41E-13	9.84E-13	1.06E-12	1.04E-12	2.12E-12	1.69E-12	3.56E-12
1,2,3,4,6,7,8,9-OCDF	4.17E-13	3.25E-13	2.96E-13	2.83E-13	4.76E-13	2.77E-13	3.01E-13	4.75E-13	2.69E-13	2.74E-13	3.81E-13	4.57E-13	2.60E-13	5.03E-13	3.37E-13	7.83E-13	7.89E-13	1.13E-12	9.61E-13	1.54E-12	2.26E-12	1.53E-12	1.14E-12	1.24E-12	2.60E-13	2.15E-13	2.25E-13	2.42E-13	2.37E-13	4.85E-13	3.85E-13	8.12E-13
1,2,3,7,8-PeCDD	2.14E-13	1.67E-13	1.52E-13	1.45E-13	2.45E-13	1.43E-13	1.55E-13	2.43E-13	1.38E-13	1.41E-13	1.96E-13	2.35E-13	1.34E-13	2.59E-13	1.73E-13	4.02E-13	4.06E-13	5.80E-13	4.94E-13	7.93E-13	1.16E-12	7.85E-13	5.86E-13	6.40E-13	1.34E-13	1.11E-13	1.16E-13	1.24E-13	1.22E-13	2.50E-13	1.99E-13	4.17E-13
1,2,3,7,8-PeCDF	1.66E-12	1.30E-12	1.18E-12	1.13E-12	1.90E-12	1.10E-12	1.20E-12	1.89E-12	1.07E-12	1.09E-12	1.52E-12	1.82E-12	1.04E-12	2.00E-12	1.34E-12	3.12E-12	3.15E-12	4.52E-12	3.83E-12	6.12E-12	9.00E-12	6.08E-12	4.55E-12	4.96E-12	1.04E-12	8.57E-13	8.95E-13	9.64E-13	9.44E-13	1.93E-12	1.53E-12	3.23E-12
2,3,4,7,8-PeCDF	2.49E-12	1.94E-12	1.76E-12	1.69E-12	2.84E-12	1.65E-12	1.79E-12	2.82E-12	1.60E-12	1.64E-12	2.27E-12	2.72E-12	1.55E-12	3.00E-12	2.01E-12	4.67E-12	4.71E-12	6.73E-12	5.73E-12	9.18E-12	1.34E-11	9.07E-12	6.79E-12	7.38E-12	1.55E-12	1.28E-12	1.34E-12	1.44E-12	1.41E-12	2.89E-12	2.29E-12	4.85E-12
Perchloroethylene	4.79E-06	3.75E-06	3.41E-06	3.26E-06	5.50E-06	3.19E-06	3.47E-06	5.46E-06	3.10E-06	3.17E-06	4.40E-06	5.26E-06	3.00E-06	5.81E-06	3.88E-06	9.01E-06	9.09E-06	1.30E-05	1.11E-05	1.77E-05	2.60E-05	1.76E-05	1.31E-05	1.43E-05	3.00E-06	2.47E-06	2.59E-06	2.79E-06	2.73E-06	5.60E-06	4.44E-06	9.35E-06
Selenium	5.08E-06	3.68E-06	2.74E-06	3.27E-06	6.79E-06	3.21E-06	3.48E-06	4.35E-06	3.31E-06	2.74E-06	5.38E-06	6.15E-06	2.84E-06	7.79E-06	4.44E-06	1.75E-05	1.66E-05	1.95E-05	1.89E-05	3.11E-05	4.72E-05	1.10E-05	1.54E-05	2.00E-05	2.79E-06	1.71E-06	2.13E-06	2.29E-06	2.35E-06	6.87E-06	5.21E-06	9.65E-06
Styrene	2.20E-05	1.72E-05	1.56E-05	1.49E-05	2.51E-05	1.46E-05	1.59E-05	2.50E-05	1.42E-05	1.45E-05	2.01E-05	2.41E-05	1.37E-05	2.65E-05	1.77E-05	4.13E-05	4.16E-05	5.98E-05	5.08E-05	8.11E-05	1.19E-04	8.04E-05	6.01E-05	6.56E-05	1.37E-05	1.13E-05	1.19E-05	1.27E-05	1.25E-05	2.57E-05	2.03E-05	4.28E-05
2,3,7,8-TCDD	2.11E-13	1.64E-13	1.49E-13	1.43E-13	2.41E-13	1.40E-13	1.52E-13	2.39E-13	1.36E-13	1.39E-13	1.92E-13	2.31E-13	1.31E-13	2.55E-13	1.70E-13	3.95E-13	3.99E-13	5.70E-13	4.86E-13	7.78E-13	1.14E-12	7.70E-13	5.75E-13	6.28E-13	1.31E-13	1.09E-13	1.14E-13	1.22E-13	1.19E-13	2.45E-13	1.95E-13	4.10E-13
2,3,7,8-TCDF	1.04E-11	8.15E-12	7.42E-12	7.07E-12	1.19E-11	6.94E-12	7.55E-12	1.19E-11	6.75E-12	6.89E-12	9.56E-12	1.14E-11	6.53E-12	1.26E-11	8.44E-12	1.96E-11	1.98E-11	2.83E-11	2.41E-11	3.87E-11	5.65E-11	3.83E-11	2.86E-11	3.11E-11	6.54E-12	5.38E-12	5.63E-12	6.05E-12	5.93E-12	1.22E-11	9.64E-12	2.03E-11
1,1,2,2-Tetrachloroethane	3.65E-06	2.84E-06	2.59E-06	2.47E-06	4.17E-06	2.42E-06	2.63E-06	4.14E-06	2.35E-06	2.40E-06	3.34E-06	4.00E-06	2.28E-06	4.40E-06	2.95E-06	6.84E-06	6.92E-06	9.90E-06	8.39E-06	1.35E-05	1.98E-05	1.33E-05	9.99E-06	1.09E-05	2.28E-06	1.88E-06	1.96E-06	2.12E-06	2.07E-06	4.25E-06	3.36E-06	7.11E-06
Toluene	7.81E-04	6.11E-04	5.55E-04	5.31E-04	8.92E-04	5.19E-04	5.66E-04	8.88E-04	5.05E-04	5.15E-04	7.16E-04	8.55E-04	4.89E-04	9.45E-04	6.30E-04	1.47E-03	1.48E-03	2.12E-03	1.80E-03	2.89E-03	4.22E-03	2.86E-03	2.14E-03	2.33E-03	4.88E-04	4.03E-04	4.22E-04	4.53E-04	4.44E-04	9.11E-04	7.24E-04	1.52E-03
1,1,2-Trichloroethane	4.84E-06	3.77E-06	3.43E-06	3.29E-06	5.54E-06	3.21E-06	3.49E-06	5.51E-06	3.12E-06	3.18E-06	4.42E-06	5.29E-06	3.02E-06	5.82E-06	3.90E-06	9.08E-06	9.15E-06	1.31E-05	1.11E-05	1.79E-05	2.62E-05	1.77E-05	1.32E-05	1.44E-05	3.02E-06	2.49E-06	2.61E-06	2.80E-06	2.75E-06	5.63E-06	4.46E-06	9.44E-06
Trichloroethylene	3.81E-06	2.97E-06	2.70E-06	2.58E-06	4.35E-06	2.53E-06	2.75E-06	4.32E-06	2.45E-06	2.50E-06	3.48E-06	4.17E-06	2.38E-06	4.59E-06	3.07E-06	7.16E-06	7.21E-06	1.03E-05	8.78E-06	1.41E-05	2.06E-05	1.39E-05	1.04E-05	1.13E-05	2.38E-06	1.96E-06	2.05E-06	2.20E-06	2.16E-06	4.43E-06	3.51E-06	7.41E-06
Vanadium	4.86E-04	3.28E-04	2.73E-04	2.97E-04	6.28E-04	2.98E-04	3.25E-04	4.35E-04	3.10E-04	2.49E-04	4.93E-04	5.62E-04	2.69E-04	6.73E-04	4.25E-04	1.46E-03	1.36E-03	1.95E-03	1.79E-03	3.09E-03	4.35E-03	1.08E-03	1.63E-03	1.95E-03	2.56E-04	1.57E-04	1.97E-04	2.06E-04	2.21E-04	5.16E-04	4.54E-04	9.42E-04
Vinyl chloride	1.28E-05	1.00E-05	9.11E-06	8.69E-06	1.47E-05	8.52E-06	9.24E-06	1.46E-05	8.27E-06	8.45E-06	1.17E-05	1.40E-05	8.00E-06	1.55E-05	1.04E-05	2.41E-05	2.43E-05	3.48E-05	2.95E-05	4.73E-05	6.93E-05	4.69E-05	3.51E-05	3.81E-05	8.02E-06	6.60E-06	6.92E-06	7.41E-06	7.29E-06	1.49E-05	1.18E-05	2.50E-05
Vinylidene chloride	3.52E-06	2.74E-06	2.49E-06	2.38E-06	4.02E-06	2.34E-06	2.54E-06	3.99E-06	2.27E-06	2.32E-06	3.21E-06	3.85E-06	2.19E-06	4.24E-06	2.83E-06	6.60E-06	6.64E-06	9.54E-06	8.09E-06	1.30E-05	1.90E-05	1.29E-05	9.63E-06	1.05E-05	2.19E-06	1.81E-06	1.90E-06	2.04E-06	2.00E-06	4.09E-06	3.25E-06	6.84E-06
o-Xylene	1.23E-04	9.64E-05	8.75E-05	8.38E-05	1.41E-04	8.20E-05	8.92E-05	1.40E-04	7.98E-05	8.12E-05	1.13E-04	1.35E-04	7.72E-05	1.49E-04	9.97E-05	2.32E-04	2.34E-04	3.35E-04	2.84E-04	4.57E-04	6.68E-04	4.50E-04	3.38E-04	3.67E-04	7.72E-05	6.36E-05	6.67E-05	7.15E-05	7.01E-05	1.44E-04	1.14E-04	2.40E-04
Xylenes (mixed)	6.28E-04	4.91E-04	4.47E-04	4.27E-04	7.18E-04	4.17E-04	4.54E-04	7.15E-04	4.06E-04	4.14E-04	5.74E-04	6.89E-04	3.93E-04	7.59E-04	5.07E-04	1.18E-03	1.19E-03	1.71E-03	1.45E-03	2.32E-03	3.40E-03	2.30E-03	1.72E-03	1.87E-03	3.92E-04	3.25E-04	3.39E-04	3.64E-04	3.57E-04	7.33E-04	5.81E-04	1.23E-03

TABLE 8A

SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2006 METEOROLOGICAL DATA
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (µg/m3)

Notes
1. Receptor identifier in the HARP model.

Abbreviations
- CS = Census Tract
- 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
- PeCDD = Pentachlorodibenzo-p-dioxin
- PeCDF = Pentachlorodibenzofuran
- OCDD = Octachlorodibenzo-p-dioxin
- OCDF = Octachlorodibenzofuran
- TCDD = Tetrachlorodibenzo-p-dioxin
- TCDF = Tetrachlorodibenzofuran

TABLE 8B

SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 METEOROLOGICAL DATA

Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (µg/m3)

Key Receptors

Chemical	1[1] CS 510100	2 CS 507805	3 CS 507703	4 CS 507701	5 CS 507807	6 CS 507702	7 CS 507808	8 CS 507600	9 CS 509902	10 CS 510002	11 CS 508301	12 CS 508401	13 CS 511701	14 CS 510200	15 CS 507806	16 CS 507906	17 CS 507905	18 CS 510001
Acetaldehyde	9.13E-05	7.91E-05	1.89E-04	1.00E-04	1.09E-04	1.14E-04	8.74E-05	1.04E-04	5.78E-05	8.45E-05	6.74E-05	5.43E-05	7.04E-05	6.06E-05	6.36E-05	6.97E-05	7.41E-05	6.81E-05
Acrolein	3.56E-06	3.08E-06	7.36E-06	3.89E-06	4.25E-06	4.42E-06	3.41E-06	4.07E-06	2.25E-06	3.30E-06	2.63E-06	2.12E-06	2.75E-06	2.36E-06	2.48E-06	2.72E-06	2.89E-06	2.65E-06
Arsenic	7.81E-06	4.85E-06	1.38E-05	6.03E-06	5.08E-06	5.44E-06	3.82E-06	1.89E-06	2.86E-06	5.48E-06	4.14E-06	2.81E-06	2.67E-06	3.13E-06	3.40E-06	2.75E-06	2.97E-06	4.06E-06
Benz[a]anthracene	1.04E-09	9.01E-10	2.15E-09	1.14E-09	1.24E-09	1.29E-09	9.93E-10	1.19E-09	6.57E-10	9.61E-10	7.67E-10	6.16E-10	8.01E-10	6.88E-10	7.21E-10	7.95E-10	8.42E-10	7.75E-10
Benzene	5.18E-04	4.49E-04	1.07E-03	5.67E-04	6.17E-04	6.42E-04	4.95E-04	5.91E-04	3.27E-04	4.78E-04	3.82E-04	3.07E-04	3.99E-04	3.43E-04	3.60E-04	3.96E-04	4.20E-04	3.86E-04
Benzo[a]pyrene	2.34E-11	2.02E-11	4.83E-11	2.56E-11	2.79E-11	2.90E-11	2.24E-11	2.66E-11	1.48E-11	2.16E-11	1.72E-11	1.39E-11	1.80E-11	1.55E-11	1.62E-11	1.78E-11	1.89E-11	1.74E-11
Benzo[b]fluoranthene	1.48E-10	1.28E-10	3.07E-10	1.62E-10	1.77E-10	1.84E-10	1.42E-10	1.69E-10	9.36E-11	1.37E-10	1.09E-10	8.81E-11	1.14E-10	9.82E-11	1.03E-10	1.13E-10	1.20E-10	1.11E-10
Benzo[k]fluoranthene	2.34E-11	2.02E-11	4.83E-11	2.56E-11	2.79E-11	2.90E-11	2.24E-11	2.66E-11	1.48E-11	2.16E-11	1.72E-11	1.39E-11	1.80E-11	1.55E-11	1.62E-11	1.78E-11	1.89E-11	1.74E-11
Benzyl chloride	8.04E-06	6.95E-06	1.66E-05	8.79E-06	9.60E-06	9.97E-06	7.69E-06	9.17E-06	5.08E-06	7.44E-06	5.93E-06	4.77E-06	6.20E-06	5.33E-06	5.59E-06	6.15E-06	6.51E-06	5.98E-06
Beryllium	1.87E-06	1.17E-06	3.32E-06	1.44E-06	1.21E-06	1.34E-06	9.33E-07	4.68E-07	6.87E-07	1.32E-06	9.97E-07	6.71E-07	6.82E-07	7.77E-07	8.16E-07	6.65E-07	7.22E-07	9.78E-07
1,3-Butadiene	7.28E-06	6.30E-06	1.50E-05	7.97E-06	8.67E-06	9.03E-06	6.95E-06	8.30E-06	4.60E-06	6.72E-06	5.36E-06	4.31E-06	5.61E-06	4.82E-06	5.05E-06	5.55E-06	5.89E-06	5.43E-06
Cadmium	3.43E-06	2.12E-06	6.04E-06	2.62E-06	2.20E-06	2.44E-06	1.70E-06	8.60E-07	1.25E-06	2.40E-06	1.82E-06	1.22E-06	1.23E-06	1.42E-06	1.49E-06	1.21E-06	1.31E-06	1.78E-06
Carbon tetrachloride	4.88E-06	4.22E-06	1.01E-05	5.33E-06	5.83E-06	6.05E-06	4.66E-06	5.57E-06	3.08E-06	4.51E-06	3.60E-06	2.90E-06	3.76E-06	3.23E-06	3.39E-06	3.73E-06	3.95E-06	3.64E-06
Chlorobenzene	4.39E-05	3.80E-05	9.08E-05	4.81E-05	5.24E-05	5.47E-05	4.21E-05	5.02E-05	2.77E-05	4.06E-05	3.23E-05	2.61E-05	3.38E-05	2.91E-05	3.06E-05	3.35E-05	3.56E-05	3.27E-05
Chloroform	2.28E-06	1.97E-06	4.69E-06	2.48E-06	2.71E-06	2.82E-06	2.18E-06	2.60E-06	1.44E-06	2.10E-06	1.68E-06	1.35E-06	1.75E-06	1.51E-06	1.58E-06	1.74E-06	1.84E-06	1.69E-06
Chromium, hexavalent	8.50E-06	5.13E-06	1.51E-05	6.47E-06	5.30E-06	5.43E-06	3.78E-06	1.61E-06	2.86E-06	5.81E-06	4.29E-06	2.87E-06	2.28E-06	2.84E-06	3.49E-06	2.70E-06	2.91E-06	4.20E-06
Chrysene	3.06E-09	2.66E-09	6.32E-09	3.35E-09	3.66E-09	3.80E-09	2.93E-09	3.50E-09	1.93E-09	2.83E-09	2.26E-09	1.82E-09	2.36E-09	2.03E-09	2.13E-09	2.34E-09	2.48E-09	2.29E-09
Copper	5.94E-05	3.69E-05	1.04E-04	4.52E-05	3.77E-05	4.15E-05	2.89E-05	1.47E-05	2.15E-05	4.14E-05	3.15E-05	2.11E-05	2.13E-05	2.44E-05	2.57E-05	2.05E-05	2.24E-05	3.08E-05
Crystalline silica (respirable)	6.51E-03	4.03E-03	1.09E-02	4.78E-03	3.89E-03	4.61E-03	3.17E-03	1.67E-03	2.37E-03	4.47E-03	3.46E-03	2.30E-03	2.72E-03	2.92E-03	2.79E-03	2.18E-03	2.43E-03	3.44E-03
Dibenz[a,h]anthracene	2.34E-11	2.02E-11	4.83E-11	2.56E-11	2.79E-11	2.90E-11	2.24E-11	2.66E-11	1.48E-11	2.16E-11	1.72E-11	1.39E-11	1.80E-11	1.55E-11	1.62E-11	1.78E-11	1.89E-11	1.74E-11
p-Dichlorobenzene	4.67E-06	4.04E-06	9.62E-06	5.10E-06	5.57E-06	5.79E-06	4.46E-06	5.32E-06	2.95E-06	4.31E-06	3.44E-06	2.77E-06	3.59E-06	3.09E-06	3.24E-06	3.56E-06	3.78E-06	3.48E-06
1,1-Dichloroethane	1.57E-06	1.36E-06	3.25E-06	1.72E-06	1.88E-06	1.95E-06	1.50E-06	1.80E-06	9.93E-07	1.45E-06	1.16E-06	9.34E-07	1.21E-06	1.04E-06	1.09E-06	1.20E-06	1.27E-06	1.17E-06
1,2-Dichloropropane	2.15E-06	1.86E-06	4.44E-06	2.35E-06	2.56E-06	2.66E-06	2.05E-06	2.45E-06	1.36E-06	1.99E-06	1.58E-06	1.28E-06	1.66E-06	1.42E-06	1.49E-06	1.64E-06	1.74E-06	1.60E-06
1,3-Dichloropropene	8.80E-06	7.63E-06	1.82E-05	9.63E-06	1.05E-05	1.09E-05	8.41E-06	1.00E-05	5.56E-06	8.13E-06	6.48E-06	5.22E-06	6.78E-06	5.83E-06	6.12E-06	6.72E-06	7.13E-06	6.57E-06
Diesel particulate matter	1.50E-04	1.10E-04	2.94E-04	1.26E-04	1.07E-04	1.25E-04	8.39E-05	1.96E-05	4.69E-05	9.95E-05	1.22E-04	4.71E-05	5.38E-05	6.90E-05	7.36E-05	6.01E-05	6.45E-05	1.06E-04
Ethyl chloride (Chloroethane)	3.07E-06	2.66E-06	6.35E-06	3.36E-06	3.67E-06	3.81E-06	2.93E-06	3.51E-06	1.94E-06	2.84E-06	2.26E-06	1.82E-06	2.37E-06	2.03E-06	2.13E-06	2.35E-06	2.49E-06	2.29E-06
Ethyl benzene	7.61E-05	6.61E-05	1.57E-04	8.34E-05	9.10E-05	9.46E-05	7.28E-05	8.70E-05	4.81E-05	7.03E-05	5.62E-05	4.53E-05	5.87E-05	5.05E-05	5.30E-05	5.81E-05	6.17E-05	5.69E-05
Ethylene dibromide (EDB)	4.77E-06	4.13E-06	9.85E-06	5.21E-06	5.70E-06	5.91E-06	4.56E-06	5.44E-06	3.01E-06	4.40E-06	3.51E-06	2.83E-06	3.67E-06	3.15E-06	3.32E-06	3.64E-06	3.87E-06	3.55E-06
Ethylene dichloride (EDC)	1.89E-06	1.63E-06	3.89E-06	2.06E-06	2.25E-06	2.34E-06	1.80E-06	2.16E-06	1.19E-06	1.74E-06	1.39E-06	1.12E-06	1.45E-06	1.25E-06	1.31E-06	1.44E-06	1.53E-06	1.41E-06
Formaldehyde	5.00E-06	4.33E-06	1.03E-05	5.46E-06	5.98E-06	6.21E-06	4.78E-06	5.71E-06	3.16E-06	4.61E-06	3.69E-06	2.97E-06	3.85E-06	3.31E-06	3.48E-06	3.81E-06	4.04E-06	3.72E-06
1,2,3,4,6,7,8-HpCDD	7.61E-13	6.61E-13	1.57E-12	8.34E-13	9.10E-13	9.46E-13	7.28E-13	8.70E-13	4.81E-13	7.03E-13	5.62E-13	4.53E-13	5.87E-13	5.05E-13	5.30E-13	5.81E-13	6.17E-13	5.69E-13
1,2,3,4,6,7,8-HpCDF	3.70E-13	3.21E-13	7.65E-13	4.04E-13	4.42E-13	4.60E-13	3.53E-13	4.22E-13	2.34E-13	3.42E-13	2.72E-13	2.19E-13	2.85E-13	2.45E-13	2.57E-13	2.83E-13	3.00E-13	2.76E-13
1,2,3,4,7,8,9-HpCDF	9.57E-14	8.28E-14	1.97E-13	1.04E-13	1.14E-13	1.19E-13	9.15E-14	1.09E-13	6.05E-14	8.83E-14	7.05E-14	5.67E-14	7.37E-14	6.33E-14	6.63E-14	7.31E-14	7.75E-14	7.15E-14
1,2,3,4,7,8-HxCDD	2.13E-13	1.84E-13	4.39E-13	2.33E-13	2.53E-13	2.64E-13	2.03E-13	2.42E-13	1.34E-13	1.97E-13	1.57E-13	1.26E-13	1.63E-13	1.41E-13	1.48E-13	1.62E-13	1.72E-13	1.59E-13
1,2,3,6,7,8-HxCDD	2.10E-13	1.82E-13	4.34E-13	2.29E-13	2.51E-13	2.60E-13	2.01E-13	2.40E-13	1.33E-13	1.94E-13	1.55E-13	1.24E-13	1.62E-13	1.39E-13	1.46E-13	1.60E-13	1.70E-13	1.57E-13
1,2,3,7,8,9-HxCDD	2.18E-13	1.88E-13	4.49E-13	2.38E-13	2.60E-13	2.70E-13	2.08E-13	2.49E-13	1.38E-13	2.01E-13	1.60E-13	1.29E-13	1.67E-13	1.44E-13	1.51E-13	1.66E-13	1.76E-13	1.62E-13
1,2,3,4,7,8-HxCDF	3.22E-13	2.79E-13	6.65E-13	3.52E-13	3.85E-13	4.00E-13	3.08E-13	3.68E-13	2.04E-13	2.98E-13	2.38E-13	1.91E-13	2.48E-13	2.13E-13	2.24E-13	2.46E-13	2.61E-13	2.40E-13
1,2,3,6,7,8-HxCDF	3.01E-13	2.61E-13	6.22E-13	3.29E-13	3.60E-13	3.74E-13	2.88E-13	3.44E-13	1.90E-13	2.79E-13	2.22E-13	1.78E-13	2.33E-13	2.00E-13	2.10E-13	2.30E-13	2.44E-13	2.25E-13
1,2,3,7,8,9-HxCDF	1.02E-13	8.83E-14	2.10E-13	1.11E-13	1.22E-13	1.26E-13	9.75E-14	1.16E-13	6.44E-14	9.41E-14	7.50E-14	6.04E-14	7.85E-14	6.74E-14	7.08E-14	7.78E-14	8.26E-14	7.59E-14
2,3,4,6,7,8-HxCDF	1.86E-13	1.61E-13	3.84E-13	2.03E-13	2.22E-13	2.30E-13	1.77E-13	2.12E-13	1.17E-13	1.72E-13	1.37E-13	1.10E-13	1.43E-13	1.23E-13	1.29E-13	1.42E-13	1.51E-13	1.39E-13
Hydrochloric acid	3.71E-03	3.21E-03	7.65E-03	4.06E-03	4.43E-03	4.60E-03	3.55E-03	4.23E-03	2.34E-03	3.43E-03	2.73E-03	2.20E-03	2.86E-03	2.45E-03	2.57E-03	2.83E-03	3.00E-03	2.76E-03
Indeno[1,2,3-cd]pyrene	1.73E-11	1.50E-11	3.57E-11	1.90E-11	2.07E-11	2.15E-11	1.66E-11	1.97E-11	1.09E-11	1.60E-11	1.28E-11	1.03E-11	1.33E-11	1.15E-11	1.20E-11	1.32E-11	1.40E-11	1.29E-11
Lead	5.57E-06	3.51E-06	1.02E-05	4.33E-06	3.62E-06	4.01E-06	2.77E-06	1.26E-06	2.00E-06	3.91E-06	2.96E-06	1.98E-06	1.88E-06	2.19E-06	2.43E-06	1.96E-06	2.13E-06	2.86E-06
Manganese	3.16E-07	2.73E-07	6.51E-07	3.46E-07	3.77E-07	3.93E-07	3.02E-07	3.61E-07	2.00E-07	2.92E-07	2.33E-07	1.88E-07	2.43E-07	2.09E-07	2.20E-07	2.41E-07	2.56E-07	2.36E-07
Mercury	1.30E-05	1.09E-05	2.65E-05	1.38E-05	1.48E-05	1.54E-05	1.18E-05	1.36E-05	7.83E-06	1.17E-05	9.28E-06	7.37E-06	9.41E-06	8.25E-06	8.63E-06	9.39E-06	9.94E-06	9.35E-06
Methyl bromide	4.96E-05	4.29E-05	1.02E-04	5.41E-05	5.93E-05	6.15E-05	4.74E-05	5.65E-05	3.13E-05	4.58E-05	3.65E-05	2.93E-05	3.82E-05	3.28E-05	3.44E-05	3.79E-05	4.02E-05	3.70E-05
Methyl chloroform	2.54E-06	2.20E-06	5.25E-06	2.77E-06	3.03E-06	3.15E-06	2.42E-06	2.90E-06	1.60E-06	2.35E-06	1.87E-06	1.50E-06	1.96E-06	1.67E-06	1.76E-06	1.94E-06	2.06E-06	1.90E-06
Methylene chloride	1.03E-05	8.90E-06	2.12E-05	1.12E-05	1.22E-05	1.27E-05	9.81E-06	1.17E-05	6.49E-06	9.47E-06	7.56E-06	6.09E-06	7.91E-06	6.79E-06	7.13E-06	7.83E-06	8.31E-06	7.64E-06
Naphthalene	1.10E-05	9.54E-06	2.28E-05	1.21E-05	1.32E-05	1.37E-05	1.05E-05	1.26E-05	6.95E-06	1.02E-05	8.13E-06	6.53E-06	8.49E-06	7.30E-06	7.65E-06	8.42E-06	8.93E-06	8.23E-06
Nickel	1.74E-04	1.11E-04	3.27E-04	1.43E-04	1.33E-04	1.40E-04	9.76E-05	4.09E-05	6.91E-05	1.29E-04	9.63E-05	6.65E-05	6.06E-05	7.46E-05	8.06E-05	7.33E-05	7.67E-05	9.52E-05
1,2,3,4,6,7,8,9-OCDD	1.60E-12	1.38E-12	3.31E-12	1.75E-12	1.91E-12	1.99E-12	1.53E-12	1.83E-12	1.01E-12	1.48E-12	1.18E-12	9.50E-13	1.23E-12	1.06E-12	1.11E-12	1.22E-12	1.30E-12	1.19E-12
1,2,3,4,6,7,8,9-OCDF	3.65E-13	3.16E-13	7.55E-13	3.99E-13	4.36E-13	4.53E-13	3.49E-13	4.17E-13	2.31E-13	3.37E-13	2.69E-13	2.17E-13	2.81E-13	2.42E-13	2.54E-13	2.79E-13	2.96E-13	2.72E-13
1,2,3,7,8-PeCDD	1.88E-13	1.63E-13	3.88E-13	2.05E-13	2.24E-13	2.34E-13	1.80E-13	2.15E-13	1.19E-13	1.74E-13	1.38E-13	1.12E-13	1.45E-13	1.24E-13	1.31E-13	1.43E-13	1.52E-13	1.40E-13
1,2,3,7,8-PeCDF	1.46E-12	1.26E-12	3.00E-12	1.59E-12	1.74E-12	1.81E-12	1.39E-12	1.66E-12	9.20E-13	1.35E-12	1.07E-12	8.63E-13	1.12E-12	9.65E-13	1.01E-12	1.11E-12	1.18E-12	1.08E-12
2,3,4,7,8-PeCDF	2.18E-12	1.88E-12	4.49E-12	2.38E-12	2.60E-12	2.70E-12	2.08E-12	2.49E-12	1.38E-12	2.01E-12	1.60E-12	1.29E-12	1.67E-12	1.44E-12	1.51E-12	1.66E-12	1.76E-12	1.62E-12
Perchloroethylene	4.21E-06	3.64E-06	8.70E-06	4.60E-06	5.01E-06	5.22E-06	4.02E-06	4.81E-06	2.66E-06	3.89E-06	3.10E-06	2.49E-06	3.24E-06	2.79E-06	2.92E-06	3.21E-06	3.41E-06	3.14E-06
Selenium	6.01E-06	3.78E-06	1.05E-05	4.66E-06	4.01E-06	4.39E-06	3.10E-06	1.77E-06	2.29E-06	4.28E-06	3.25E-06	2.22E-06	2.31E-06	2.59E-06	2.67E-06	2.24E-06	2.42E-06	3.23E-06
Styrene	1.93E-05	1.67E-05	3.98E-05	2.10E-05	2.30E-05	2.39E-05	1.84E-05	2.20E-05	1.22E-05	1.78E-05	1.42E-05	1.14E-05	1.49E-05	1.27E-05	1.34E-05	1.47E-05	1.56E-05	1.44E-05
2,3,7,8-TCDD	1.84E-13	1.60E-13	3.81E-13	2.01E-13	2.20E-13	2.29E-13	1.76E-13	2.10E-13	1.16E-13	1.70E-13	1.36E-13	1.09E-13	1.42E-13	1.22E-13	1.28E-13	1.41E-13	1.49E-13	1.37E-13
2,3,7,8-TCDF	9.13E-12	7.91E-12	1.89E-11	1.00E-11	1.09E-11	1.14E-11	8.74E-12	1.04E-11	5.78E-12	8.45E-12	6.74E-12	5.43E-12	7.04E-12	6.06E-12	6.36E-12	6.97E-12	7.41E-12	6.81E-12
1,1,2,2-Tetrachloroethane	3.20E-06	2.77E-06	6.59E-06	3.49E-06	3.82E-06	3.97E-06	3.06E-06	3.64E-06	2.02E-06	2.96E-06	2.35E-06	1.90E-06	2.46E-06	2.11E-06	2.22E-06	2.44E-06	2.59E-06	2.39E-06
Toluene	6.84E-04	5.93E-04	1.41E-03	7.50E-04	8.17E-04	8.50E-04	6.56E-04	7.81E-04	4.33E-04	6.33E-04	5.05E-04	4.07E-04	5.28E-04	4.53E-04	4.76E-04	5.23E-04	5.55E-04	5.11E-04
1,1,2-Trichloroethane	4.24E-06	3.67E-06	8.75E-06	4.63E-06	5.06E-06	5.27E-06	4.05E-06	4.83E-06	2.68E-06	3.91E-06	3.12E-06	2.51E-06	3.27E-06	2.81E-06	2.94E-06	3.23E-06	3.43E-06	3.16E-06
Trichloroethylene	3.34E-06	2.89E-06	6.88E-06	3.64E-06	3.98E-06	4.14E-06	3.19E-06	3.80E-06	2.11E-06	3.08E-06	2.46E-06	1.98E-06	2.56E-06	2.21E-06	2.32E-06	2.55E-06	2.70E-06	2.48E-06
Vanadium	5.41E-04	3.42E-04	1.02E-03	4.43E-04	4.08E-04	4.25E-04	2.96E-04	1.23E-04	2.10E-04	3.99E-04	2.95E-04	2.04E-04	1.75E-04	2.21E-04	2.46E-04	2.22E-04	2.32E-04	2.91E-04
Vinyl chloride	1.12E-05	9.72E-06	2.32E-05	1.23E-05	1.34E-05	1.39E-05	1.07E-05	1.28E-05	7.09E-06	1.04E-05	8.27E-06	6.66E-06	8.65E-06	7.45E-06	7.79E-06	8.58E-06	9.10E-06	8.36E-06
Vinylidene chloride	3.08E-06	2.66E-06	6.35E-06	3.37E-06	3.67E-06	3.82E-06	2.94E-06	3.51E-06	1.95E-06	2.84E-06	2.26E-06	1.83E-06	2.37E-06	2.03E-06	2.13E-06	2.35E-06	2.49E-06	2.29E-06
o-Xylene	1.08E-04	9.36E-05	2.23E-04	1.18E-04	1.29E-04	1.34E-04	1.04E-04	1.23E-04	6.83E-05	9.99E-05	7.95E-05	6.41E-05	8.33E-05	7.17E-05	7.52E-05	8.25E-05	8.76E-05	8.05E-05
Xylenes (mixed)	5.50E-04	4.77E-04	1.14E-03	6.02E-04	6.58E-04	6.84E-04	5.27E-04	6.29E-04	3.48E-04	5.09E-04	4.06E-04	3.27E-04	4.25E-04	3.65E-04	3.83E-04	4.21E-04	4.47E-04	4.11E-04

Chemical	19 CS 509901	20 Daycare	21 Daycare	22 Preschool	23 Preschool	24 Preschool	25 Preschool	26 Preschool	27 School-Age Care	28 School	29 School	30 School	31 School	32 School	33 School	34 School	35 School	36 School
Acetaldehyde	6.17E-05	9.36E-05	7.06E-05	6.60E-05	1.23E-04	7.37E-05	6.94E-05	1.17E-04	8.81E-05	7.09E-05	7.91E-05	7.99E-05	6.98E-05	7.06E-05	1.43E-04	1.38E-04	6.21E-05	8.29E-05
Acrolein	2.41E-06	3.65E-06	2.75E-06	2.57E-06	4.77E-06	2.87E-06	2.70E-06	4.54E-06	3.44E-06	2.76E-06	3.08E-06	3.10E-06	2.72E-06	2.75E-06	5.55E-06	5.37E-06	2.42E-06	3.23E-06
Arsenic	3.18E-06	5.12E-06	2.85E-06	3.92E-06	8.36E-06	4.09E-06	3.97E-06	7.39E-06	3.75E-06	3.55E-06	4.99E-06	4.86E-06	3.85E-06	4.07E-06	6.56E-06	7.30E-06	4.02E-06	3.43E-06
Benz[a]anthracene	7.02E-10	1.06E-09	8.01E-10	7.52E-10	1.39E-09	8.39E-10	7.88E-10	1.33E-09	1.00E-09	8.07E-10	8.99E-10	9.05E-10	7.95E-10	8.03E-10	1.63E-09	1.56E-09	7.05E-10	9.42E-10
Benzene	3.49E-04	5.31E-04	3.99E-04	3.75E-04	6.94E-04	4.17E-04	3.93E-04	6.61E-04	4.99E-04	4.02E-04	4.48E-04	4.51E-04	3.95E-04	4.00E-04	8.10E-04	7.79E-04	3.52E-04	4.70E-04
Benzo[a]pyrene	1.58E-11	2.39E-11	1.80E-11	1.69E-11	3.13E-11	1.88E-11	1.77E-11	2.97E-11	2.25E-11	1.81E-11	2.02E-11	2.03E-11	1.78E-11	1.80E-11	3.65E-11	3.51E-11	1.59E-11	2.12E-11
Benzo[b]fluoranthene	1.00E-10	1.52E-10	1.14E-10	1.07E-10	1.99E-10	1.20E-10	1.12E-10	1.89E-10	1.43E-10	1.15E-10	1.28E-10	1.29E-10	1.13E-10	1.15E-10	2.32E-10	2.23E-10	1.01E-10	1.34E-10
Benzo[k]fluoranthene	1.58E-11	2.39E-11	1.80E-11	1.69E-11	3.13E-11	1.88E-11	1.77E-11	2.97E-11	2.25E-11	1.81E-11	2.02E-11	2.03E-11	1.78E-11	1.80E-11	3.65E-11	3.51E-11	1.59E-11	2.12E-11
Benzyl chloride	5.43E-06	8.22E-06	6.19E-06	5.81E-06	1.08E-05	6.48E-06	6.09E-06	1.03E-05	7.76E-06	6.22E-06	6.95E-06	6.99E-06	6.13E-06	6.21E-06	1.26E-05	1.21E-05	5.47E-06	7.29E-06
Beryllium	7.67E-07	1.22E-06	7.01E-07	9.55E-07	2.01E-06	1.01E-06	9.81E-07	1.77E-06	9.08E-07	8.58E-07	1.20E-06	1.17E-06	9.31E-07	9.79E-07	1.59E-06	1.75E-06	9.77E-07	8.27E-07
1,3-Butadiene	4.92E-06	7.45E-06	5.61E-06	5.26E-06	9.75E-06	5.86E-06	5.52E-06	9.27E-06	7.00E-06	5.62E-06	6.29E-06	6.34E-06	5.55E-06	5.61E-06	1.14E-05	1.09E-05	4.94E-06	6.59E-06
Cadmium	1.40E-06	2.22E-06	1.27E-06	1.74E-06	3.68E-06	1.84E-06	1.79E-06	3.23E-06	1.65E-06	1.56E-06	2.19E-06	2.14E-06	1.70E-06	1.78E-06	2.88E-06	3.17E-06	1.78E-06	1.50E-06
Carbon tetrachloride	3.29E-06	5.00E-06	3.76E-06	3.53E-06	6.53E-06	3.93E-06	3.70E-06	6.24E-06	4.70E-06	3.78E-06	4.22E-06	4.25E-06	3.72E-06	3.77E-06	7.62E-06	7.34E-06	3.31E-06	4.42E-06
Chlorobenzene	2.97E-05	4.50E-05	3.39E-05	3.18E-05	5.89E-05	3.54E-05	3.34E-05	5.61E-05	4.24E-05	3.41E-05	3.79E-05	3.83E-05	3.36E-05	3.39E-05	6.87E-05	6.61E-05	2.98E-05	3.99E-05
Chloroform	1.54E-06	2.33E-06	1.75E-06	1.64E-06	3.04E-06	1.83E-06	1.72E-06	2.90E-06	2.19E-06	1.76E-06	1.97E-06	1.98E-06	1.74E-06	1.76E-06	3.56E-06	3.42E-06	1.54E-06	2.06E-06
Chromium, hexavalent	3.25E-06	5.37E-06	2.70E-06	3.90E-06	8.71E-06	3.86E-06	3.68E-06	7.77E-06	3.75E-06	3.53E-06	5.14E-06	4.94E-06	3.81E-06	4.25E-06	6.84E-06	7.94E-06	4.04E-06	3.40E-06
Chrysene	2.07E-09	3.14E-09	2.36E-09	2.21E-09	4.10E-09	2.47E-09	2.33E-09	3.90E-09	2.95E-09	2.37E-09	2.65E-09	2.67E-09	2.34E-09	2.36E-09	4.79E-09	4.61E-09	2.08E-09	2.77E-09
Copper	2.41E-05	3.82E-05	2.18E-05	3.01E-05	6.33E-05	3.18E-05	3.09E-05	5.58E-05	2.82E-05	2.68E-05	3.80E-05	3.71E-05	2.93E-05	3.09E-05	4.92E-05	5.45E-05	3.09E-05	2.57E-05
Crystalline silica (respirable)	2.73E-03	3.99E-03	2.42E-03	3.47E-03	6.76E-03	3.80E-03	3.69E-03	5.90E-03	3.03E-03	2.99E-03	4.17E-03	4.05E-03	3.23E-03	3.38E-03	5.24E-03	5.68E-03	3.59E-03	2.73E-03
Dibenz[a,h]anthracene	1.58E-11	2.39E-11	1.80E-11	1.69E-11	3.13E-11	1.88E-11	1.77E-11	2.97E-11	2.25E-11	1.81E-11	2.02E-11	2.03E-11	1.78E-11	1.80E-11	3.65E-11	3.51E-11	1.59E-11	2.12E-11
p-Dichlorobenzene	3.15E-06	4.78E-06	3.60E-06	3.37E-06	6.25E-06	3.76E-06	3.54E-06	5.94E-06	4.50E-06	3.61E-06	4.03E-06	4.06E-06	3.56E-06	3.60E-06	7.28E-06	7.01E-06	3.17E-06	4.22E-06
1,1-Dichloroethane	1.06E-06	1.61E-06	1.21E-06	1.14E-06	2.11E-06	1.27E-06	1.19E-06	2.01E-06	1.52E-06	1.22E-06	1.36E-06	1.37E-06	1.20E-06	1.21E-06	2.46E-06	2.36E-06	1.07E-06	1.43E-06
1,2-Dichloropropane	1.45E-06	2.20E-06	1.66E-06	1.55E-06	2.88E-06	1.73E-06	1.63E-06	2.74E-06	2.07E-06	1.67E-06	1.86E-06	1.87E-06	1.64E-06	1.66E-06	3.35E-06	3.23E-06	1.46E-06	1.95E-06
1,3-Dichloropropene	5.94E-06	9.03E-06	6.80E-06	6.36E-06	1.18E-05	7.08E-06	6.68E-06	1.12E-05	8.49E-06	6.82E-06	7.61E-06	7.68E-06	6.72E-06	6.80E-06	1.38E-05	1.32E-05	5.98E-06	7.98E-06
Diesel particulate matter	6.91E-05	1.07E-04	6.14E-05	9.18E-05	1.32E-04	9.29E-05	9.06E-05	1.60E-04	8.10E-05	8.32E-05	1.43E-04	1.38E-04	8.93E-05	9.25E-05	1.46E-04	1.53E-04	9.68E-05	7.27E-05
Ethyl chloride (Chloroethane)	2.07E-06	3.15E-06	2.36E-06	2.22E-06	4.12E-06	2.47E-06	2.33E-06	3.92E-06	2.97E-06	2.39E-06	2.65E-06	2.67E-06	2.34E-06	2.37E-06	4.80E-06	4.61E-06	2.09E-06	2.79E-06
Ethyl benzene	5.15E-05	7.80E-05	5.87E-05	5.51E-05	1.02E-04	6.15E-05	5.79E-05	9.73E-05	7.35E-05	5.89E-05	6.59E-05	6.64E-05	5.82E-05	5.89E-05	1.19E-04	1.15E-04	5.18E-05	6.91E-05
Ethylene dibromide (EDB)	3.22E-06	4.89E-06	3.67E-06	3.44E-06	6.39E-06	3.85E-06	3.62E-06	6.08E-06	4.60E-06	3.70E-06	4.12E-06	4.15E-06	3.64E-06	3.68E-06	7.45E-06	7.16E-06	3.24E-06	4.32E-06
Ethylene dichloride (EDC)	1.27E-06	1.93E-06	1.45E-06	1.36E-06	2.53E-06	1.52E-06	1.43E-06	2.41E-06	1.82E-06	1.46E-06	1.63E-06	1.64E-06	1.44E-06	1.46E-06	2.95E-06	2.84E-06	1.28E-06	1.71E-06
Formaldehyde	3.38E-06	5.12E-06	3.85E-06	3.61E-06	6.71E-06	4.03E-06	3.79E-06	6.36E-06	4.81E-06	3.88E-06	4.32E-06	4.36E-06	3.81E-06	3.86E-06	7.81E-06	7.51E-06	3.40E-06	4.53E-06
1,2,3,4,6,7,8-HpCDD	5.15E-13	7.80E-13	5.87E-13	5.51E-13	1.02E-12	6.15E-13	5.79E-13	9.73E-13	7.35E-13	5.89E-13	6.59E-13	6.64E-13	5.82E-13	5.89E-13	1.19E-12	1.15E-12	5.18E-13	6.91E-13
1,2,3,4,6,7,8-HpCDF	2.50E-13	3.80E-13	2.85E-13	2.68E-13	4.95E-13	2.99E-13	2.81E-13	4.72E-13	3.57E-13	2.86E-13	3.20E-13	3.23E-13	2.82E-13	2.85E-13	5.77E-13	5.56E-13	2.51E-13	3.36E-13
1,2,3,4,7,8,9-HpCDF	6.46E-14	9.81E-14	7.37E-14	6.91E-14	1.28E-13	7.72E-14	7.25E-14	1.22E-13	9.22E-14	7.41E-14	8.27E-14	8.34E-14	7.29E-14	7.39E-14	1.49E-13	1.44E-13	6.50E-14	8.67E-14
1,2,3,4,7,8-HxCDD	1.44E-13	2.18E-13	1.64E-13	1.54E-13	2.85E-13	1.72E-13	1.61E-13	2.71E-13	2.05E-13	1.65E-13	1.84E-13	1.85E-13	1.62E-13	1.64E-13	3.32E-13	3.20E-13	1.45E-13	1.93E-13
1,2,3,6,7,8-HxCDD	1.42E-13	2.15E-13	1.62E-13	1.52E-13	2.81E-13	1.69E-13	1.59E-13	2.68E-13	2.02E-13	1.63E-13	1.81E-13	1.83E-13	1.60E-13	1.62E-13	3.28E-13	3.16E-13	1.43E-13	1.90E-13
1,2,3,7,8,9-HxCDD	1.47E-13	2.23E-13	1.68E-13	1.57E-13	2.92E-13	1.75E-13	1.65E-13	2.78E-13	2.10E-13	1.69E-13	1.88E-13	1.90E-13	1.66E-13	1.68E-13	3.40E-13	3.28E-13	1.48E-13	1.97E-13
1,2,3,4,7,8-HxCDF	2.18E-13	3.30E-13	2.48E-13	2.33E-13	4.31E-13	2.60E-13	2.45E-13	4.11E-13	3.10E-13	2.49E-13	2.79E-13	2.81E-13	2.46E-13	2.49E-13	5.03E-13	4.84E-13	2.19E-13	2.92E-13
1,2,3,6,7,8-HxCDF	2.03E-13	3.09E-13	2.33E-13	2.17E-13	4.04E-13	2.43E-13	2.29E-13	3.85E-13	2.90E-13	2.33E-13	2.60E-13	2.63E-13	2.30E-13	2.33E-13	4.71E-13	4.53E-13	2.05E-13	2.73E-13
1,2,3,7,8,9-HxCDF	6.88E-14	1.04E-13	7.84E-14	7.35E-14	1.37E-13	8.22E-14	7.74E-14	1.30E-13	9.83E-14	7.90E-14	8.80E-14	8.88E-14	7.78E-14	7.86E-14	1.59E-13	1.53E-13	6.91E-14	9.25E-14
2,3,4,6,7,8-HxCDF	1.25E-13	1.90E-13	1.43E-13	1.34E-13	2.49E-13	1.50E-13	1.41E-13	2.37E-13	1.79E-13	1.44E-13	1.61E-13	1.62E-13	1.42E-13	1.43E-13	2.90E-13	2.79E-13	1.26E-13	1.68E-13
Hydrochloric acid	2.51E-03	3.80E-03	2.86E-03	2.68E-03	4.98E-03	2.99E-03	2.81E-03	4.73E-03	3.57E-03	2.88E-03	3.21E-03	3.23E-03	2.83E-03	2.87E-03	5.81E-03	5.56E-03	2.52E-03	3.36E-03
Indeno[1,2,3-cd]pyrene	1.17E-11	1.78E-11	1.34E-11	1.25E-11	2.32E-11	1.40E-11	1.31E-11	2.21E-11	1.67E-11	1.34E-11	1.50E-11	1.51E-11	1.32E-11	1.34E-11	2.71E-11	2.61E-11	1.18E-11	1.57E-11
Lead	2.23E-06	3.65E-06	2.06E-06	2.75E-06	5.97E-06	2.87E-06	2.77E-06	5.34E-06	2.70E-06	2.48E-06	3.59E-06	3.49E-06	2.77E-06	2.93E-06	4.79E-06	5.29E-06	2.82E-06	2.45E-06
Manganese	2.14E-07	3.24E-07	2.43E-07	2.28E-07	4.23E-07	2.55E-07	2.40E-07	4.03E-07	3.05E-07	2.45E-07	2.73E-07	2.76E-07	2.41E-07	2.43E-07	4.94E-07	4.74E-07	2.15E-07	2.86E-07
Mercury	8.36E-06	1.28E-05	9.49E-06	9.06E-06	1.71E-05	1.01E-05	9.51E-06	1.62E-05	1.19E-05	9.64E-06	1.09E-05	1.10E-05	9.53E-06	9.64E-06	1.93E-05	1.88E-05	8.56E-06	1.12E-05
Methyl bromide	3.35E-05	5.08E-05	3.82E-05	3.58E-05	6.63E-05	4.00E-05	3.76E-05	6.31E-05	4.78E-05	3.84E-05	4.29E-05	4.32E-05	3.78E-05	3.82E-05	7.75E-05	7.46E-05	3.37E-05	4.49E-05
Methyl chloroform	1.71E-06	2.60E-06	1.96E-06	1.83E-06	3.39E-06	2.05E-06	1.92E-06	3.23E-06	2.45E-06	1.97E-06	2.19E-06	2.21E-06	1.94E-06	1.96E-06	3.96E-06	3.81E-06	1.72E-06	2.30E-06
Methylene chloride	6.94E-06	1.05E-05	7.89E-06	7.41E-06	1.37E-05	8.28E-06	7.77E-06	1.31E-05	9.89E-06	7.95E-06	8.86E-06	8.94E-06	7.84E-06	7.92E-06	1.60E-05	1.54E-05	6.96E-06	9.30E-06
Naphthalene	7.44E-06	1.13E-05	8.48E-06	7.96E-06	1.47E-05	8.88E-06	8.38E-06	1.41E-05	1.06E-05	8.55E-06	9.53E-06	9.59E-06	8.40E-06	8.50E-06	1.72E-05	1.66E-05	7.49E-06	1.00E-05
Nickel	7.40E-05	1.27E-04	7.23E-05	9.22E-05	1.99E-04	9.48E-05	9.28E-05	1.79E-04	9.70E-05	8.75E-05	1.16E-04	1.15E-04	9.18E-05	9.49E-05	1.70E-04	1.83E-04	9.18E-05	9.03E-05
1,2,3,4,6,7,8,9-OCDD	1.08E-12	1.64E-12	1.23E-12	1.16E-12	2.15E-12	1.29E-12	1.22E-12	2.04E-12	1.54E-12	1.24E-12	1.38E-12	1.40E-12	1.22E-12	1.24E-12	2.50E-12	2.41E-12	1.09E-12	1.45E-12
1,2,3,4,6,7,8,9-OCDF	2.47E-13	3.74E-13	2.82E-13	2.64E-13	4.89E-13	2.95E-13	2.77E-13	4.66E-13	3.53E-13	2.83E-13	3.16E-13	3.18E-13	2.79E-13	2.82E-13	5.73E-13	5.51E-13	2.48E-13	3.31E-13
1,2,3,7,8-PeCDD	1.27E-13	1.93E-13	1.45E-13	1.36E-13	2.52E-13	1.52E-13	1.42E-13	2.39E-13	1.81E-13	1.46E-13	1.62E-13	1.64E-13	1.43E-13	1.45E-13	2.93E-13	2.82E-13	1.28E-13	1.70E-13
1,2,3,7,8-PeCDF	9.83E-13	1.49E-12	1.12E-12	1.05E-12	1.95E-12	1.17E-12	1.10E-12	1.86E-12	1.40E-12	1.13E-12	1.26E-12	1.27E-12	1.11E-12	1.12E-12	2.27E-12	2.19E-12	9.88E-13	1.32E-12
2,3,4,7,8-PeCDF	1.47E-12	2.23E-12	1.68E-12	1.57E-12	2.92E-12	1.75E-12	1.65E-12	2.78E-12	2.10E-12	1.69E-12	1.88E-12	1.90E-12	1.66E-12	1.68E-12	3.40E-12	3.28E-12	1.48E-12	1.97E-12
Perchloroethylene	2.84E-06	4.31E-06	3.24E-06	3.04E-06	5.63E-06	3.39E-06	3.19E-06	5.36E-06	4.05E-06	3.26E-06	3.64E-06	3.67E-06	3.21E-06	3.25E-06	6.57E-06	6.33E-06	2.86E-06	3.82E-06
Selenium	2.55E-06	3.99E-06	2.34E-06	3.15E-06	6.50E-06	3.36E-06	3.25E-06	5.71E-06	3.03E-06	2.86E-06	3.90E-06	3.81E-06	3.04E-06	3.19E-06	5.23E-06	5.69E-06	3.20E-06	2.77E-06
Styrene	1.30E-05	1.97E-05	1.48E-05	1.39E-05	2.58E-05	1.55E-05	1.46E-05	2.46E-05	1.86E-05	1.49E-05	1.67E-05	1.68E-05	1.47E-05	1.49E-05	3.01E-05	2.90E-05	1.31E-05	1.75E-05
2,3,7,8-TCDD	1.24E-13	1.89E-13	1.42E-13	1.33E-13	2.47E-13	1.49E-13	1.40E-13	2.35E-13	1.78E-13	1.43E-13	1.59E-13	1.61E-13	1.41E-13	1.42E-13	2.88E-13	2.77E-13	1.25E-13	1.67E-13
2,3,7,8-TCDF	6.17E-12	9.36E-12	7.06E-12	6.60E-12	1.23E-11	7.37E-12	6.94E-12	1.17E-11	8.81E-12	7.09E-12	7.91E-12	7.99E-12	6.98E-12	7.06E-12	1.43E-11	1.38E-11	6.21E-12	8.29E-12
1,1,2,2-Tetrachloroethane	2.16E-06	3.28E-06	2.47E-06	2.31E-06	4.28E-06	2.58E-06	2.42E-06	4.07E-06	3.08E-06	2.47E-06	2.76E-06	2.78E-06	2.44E-06	2.47E-06	4.99E-06	4.79E-06	2.17E-06	2.89E-06
Toluene	4.62E-04	7.02E-04	5.27E-04	4.95E-04	9.17E-04	5.53E-04	5.20E-04	8.74E-04	6.59E-04	5.31E-04	5.92E-04	5.97E-04	5.23E-04	5.28E-04	1.07E-03	1.03E-03	4.66E-04	6.22E-04
1,1,2-Trichloroethane	2.86E-06	4.34E-06	3.26E-06	3.06E-06	5.67E-06	3.41E-06	3.21E-06	5.41E-06	4.08E-06	3.28E-06	3.66E-06	3.70E-06	3.23E-06	3.27E-06	6.61E-06	6.37E-06	2.88E-06	3.84E-06
Trichloroethylene	2.25E-06	3.41E-06	2.57E-06	2.41E-06	4.47E-06	2.69E-06	2.53E-06	4.25E-06	3.21E-06	2.59E-06	2.88E-06	2.91E-06	2.55E-06	2.57E-06	5.20E-06	5.01E-06	2.27E-06	3.02E-06
Vanadium	2.24E-04	3.91E-04	2.18E-04	2.77E-04	6.17E-04	2.81E-04	2.75E-04	5.54E-04	2.94E-04	2.65E-04	3.58E-04	3.51E-04	2.80E-04	2.91E-04	5.18E-04	5.64E-04	2.76E-04	2.74E-04
Vinyl chloride	7.57E-06	1.15E-05	8.66E-06	8.12E-06	1.51E-05	9.06E-06	8.51E-06	1.43E-05	1.08E-05	8.71E-06	9.70E-06	9.78E-06	8.58E-06	8.68E-06	1.75E-05	1.69E-05	7.63E-06	1.02E-05
Vinylidene chloride	2.08E-06	3.15E-06	2.37E-06	2.23E-06	4.12E-06	2.49E-06	2.33E-06	3.92E-06	2.97E-06	2.39E-06	2.66E-06	2.68E-06	2.35E-06	2.38E-06	4.80E-06	4.64E-06	2.09E-06	2.79E-06
o-Xylene	7.31E-05	1.11E-04	8.33E-05	7.83E-05	1.45E-04	8.71E-05	8.20E-05	1.38E-04	1.04E-04	8.38E-05	9.34E-05	9.42E-05	8.26E-05	8.35E-05	1.69E-04	1.63E-04	7.36E-05	9.79E-05
Xylenes (mixed)	3.72E-04	5.64E-04	4.24E-04	3.98E-04	7.40E-04	4.44E-04	4.17E-04	7.03E-04	5.29E-04	4.27E-04	4.77E-04	4.80E-04	4.20E-04	4.25E-04	8.60E-04	8.29E-04	3.75E-04	4.99E-04

TABLE 8B

SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 METEOROLOGICAL DATA
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (µg/m3)

	Key Receptors																												
	37	38	39	40	41	42	43	44	45	46	47	48	57	63	65	66	1637	1716	11396	12566	13886	29527	30151	30292	30451	30513	30954	30955	30956
Chemical	School	School	School	School	School	School	School	School	School	School	School	School	MEIW - Acute (Future)	Residence	MEIW	Worker	PMI - Acute	PMI - Cancer/ chronic	MEIR - Acute (Current)	MEIR - Acute (Future)	MEIR - Cancer/ chronic	CS 508303	CS 507401	CS 508001	CS 508304	CS 508403	CS 511703	CS 511702	Residence
Acetaldehyde	6.87E-05	1.08E-04	6.12E-05	6.83E-05	9.92E-05	6.72E-05	5.89E-05	8.39E-05	1.21E-04	6.01E-05	1.14E-04	7.67E-05	1.87E-04	1.87E-04	2.59E-04	2.14E-04	3.48E-04	6.15E-04	3.42E-04	3.98E-04	3.40E-04	5.90E-05	5.28E-05	7.37E-05	5.49E-05	5.31E-05	1.22E-04	8.25E-05	2.08E-04
Acrolein	2.67E-06	4.22E-06	2.39E-06	2.66E-06	3.86E-06	2.62E-06	2.29E-06	3.27E-06	4.69E-06	2.35E-06	4.43E-06	2.98E-06	7.27E-06	7.26E-06	1.01E-05	8.35E-06	1.35E-05	2.39E-05	1.33E-05	1.55E-05	1.32E-05	2.30E-06	2.06E-06	2.88E-06	2.14E-06	2.07E-06	4.75E-06	3.22E-06	8.10E-06
Arsenic	3.65E-06	7.72E-06	3.66E-06	3.95E-06	4.57E-06	3.75E-06	3.03E-06	6.07E-06	7.65E-06	3.12E-06	8.79E-06	5.03E-06	2.10E-05	1.95E-05	2.40E-05	2.28E-05	3.98E-05	6.50E-05	1.15E-05	1.98E-05	2.76E-05	3.17E-06	1.80E-06	3.12E-06	2.67E-06	2.61E-06	7.56E-06	5.81E-06	1.04E-05
Benz[a]anthracene	7.79E-10	1.23E-09	6.97E-10	7.76E-10	1.13E-09	7.65E-10	6.69E-10	9.53E-10	1.37E-09	6.84E-10	1.29E-09	8.71E-10	2.13E-09	2.12E-09	2.94E-09	2.43E-09	3.94E-09	6.99E-09	3.88E-09	4.53E-09	3.86E-09	6.71E-10	6.01E-10	8.40E-10	6.24E-10	6.03E-10	1.39E-09	9.40E-10	2.36E-09
Benzene	3.88E-04	6.11E-04	3.47E-04	3.87E-04	5.60E-04	3.81E-04	3.33E-04	4.75E-04	6.82E-04	3.41E-04	6.44E-04	4.34E-04	1.06E-03	1.06E-03	1.46E-03	1.21E-03	1.97E-03	3.48E-03	1.94E-03	2.26E-03	1.92E-03	3.34E-04	2.99E-04	4.18E-04	3.10E-04	3.01E-04	6.89E-04	4.68E-04	1.18E-03
Benzo[a]pyrene	1.75E-11	2.77E-11	1.56E-11	1.74E-11	2.53E-11	1.72E-11	1.50E-11	2.14E-11	3.08E-11	1.54E-11	2.90E-11	1.95E-11	4.78E-11	4.77E-11	6.60E-11	5.47E-11	8.87E-11	1.57E-10	8.74E-11	1.02E-10	8.69E-11	1.51E-11	1.35E-11	1.89E-11	1.40E-11	1.35E-11	3.12E-11	2.11E-11	5.31E-11
Benzo[b]fluoranthene	1.11E-10	1.76E-10	9.93E-11	1.11E-10	1.61E-10	1.09E-10	9.54E-11	1.36E-10	1.95E-10	9.75E-11	1.84E-10	1.24E-10	3.03E-10	3.03E-10	4.19E-10	3.47E-10	5.65E-10	9.96E-10	5.54E-10	6.46E-10	5.52E-10	9.56E-11	8.56E-11	1.20E-10	8.88E-11	8.59E-11	1.97E-10	1.34E-10	3.37E-10
Benzo[k]fluoranthene	1.75E-11	2.77E-11	1.56E-11	1.74E-11	2.53E-11	1.72E-11	1.50E-11	2.14E-11	3.08E-11	1.54E-11	2.90E-11	1.95E-11	4.78E-11	4.77E-11	6.60E-11	5.47E-11	8.87E-11	1.57E-10	8.74E-11	1.02E-10	8.69E-11	1.51E-11	1.35E-11	1.89E-11	1.40E-11	1.35E-11	3.12E-11	2.11E-11	5.31E-11
Benzyl chloride	6.03E-06	9.52E-06	5.39E-06	6.01E-06	8.70E-06	5.91E-06	5.17E-06	7.36E-06	1.06E-05	5.29E-06	9.99E-06	6.73E-06	1.64E-05	1.64E-05	2.27E-05	1.88E-05	3.06E-05	5.40E-05	3.00E-05	3.50E-05	2.98E-05	5.19E-06	4.64E-06	6.50E-06	4.82E-06	4.66E-06	1.07E-05	7.26E-06	1.83E-05
Beryllium	8.84E-07	1.86E-06	8.72E-07	9.42E-07	1.12E-06	9.01E-07	7.32E-07	1.45E-06	1.85E-06	7.49E-07	2.15E-06	1.21E-06	5.00E-06	4.72E-06	5.83E-06	5.38E-06	8.90E-06	1.28E-05	2.69E-06	4.84E-06	6.71E-06	7.66E-07	4.43E-07	7.46E-07	6.44E-07	6.27E-07	1.94E-06	1.41E-06	2.66E-06
1,3-Butadiene	5.47E-06	8.62E-06	4.87E-06	5.43E-06	7.89E-06	5.36E-06	4.68E-06	6.66E-06	9.57E-06	4.79E-06	9.06E-06	6.08E-06	1.49E-05	1.49E-05	2.06E-05	1.70E-05	2.77E-05	4.87E-05	2.72E-05	3.17E-05	2.70E-05	4.69E-06	4.20E-06	5.89E-06	4.36E-06	4.22E-06	9.70E-06	6.57E-06	1.65E-05
Cadmium	1.61E-06	3.41E-06	1.59E-06	1.72E-06	2.04E-06	1.64E-06	1.33E-06	2.66E-06	3.38E-06	1.37E-06	3.95E-06	2.20E-06	9.39E-06	8.84E-06	1.07E-05	1.00E-05	1.69E-05	2.66E-05	5.02E-06	8.73E-06	1.21E-05	1.40E-06	8.01E-07	1.36E-06	1.18E-06	1.15E-06	3.54E-06	2.59E-06	4.80E-06
Carbon tetrachloride	3.66E-06	5.78E-06	3.26E-06	3.65E-06	5.29E-06	3.59E-06	3.14E-06	4.47E-06	6.41E-06	3.21E-06	6.07E-06	4.08E-06	9.98E-06	9.95E-06	1.38E-05	1.14E-05	1.86E-05	3.28E-05	1.82E-05	2.13E-05	1.81E-05	3.15E-06	2.82E-06	3.95E-06	2.92E-06	2.83E-06	6.50E-06	4.41E-06	1.11E-05
Chlorobenzene	3.30E-05	5.20E-05	2.95E-05	3.28E-05	4.77E-05	3.23E-05	2.82E-05	4.03E-05	5.78E-05	2.89E-05	5.47E-05	3.67E-05	8.97E-05	8.99E-05	1.24E-04	1.03E-04	1.67E-04	2.95E-04	1.64E-04	1.91E-04	1.63E-04	2.84E-05	2.53E-05	3.55E-05	2.63E-05	2.55E-05	5.86E-05	3.97E-05	9.98E-05
Chloroform	1.71E-06	2.69E-06	1.52E-06	1.70E-06	2.47E-06	1.67E-06	1.46E-06	2.08E-06	3.00E-06	1.49E-06	2.83E-06	1.91E-06	4.65E-06	4.64E-06	6.43E-06	5.31E-06	8.64E-06	1.53E-05	8.48E-06	9.90E-06	8.44E-06	1.47E-06	1.31E-06	1.84E-06	1.36E-06	1.32E-06	3.03E-06	2.06E-06	5.16E-06
Chromium, hexavalent	3.67E-06	8.02E-06	3.93E-06	4.23E-06	4.54E-06	3.78E-06	3.05E-06	6.44E-06	7.79E-06	3.10E-06	8.46E-06	5.22E-06	1.92E-05	1.75E-05	2.36E-05	2.21E-05	4.13E-05	5.75E-05	1.20E-05	2.16E-05	3.07E-05	3.12E-06	1.69E-06	3.14E-06	2.63E-06	2.55E-06	6.29E-06	5.75E-06	9.94E-06
Chrysene	2.30E-09	3.63E-09	2.05E-09	2.28E-09	3.32E-09	2.26E-09	1.97E-09	2.80E-09	4.04E-09	2.02E-09	3.81E-09	2.56E-09	6.25E-09	6.26E-09	8.66E-09	7.16E-09	1.16E-08	2.06E-08	1.14E-08	1.33E-08	1.14E-08	1.98E-09	1.77E-09	2.47E-09	1.83E-09	1.77E-09	4.09E-09	2.77E-09	6.96E-09
Copper	2.77E-05	5.88E-05	2.75E-05	2.96E-05	3.47E-05	2.84E-05	2.30E-05	4.62E-05	5.86E-05	2.36E-05	6.83E-05	3.82E-05	1.63E-04	1.53E-04	1.86E-04	1.75E-04	2.95E-04	4.67E-04	8.55E-05	1.50E-04	2.10E-04	2.42E-05	1.38E-05	2.32E-05	2.03E-05	1.98E-05	6.11E-05	4.49E-05	8.22E-05
Crystalline silica (respirable)	3.11E-03	6.43E-03	3.00E-03	3.21E-03	3.81E-03	3.09E-03	2.58E-03	5.10E-03	6.37E-03	2.58E-03	7.95E-03	4.17E-03	1.80E-02	1.74E-02	1.89E-02	1.75E-02	2.63E-02	3.27E-02	8.44E-03	1.58E-02	2.17E-02	2.69E-03	1.54E-03	2.43E-03	2.24E-03	2.17E-03	7.90E-03	5.25E-03	9.68E-03
Dibenz[a,h]anthracene	1.75E-11	2.77E-11	1.56E-11	1.74E-11	2.53E-11	1.72E-11	1.50E-11	2.14E-11	3.08E-11	1.54E-11	2.90E-11	1.95E-11	4.78E-11	4.77E-11	6.60E-11	5.47E-11	8.87E-11	1.57E-10	8.74E-11	1.02E-10	8.69E-11	1.51E-11	1.35E-11	1.89E-11	1.40E-11	1.35E-11	3.12E-11	2.11E-11	5.31E-11
p-Dichlorobenzene	3.50E-06	5.53E-06	3.12E-06	3.49E-06	5.06E-06	3.44E-06	3.00E-06	4.27E-06	6.14E-06	3.06E-06	5.81E-06	3.91E-06	9.53E-06	9.54E-06	1.32E-05	1.09E-05	1.77E-05	3.13E-05	1.74E-05	2.03E-05	1.73E-05	3.02E-06	2.70E-06	3.76E-06	2.80E-06	2.71E-06	6.22E-06	4.21E-06	1.06E-05
1,1-Dichloroethane	1.18E-06	1.86E-06	1.06E-06	1.18E-06	1.71E-06	1.16E-06	1.01E-06	1.44E-06	2.07E-06	1.03E-06	1.96E-06	1.32E-06	3.22E-06	3.22E-06	4.46E-06	3.68E-06	5.98E-06	1.06E-05	5.89E-06	6.84E-06	5.83E-06	1.02E-06	9.09E-07	1.27E-06	9.43E-07	9.13E-07	2.10E-06	1.42E-06	3.58E-06
1,2-Dichloropropane	1.61E-06	2.54E-06	1.44E-06	1.60E-06	2.32E-06	1.58E-06	1.38E-06	1.97E-06	2.83E-06	1.41E-06	2.67E-06	1.80E-06	4.39E-06	4.39E-06	6.09E-06	5.02E-06	8.18E-06	1.44E-05	8.04E-06	9.36E-06	8.00E-06	1.39E-06	1.24E-06	1.73E-06	1.29E-06	1.25E-06	2.87E-06	1.94E-06	4.88E-06
1,3-Dichloropropene	6.60E-06	1.04E-05	5.90E-06	6.59E-06	9.54E-06	6.48E-06	5.66E-06	8.07E-06	1.16E-05	5.79E-06	1.09E-05	7.38E-06	1.80E-05	1.80E-05	2.49E-05	2.06E-05	3.35E-05	5.92E-05	3.29E-05	3.83E-05	3.28E-05	5.68E-06	5.08E-06	7.10E-06	5.28E-06	5.11E-06	1.17E-05	7.95E-06	2.00E-05
Diesel particulate matter	8.99E-05	2.15E-04	5.93E-05	6.27E-05	1.03E-04	1.08E-04	6.31E-05	1.32E-04	1.76E-04	7.96E-05	2.06E-04	1.47E-04	3.95E-04	3.57E-04	6.65E-04	4.45E-04	1.42E-03	5.03E-04	1.76E-04	4.95E-04	6.40E-04	8.37E-05	3.67E-05	6.24E-05	6.12E-05	7.03E-05	1.53E-04	1.44E-04	2.86E-04
Ethyl chloride (Chloroethane)	2.30E-06	3.63E-06	2.05E-06	2.30E-06	3.33E-06	2.26E-06	1.97E-06	2.81E-06	4.04E-06	2.02E-06	3.82E-06	2.57E-06	6.29E-06	6.26E-06	8.69E-06	7.19E-06	1.17E-05	2.06E-05	1.15E-05	1.34E-05	1.14E-05	1.98E-06	1.77E-06	2.48E-06	1.84E-06	1.78E-06	4.09E-06	2.77E-06	6.98E-06
Ethyl benzene	5.73E-05	9.03E-05	5.11E-05	5.70E-05	8.27E-05	5.61E-05	4.91E-05	6.99E-05	1.00E-04	5.01E-05	9.48E-05	6.37E-05	1.56E-04	1.56E-04	2.16E-04	1.78E-04	2.90E-04	5.13E-04	2.84E-04	3.32E-04	2.83E-04	4.92E-05	4.40E-05	6.17E-05	4.57E-05	4.42E-05	1.02E-04	6.88E-05	1.73E-04
Ethylene dibromide (EDB)	3.57E-06	5.63E-06	3.19E-06	3.56E-06	5.17E-06	3.51E-06	3.07E-06	4.37E-06	6.29E-06	3.13E-06	5.93E-06	3.99E-06	9.74E-06	9.74E-06	1.35E-05	1.11E-05	1.81E-05	3.20E-05	1.78E-05	2.08E-05	1.77E-05	3.08E-06	2.76E-06	3.85E-06	2.86E-06	2.76E-06	6.36E-06	4.31E-06	1.08E-05
Ethylene dichloride (EDC)	1.41E-06	2.23E-06	1.26E-06	1.41E-06	2.04E-06	1.39E-06	1.21E-06	1.73E-06	2.48E-06	1.24E-06	2.34E-06	1.58E-06	3.86E-06	3.84E-06	5.34E-06	4.40E-06	7.16E-06	1.27E-05	7.04E-06	8.20E-06	7.00E-06	1.22E-06	1.09E-06	1.52E-06	1.13E-06	1.09E-06	2.51E-06	1.70E-06	4.29E-06
Formaldehyde	3.75E-06	5.92E-06	3.35E-06	3.74E-06	5.43E-06	3.67E-06	3.21E-06	4.58E-06	6.56E-06	3.28E-06	6.22E-06	4.19E-06	1.02E-05	1.02E-05	1.41E-05	1.17E-05	1.90E-05	3.36E-05	1.87E-05	2.18E-05	1.86E-05	3.23E-06	2.89E-06	4.03E-06	2.99E-06	2.89E-06	6.67E-06	4.51E-06	1.14E-05
1,2,3,4,6,7,8-HpCDD	5.73E-13	9.03E-13	5.11E-13	5.70E-13	8.27E-13	5.61E-13	4.91E-13	6.99E-13	1.00E-12	5.01E-13	9.48E-13	6.37E-13	1.56E-12	1.56E-12	2.16E-12	1.78E-12	2.90E-12	5.13E-12	2.84E-12	3.32E-12	2.83E-12	4.92E-13	4.40E-13	6.17E-13	4.57E-13	4.42E-13	1.02E-12	6.88E-13	1.73E-12
1,2,3,4,6,7,8-HpCDF	2.78E-13	4.38E-13	2.48E-13	2.76E-13	4.01E-13	2.72E-13	2.38E-13	3.39E-13	4.88E-13	2.44E-13	4.61E-13	3.10E-13	7.56E-13	7.56E-13	1.05E-12	8.67E-13	1.41E-12	2.49E-12	1.38E-12	1.61E-12	1.37E-12	2.39E-13	2.13E-13	2.99E-13	2.22E-13	2.15E-13	4.93E-13	3.34E-13	8.41E-13
1,2,3,4,7,8,9-HpCDF	7.17E-14	1.13E-13	6.40E-14	7.14E-14	1.04E-13	7.05E-14	6.15E-14	8.77E-14	1.26E-13	6.29E-14	1.19E-13	8.00E-14	1.96E-13	1.95E-13	2.70E-13	2.24E-13	3.64E-13	6.42E-13	3.57E-13	4.17E-13	3.56E-13	6.17E-14	5.52E-14	7.74E-14	5.74E-14	5.55E-14	1.27E-13	8.65E-14	2.17E-13
1,2,3,4,7,8-HxCDD	1.60E-13	2.52E-13	1.43E-13	1.59E-13	2.30E-13	1.57E-13	1.37E-13	1.95E-13	2.81E-13	1.40E-13	2.65E-13	1.78E-13	4.35E-13	4.34E-13	6.01E-13	4.97E-13	8.08E-13	1.43E-12	7.95E-13	9.28E-13	7.91E-13	1.37E-13	1.23E-13	1.72E-13	1.28E-13	1.23E-13	2.84E-13	1.92E-13	4.84E-13
1,2,3,6,7,8-HxCDD	1.58E-13	2.48E-13	1.41E-13	1.57E-13	2.28E-13	1.55E-13	1.35E-13	1.92E-13	2.77E-13	1.38E-13	2.61E-13	1.76E-13	4.29E-13	4.29E-13	5.93E-13	4.90E-13	7.99E-13	1.41E-12	7.85E-13	9.16E-13	7.80E-13	1.35E-13	1.21E-13	1.70E-13	1.26E-13	1.22E-13	2.80E-13	1.90E-13	4.78E-13
1,2,3,7,8,9-HxCDD	1.63E-13	2.57E-13	1.46E-13	1.63E-13	2.36E-13	1.60E-13	1.40E-13	1.99E-13	2.87E-13	1.43E-13	2.70E-13	1.82E-13	4.45E-13	4.44E-13	6.14E-13	5.10E-13	8.26E-13	1.46E-12	8.13E-13	9.48E-13	8.09E-13	1.40E-13	1.26E-13	1.76E-13	1.30E-13	1.26E-13	2.90E-13	1.97E-13	4.95E-13
1,2,3,4,7,8-HxCDF	2.42E-13	3.82E-13	2.16E-13	2.41E-13	3.49E-13	2.37E-13	2.07E-13	2.96E-13	4.24E-13	2.12E-13	4.01E-13	2.70E-13	6.59E-13	6.57E-13	9.12E-13	7.53E-13	1.22E-12	2.16E-12	1.21E-12	1.40E-12	1.20E-12	2.08E-13	1.86E-13	2.61E-13	1.93E-13	1.87E-13	4.30E-13	2.91E-13	7.34E-13
1,2,3,6,7,8-HxCDF	2.26E-13	3.57E-13	2.02E-13	2.25E-13	3.26E-13	2.22E-13	1.94E-13	2.76E-13	3.97E-13	1.98E-13	3.75E-13	2.52E-13	6.15E-13	6.16E-13	8.53E-13	7.06E-13	1.15E-12	2.02E-12	1.13E-12	1.31E-12	1.12E-12	1.95E-13	1.74E-13	2.43E-13	1.81E-13	1.75E-13	4.02E-13	2.72E-13	6.84E-13
1,2,3,7,8,9-HxCDF	7.63E-14	1.21E-13	6.84E-14	7.60E-14	1.10E-13	7.48E-14	6.57E-14	9.32E-14	1.34E-13	6.69E-14	1.27E-13	8.53E-14	2.08E-13	2.08E-13	2.88E-13	2.38E-13	3.87E-13	6.83E-13	3.81E-13	4.44E-13	3.79E-13	6.57E-14	5.89E-14	8.23E-14	6.11E-14	5.91E-14	1.36E-13	9.21E-14	2.32E-13
2,3,4,6,7,8-HxCDF	1.39E-13	2.20E-13	1.24E-13	1.39E-13	2.01E-13	1.37E-13	1.19E-13	1.70E-13	2.45E-13	1.22E-13	2.31E-13	1.56E-13	3.79E-13	3.79E-13	5.25E-13	4.35E-13	7.05E-13	1.25E-12	6.94E-13	8.09E-13	6.91E-13	1.20E-13	1.07E-13	1.50E-13	1.11E-13	1.08E-13	2.48E-13	1.68E-13	4.23E-13
Hydrochloric acid	2.78E-03	4.39E-03	2.49E-03	2.76E-03	4.02E-03	2.74E-03	2.39E-03	3.39E-03	4.88E-03	2.44E-03	4.61E-03	3.10E-03	7.59E-03	7.56E-03	1.05E-02	8.67E-03	1.41E-02	2.49E-02	1.38E-02	1.62E-02	1.38E-02	2.40E-03	2.14E-03	3.00E-03	2.22E-03	2.15E-03	4.95E-03	3.35E-03	8.44E-03
Indeno[1,2,3-cd]pyrene	1.30E-11	2.05E-11	1.16E-11	1.30E-11	1.88E-11	1.28E-11	1.11E-11	1.59E-11	2.28E-11	1.14E-11	2.15E-11	1.45E-11	3.54E-11	3.54E-11	4.92E-11	4.05E-11	6.59E-11	1.16E-10	6.47E-11	7.54E-11	6.43E-11	1.12E-11	1.00E-11	1.40E-11	1.04E-11	1.00E-11	2.31E-11	1.56E-11	3.94E-11
Lead	2.56E-06	5.46E-06	2.58E-06	2.79E-06	3.33E-06	2.66E-06	2.12E-06	4.30E-06	5.59E-06	2.20E-06	6.14E-06	3.61E-06	1.44E-05	1.35E-05	1.77E-05	1.62E-05	2.75E-05	3.85E-05	7.96E-06	1.51E-05	2.09E-05	2.27E-06	1.29E-06	2.20E-06	1.91E-06	1.85E-06	5.28E-06	4.07E-06	8.02E-06
Manganese	2.37E-07	3.74E-07	2.12E-07	2.36E-07	3.43E-07	2.33E-07	2.04E-07	2.90E-07	4.16E-07	2.08E-07	3.93E-07	2.65E-07	6.45E-07	6.45E-07	8.95E-07	7.40E-07	1.20E-06	2.12E-06	1.18E-06	1.38E-06	1.17E-06	2.04E-07	1.82E-07	2.55E-07	1.90E-07	1.83E-07	4.21E-07	2.85E-07	7.18E-07
Mercury	9.35E-06	1.51E-05	8.37E-06	9.36E-06	1.34E-05	9.20E-06	7.99E-06	1.17E-05	1.67E-05	8.19E-06	1.60E-05	1.06E-05	2.77E-05	2.74E-05	3.78E-05	3.19E-05	5.27E-05	9.37E-05	4.56E-05	5.44E-05	4.82E-05	8.03E-06	7.03E-06	9.95E-06	7.42E-06	7.19E-06	1.69E-05	1.15E-05	2.84E-05
Methyl bromide	3.71E-05	5.87E-05	3.32E-05	3.70E-05	5.38E-05	3.65E-05	3.19E-05	4.54E-05	6.52E-05	3.26E-05	6.18E-05	4.15E-05	1.01E-04	1.01E-04	1.40E-04	1.16E-04	1.88E-04	3.33E-04	1.85E-04	2.16E-04	1.84E-04	3.20E-05	2.86E-05	4.01E-05	2.97E-05	2.88E-05	6.61E-05	4.48E-05	1.13E-04
Methyl chloroform	1.90E-06	3.01E-06	1.70E-06	1.89E-06	2.74E-06	1.87E-06	1.63E-06	2.32E-06	3.34E-06	1.67E-06	3.16E-06	2.13E-06	5.18E-06	5.18E-06	7.19E-06	5.92E-06	9.66E-06	1.70E-05	9.47E-06	1.11E-05	9.43E-06	1.64E-06	1.47E-06	2.05E-06	1.52E-06	1.47E-06	3.38E-06	2.29E-06	5.77E-06
Methylene chloride	7.68E-06	1.21E-05	6.87E-06	7.66E-06	1.11E-05	7.54E-06	6.59E-06	9.41E-06	1.35E-05	6.74E-06	1.28E-05	8.58E-06	2.10E-05	2.09E-05	2.90E-05	2.40E-05	3.90E-05	6.90E-05	3.83E-05	4.48E-05	3.81E-05	6.62E-06	5.92E-06	8.29E-06	6.14E-06	5.95E-06	1.37E-05	9.27E-06	2.33E-05
Naphthalene	8.25E-06	1.31E-05	7.38E-06	8.22E-06	1.19E-05	8.12E-06	7.09E-06	1.01E-05	1.45E-05	7.24E-06	1.37E-05	9.24E-06	2.25E-05	2.25E-05	3.12E-05	2.58E-05	4.20E-05	7.40E-05	4.12E-05	4.80E-05	4.10E-05	7.11E-06	6.37E-06	8.89E-06	6.60E-06	6.39E-06	1.47E-05	9.97E-06	2.50E-05
Nickel	8.82E-05	1.80E-04	8.54E-05	9.39E-05	1.18E-04	9.00E-05	7.26E-05	1.39E-04	1.79E-04	7.50E-05	2.01E-04	1.16E-04	4.41E-04	4.11E-04	5.39E-04	4.88E-04	8.51E-04	1.19E-03	2.88E-04	5.19E-04	6.34E-04	7.40E-05	4.48E-05	8.02E-05	6.27E-05	6.20E-05	1.72E-04	1.33E-04	2.62E-04
1,2,3,4,6,7,8,9-OCDD	1.20E-12	1.89E-12	1.07E-12	1.20E-12	1.73E-12	1.18E-12	1.03E-12	1.47E-12	2.11E-12	1.05E-12	1.99E-12	1.34E-12	3.27E-12	3.27E-12	4.53E-12	3.75E-12	6.10E-12	1.08E-11	5.98E-12	6.97E-12	5.95E-12	1.03E-12	9.25E-13	1.29E-12	9.60E-13	9.29E-13	2.13E-12	1.45E-12	3.64E-12
1,2,3,4,6,7,8,9-OCDF	2.74E-13	4.33E-13	2.45E-13	2.73E-13	3.96E-13	2.69E-13	2.35E-13	3.35E-13	4.81E-13	2.41E-13	4.54E-13	3.06E-13	7.46E-13	7.45E-13	1.03E-12	8.55E-13	1.39E-12	2.45E-12	1.36E-12	1.59E-12	1.36E-12	2.35E-13	2.10E-13	2.96E-13	2.19E-13	2.12E-13	4.86E-13	3.30E-13	8.29E-13
1,2,3,7,8-PeCDD	1.41E-13	2.22E-13	1.26E-13	1.40E-13	2.04E-13	1.38E-13	1.21E-13	1.72E-13	2.47E-13	1.24E-13	2.34E-13	1.57E-13	3.84E-13	3.84E-13	5.30E-13	4.40E-13	7.13E-13	1.26E-12	7.03E-13	8.19E-13	6.96E-13	1.21E-13	1.08E-13	1.52E-13	1.13E-13	1.09E-13	2.50E-13	1.70E-13	4.27E-13
1,2,3,7,8-PeCDF	1.09E-12	1.72E-12	9.74E-13	1.09E-12	1.58E-12	1.07E-12	9.36E-13	1.33E-12	1.92E-12	9.57E-13	1.81E-12	1.22E-12	2.98E-12	2.97E-12	4.12E-12	3.41E-12	5.53E-12	9.78E-12	5.43E-12	6.34E-12	5.40E-12	9.40E-13	8.39E-13	1.18E-12	8.73E-13	8.45E-13	1.94E-12	1.31E-12	3.31E-12
2,3,4,7,8-PeCDF	1.63E-12	2.57E-12	1.46E-12	1.63E-12	2.36E-12	1.60E-12	1.40E-12	1.99E-12	2.87E-12	1.43E-12	2.70E-12	1.82E-12	4.45E-12	4.44E-12	6.14E-12	5.10E-12	8.26E-12	1.46E-11	8.13E-12	9.48E-12	8.09E-12	1.40E-12	1.26E-12	1.76E-12	1.30E-12	1.26E-12	2.90E-12	1.97E-12	4.95E-12
Perchloroethylene	3.16E-06	4.97E-06	2.82E-06	3.14E-06	4.56E-06	3.10E-06	2.71E-06	3.85E-06	5.55E-06	2.77E-06	5.23E-06	3.52E-06	8.61E-06	8.60E-06	1.19E-05	9.83E-06	1.60E-05	2.83E-05	1.57E-05	1.83E-05	1.56E-05	2.71E-06	2.43E-06	3.39E-06	2.52E-06	2.44E-06	5.60E-06	3.80E-06	9.56E-06
Selenium	2.94E-06	6.04E-06	2.87E-06	3.11E-06	3.69E-06	2.96E-06	2.44E-06	4.74E-06	5.95E-06	2.48E-06	7.00E-06	3.91E-06	1.61E-05	1.52E-05	1.78E-05	1.68E-05	2.83E-05	4.46E-05	9.39E-06	1.55E-05	2.05E-05	2.51E-06	1.50E-06	2.50E-06	2.13E-06	2.08E-06	6.40E-06	4.64E-06	8.49E-06
Styrene	1.44E-05	2.28E-05	1.29E-05	1.44E-05	2.09E-05	1.42E-05	1.24E-05	1.76E-05	2.54E-05	1.27E-05	2.40E-05	1.61E-05	3.94E-05	3.93E-05	5.46E-05	4.51E-05	7.31E-05	1.29E-04	7.20E-05	8.40E-05	7.17E-05	1.24E-05	1.11E-05	1.56E-05	1.16E-05	1.12E-05	2.57E-05	1.74E-05	4.38E-05
2,3,7,8-TCDD	1.38E-13	2.18E-13	1.24E-13	1.38E-13	2.00E-13	1.36E-13	1.19E-13	1.69E-13	2.43E-13	1.21E-13	2.29E-13	1.54E-13	3.77E-13	3.77E-13	5.21E-13	4.31E-13	7.01E-13	1.24E-12	6.89E-13	8.04E-13	6.84E-13	1.19E-13	1.07E-13	1.49E-13	1.11E-13	1.07E-13	2.46E-13	1.67E-13	4.19E-13
2,3,7,8-TCDF	6.87E-12	1.08E-11	6.12E-12	6.83E-12	9.92E-12	6.72E-12	5.89E-12	8.39E-12	1.21E-11	6.01E-12	1.14E-11	7.67E-12	1.87E-11	1.87E-11	2.59E-11	2.14E-11	3.48E-11	6.15E-11	3.42E-11	3.98E-11	3.40E-11	5.90E-12	5.28E-12	7.37E-12	5.49E-12	5.31E-12	1.22E-11	8.25E-12	2.08E-11
1,1,2,2-Tetrachloroethane	2.40E-06	3.78E-06	2.14E-06	2.38E-06	3.46E-06	2.36E-06	2.06E-06	2.92E-06	4.20E-06	2.10E-06	3.97E-06	2.67E-06	6.54E-06	6.51E-06	9.04E-06	7.48E-06	1.22E-05	2.15E-05	1.19E-05	1.39E-05	1.19E-05	2.06E-06	1.85E-06	2.58E-06	1.91E-06	1.85E-06	4.26E-06	2.89E-06	7.27E-06
Toluene	5.14E-04	8.10E-04	4.59E-04	5.12E-04	7.42E-04	5.04E-04	4.41E-04	6.28E-04	9.01E-04	4.50E-04	8.52E-04	5.73E-04	1.40E-03	1.40E-03	1.94E-03	1.60E-03	2.60E-03	4.60E-03	2.56E-03	2.99E-03	2.55E-03	4.42E-04	3.95E-04	5.53E-04	4.10E-04	3.97E-04	9.13E-04	6.19E-04	1.56E-03
1,1,2-Trichloroethane	3.18E-06	5.02E-06	2.84E-06	3.16E-06	4.58E-06	3.12E-06	2.73E-06	3.88E-06	5.56E-06	2.79E-06	5.26E-06	3.54E-06	8.66E-06	8.64E-06	1.20E-05	9.91E-06	1.61E-05	2.85E-05	1.58E-05	1.84E-05	1.57E-05	2.73E-06	2.44E-06	3.42E-06	2.53E-06	2.46E-06	5.65E-06	3.83E-06	9.62E-06
Trichloroethylene	2.50E-06	3.94E-06	2.23E-06	2.49E-06	3.61E-06	2.45E-06	2.14E-06	3.06E-06	4.39E-06	2.19E-06	4.15E-06	2.80E-06	6.83E-06	6.81E-06	9.44E-06	7.81E-06	1.27E-05	2.24E-05	1.25E-05	1.45E-05	1.24E-05	2.15E-06	1.92E-06	2.69E-06	2.00E-06	1.93E-06	4.44E-06	3.01E-06	7.58E-06
Vanadium	2.68E-04	5.56E-04	2.63E-04	2.89E-04	3.58E-04	2.75E-04	2.20E-04	4.28E-04	5.54E-04	2.29E-04	6.04E-04	3.59E-04	1.36E-03	1.25E-03	1.71E-03	1.57E-03	2.79E-03	4.13E-03	9.00E-04	1.60E-03	2.00E-03	2.25E-04	1.34E-04	2.45E-04	1.91E-04	1.89E-04	4.99E-04	4.00E-04	7.86E-04
Vinyl chloride	8.42E-06	1.33E-05	7.51E-06	8.39E-06	1.22E-05	8.28E-06	7.21E-06	1.03E-05	1.48E-05	7.40E-06	1.40E-05	9.41E-06	2.30E-05	2.29E-05	3.18E-05	2.63E-05	4.28E-05	7.55E-05	4.19E-05	4.91E-05	4.17E-05	7.26E-06	6.48E-06	9.06E-06	6.73E-06	6.51E-06	1.50E-05	1.01E-05	2.55E-05
Vinylidene chloride	2.31E-06	3.64E-06	2.07E-06	2.30E-06	3.33E-06	2.26E-06	1.98E-06	2.82E-06	4.05E-06	2.02E-06	3.83E-06	2.58E-06	6.30E-06	6.27E-06	8.70E-06	7.20E-06	1.17E-05	2.07E-05	1.15E-05	1.34E-05	1.14E-05	1.98E-06	1.78E-06	2.49E-06	1.85E-06	1.79E-06	4.10E-06	2.78E-06	6.99E-06
o-Xylene	8.12E-05	1.28E-04	7.24E-05	8.09E-05	1.17E-04	7.96E-05	6.95E-05	9.91E-05	1.42E-04	7.11E-05	1.34E-04	9.05E-05	2.21E-04	2.21E-04	3.06E-04	2.53E-04	4.10E-04	7.25E-04	4.04E-04	4.72E-04	4.02E-04	6.97E-05	6.24E-05	8.73E-05	6.49E-05	6.27E-05	1.44E-04	9.75E-05	2.46E-04
Xylenes (mixed)	4.13E-04	6.54E-04	3.70E-04	4.12E-04	5.98E-04	4.05E-04	3.54E-04	5.05E-04	7.26E-04	3.62E-04	6.85E-04	4.61E-04	1.13E-03	1.12E-03	1.56E-03	1.29E-03	2.09E-03	3.70E-03	2.06E-03	2.40E-03	2.05E-03	3.55E-04	3.17E-04	4.45E-04	3.30E-04	3.19E-04	7.34E-04	4.98E-04	1.25E-03

TABLE 8B

SUMMARY OF ANNUAL AVERAGE CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 METEOROLOGICAL DATA
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter (µg/m3)

Notes
1. Receptor identifier in the HARP model.

Abbreviations
CS = Census Tract
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
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
TCDD = Tetrachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran

TABLE 9

SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 METEOROLOGICAL DATA AND CURRENT FACILITY CONFIGURATION
Lehigh Southwest Cement Company
Cupertino, Facility

Concentrations reported in micrograms per cubic meter ($\mu g/m^3$)

Chemical	Key Receptors																																
	1[1]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	CS 510100	CS 507805	CS 507703	CS 507701	CS 507807	CS 507702	CS 507808	CS 507600	CS 509902	CS 510002	CS 508301	CS 508401	CS 511701	CS 510200	CS 507806	CS 507906	CS 507905	CS 510001	CS 509901	Daycare	Daycare	Preschool	Preschool	Preschool	Preschool	Preschool	School-Age Care	School	School	School	School	School	School
Acetaldehyde	4.46E-01	3.45E-01	5.18E-01	3.46E-01	2.71E-01	2.51E-01	1.79E-01	3.30E-01	2.30E-01	3.86E-01	3.05E-01	2.59E-01	1.98E-01	3.15E-01	2.38E-01	9.87E-02	1.23E-01	3.63E-01	2.41E-01	2.59E-01	1.41E-01	3.21E-01	4.65E-01	3.62E-01	3.26E-01	3.79E-01	1.12E-01	3.13E-01	3.38E-01	3.64E-01	2.51E-01	3.36E-01	1.78E-01
Acrolein	1.73E-02	1.34E-02	2.01E-02	1.34E-02	1.05E-02	9.71E-03	6.94E-03	1.28E-02	8.90E-03	1.50E-02	1.18E-02	1.00E-02	7.66E-03	1.22E-02	9.23E-03	3.83E-03	4.78E-03	1.40E-02	9.32E-03	1.00E-02	5.45E-03	1.24E-02	1.80E-02	1.40E-02	1.26E-02	1.47E-02	4.35E-03	1.21E-02	1.31E-02	1.41E-02	9.71E-03	1.30E-02	6.91E-03
Arsenic	1.31E-03	9.66E-04	2.33E-03	1.03E-03	1.43E-03	7.72E-04	5.94E-04	6.89E-04	4.95E-04	9.57E-04	9.92E-04	6.00E-04	5.33E-04	9.65E-04	6.14E-04	5.05E-04	4.74E-04	7.52E-04	7.85E-04	8.18E-04	4.04E-04	1.50E-03	1.31E-03	1.20E-03	1.28E-03	1.11E-03	8.14E-04	6.55E-04	1.16E-03	1.13E-03	7.66E-04	8.40E-04	1.33E-03
Benz[a]anthracene	5.05E-06	3.90E-06	5.86E-06	3.92E-06	3.06E-06	2.83E-06	2.03E-06	3.73E-06	2.60E-06	4.37E-06	3.45E-06	2.93E-06	2.24E-06	3.56E-06	2.69E-06	1.12E-06	1.40E-06	4.10E-06	2.72E-06	2.92E-06	1.59E-06	3.63E-06	5.26E-06	4.10E-06	3.69E-06	4.29E-06	1.27E-06	3.54E-06	3.83E-06	4.12E-06	2.83E-06	3.80E-06	2.02E-06
Benzene	3.72E+00	2.87E+00	4.32E+00	2.89E+00	2.26E+00	2.09E+00	1.49E+00	2.75E+00	1.91E+00	3.22E+00	2.54E+00	2.16E+00	1.65E+00	2.62E+00	1.99E+00	8.23E-01	1.03E+00	3.02E+00	2.00E+00	2.15E+00	1.17E+00	2.68E+00	3.88E+00	3.02E+00	2.72E+00	3.16E+00	9.35E-01	2.61E+00	2.82E+00	3.04E+00	2.09E+00	2.80E+00	1.49E+00
Benzo[a]pyrene	1.13E-07	8.76E-08	1.32E-07	8.80E-08	6.88E-08	6.37E-08	4.55E-08	8.38E-08	5.84E-08	9.81E-08	7.76E-08	6.59E-08	5.03E-08	8.00E-08	6.05E-08	2.51E-08	3.14E-08	9.21E-08	6.11E-08	6.57E-08	3.58E-08	8.16E-08	1.18E-07	9.21E-08	8.29E-08	9.65E-08	2.85E-08	7.96E-08	8.60E-08	9.26E-08	6.37E-08	8.55E-08	4.54E-08
Benzo[b]fluoranthene	7.20E-07	5.56E-07	8.36E-07	5.58E-07	4.37E-07	4.04E-07	2.89E-07	5.32E-07	3.71E-07	6.23E-07	4.93E-07	4.18E-07	3.19E-07	5.08E-07	3.84E-07	1.59E-07	1.99E-07	5.85E-07	3.88E-07	4.17E-07	2.27E-07	5.18E-07	7.50E-07	5.84E-07	5.26E-07	6.12E-07	1.81E-07	5.05E-07	5.46E-07	5.88E-07	4.04E-07	5.42E-07	2.88E-07
Benzo[k]fluoranthene	1.13E-07	8.76E-08	1.32E-07	8.80E-08	6.88E-08	6.37E-08	4.55E-08	8.38E-08	5.84E-08	9.81E-08	7.76E-08	6.59E-08	5.03E-08	8.00E-08	6.05E-08	2.51E-08	3.14E-08	9.21E-08	6.11E-08	6.57E-08	3.58E-08	8.16E-08	1.18E-07	9.21E-08	8.29E-08	9.65E-08	2.85E-08	7.96E-08	8.60E-08	9.26E-08	6.37E-08	8.55E-08	4.54E-08
Benzyl chloride	3.91E-02	3.01E-02	4.53E-02	3.03E-02	2.37E-02	2.19E-02	1.57E-02	2.89E-02	2.01E-02	3.38E-02	2.67E-02	2.27E-02	1.73E-02	2.76E-02	2.08E-02	8.64E-03	1.08E-02	3.17E-02	2.11E-02	2.26E-02	1.23E-02	2.81E-02	4.07E-02	3.17E-02	2.85E-02	3.32E-02	9.81E-03	2.74E-02	2.96E-02	3.19E-02	2.19E-02	2.94E-02	1.56E-02
Beryllium	3.89E-04	2.82E-04	6.01E-04	2.84E-04	3.97E-04	2.19E-04	1.72E-04	2.05E-04	1.50E-04	2.91E-04	2.69E-04	1.83E-04	1.73E-04	3.13E-04	1.80E-04	1.51E-04	1.43E-04	2.30E-04	2.28E-04	2.24E-04	1.15E-04	4.05E-04	3.82E-04	3.61E-04	3.59E-04	3.15E-04	2.56E-04	2.08E-04	3.32E-04	3.35E-04	2.20E-04	2.54E-04	3.99E-04
1,3-Butadiene	3.53E-02	2.73E-02	4.10E-02	2.74E-02	2.14E-02	1.98E-02	1.42E-02	2.61E-02	1.82E-02	3.06E-02	2.42E-02	2.05E-02	1.57E-02	2.49E-02	1.89E-02	7.82E-03	9.77E-03	2.87E-02	1.90E-02	2.05E-02	1.11E-02	2.54E-02	3.68E-02	2.87E-02	2.58E-02	3.00E-02	8.88E-03	2.48E-02	2.68E-02	2.88E-02	1.98E-02	2.66E-02	1.41E-02
Cadmium	5.86E-04	4.22E-04	9.72E-04	4.33E-04	6.51E-04	3.29E-04	2.61E-04	2.92E-04	2.13E-04	4.21E-04	4.23E-04	2.60E-04	2.54E-04	4.88E-04	2.63E-04	2.43E-04	2.24E-04	3.19E-04	3.39E-04	3.45E-04	1.70E-04	6.64E-04	5.64E-04	5.73E-04	5.89E-04	4.71E-04	4.19E-04	2.86E-04	5.09E-04	5.03E-04	3.29E-04	3.74E-04	6.54E-04
Carbon tetrachloride	2.38E-02	1.83E-02	2.76E-02	1.84E-02	1.44E-02	1.33E-02	9.53E-03	1.75E-02	1.22E-02	2.05E-02	1.63E-02	1.38E-02	1.05E-02	1.68E-02	1.27E-02	5.25E-03	6.57E-03	1.93E-02	1.28E-02	1.38E-02	7.49E-03	1.71E-02	2.48E-02	1.93E-02	1.74E-02	2.02E-02	5.97E-03	1.67E-02	1.80E-02	1.94E-02	1.33E-02	1.79E-02	9.50E-03
Chlorobenzene	2.14E-01	1.65E-01	2.48E-01	1.66E-01	1.30E-01	1.20E-01	8.57E-02	1.58E-01	1.10E-01	1.85E-01	1.46E-01	1.24E-01	9.46E-02	1.51E-01	1.14E-01	4.73E-02	5.91E-02	1.73E-01	1.15E-01	1.24E-01	6.74E-02	1.54E-01	2.23E-01	1.73E-01	1.56E-01	1.82E-01	5.37E-02	1.50E-01	1.62E-01	1.74E-01	1.20E-01	1.61E-01	8.54E-02
Chloroform	1.11E-02	8.53E-03	1.28E-02	8.57E-03	6.70E-03	6.20E-03	4.44E-03	8.17E-03	5.69E-03	9.56E-03	7.56E-03	6.42E-03	4.90E-03	7.80E-03	5.90E-03	2.45E-03	3.06E-03	8.98E-03	5.96E-03	6.40E-03	3.49E-03	7.95E-03	1.15E-02	8.97E-03	8.07E-03	9.40E-03	2.78E-03	7.75E-03	8.38E-03	9.02E-03	6.20E-03	8.33E-03	4.42E-03
Chromium, hexavalent	1.33E-03	9.20E-04	2.20E-03	9.93E-04	1.04E-03	9.05E-04	6.97E-04	6.95E-04	5.23E-04	9.91E-04	9.34E-04	6.26E-04	4.56E-04	6.32E-04	6.49E-04	4.48E-04	4.32E-04	8.94E-04	7.38E-04	7.82E-04	4.53E-04	1.19E-03	1.46E-03	8.87E-04	9.72E-04	1.18E-03	6.24E-04	6.95E-04	1.20E-03	1.14E-03	8.42E-04	7.50E-04	1.13E-03
Chrysene	1.49E-05	1.15E-05	1.73E-05	1.15E-05	9.02E-06	8.35E-06	5.97E-06	1.10E-05	7.66E-06	1.29E-05	1.02E-05	8.64E-06	6.59E-06	1.05E-05	7.94E-06	3.29E-06	4.12E-06	1.21E-05	8.02E-06	8.62E-06	4.69E-06	1.07E-05	1.55E-05	1.21E-05	1.09E-05	1.26E-05	3.74E-06	1.04E-05	1.13E-05	1.21E-05	8.35E-06	1.12E-05	5.95E-06
Copper	9.03E-03	6.46E-03	1.57E-02	6.61E-03	1.08E-02	4.87E-03	3.84E-03	4.27E-03	3.09E-03	6.33E-03	6.50E-03	3.87E-03	3.96E-03	7.28E-03	3.86E-03	3.65E-03	3.33E-03	4.57E-03	5.38E-03	5.33E-03	2.53E-03	1.07E-02	8.63E-03	8.67E-03	9.23E-03	7.12E-03	6.63E-03	4.16E-03	7.81E-03	7.65E-03	4.98E-03	5.64E-03	1.06E-02
Crystalline silica (respirable)	8.45E-01	4.95E-01	1.10E+00	3.89E-01	1.17E+00	3.25E-01	3.03E-01	1.82E-01	1.80E-01	5.03E-01	3.97E-01	2.73E-01	4.98E-01	8.06E-01	2.33E-01	4.02E-01	3.31E-01	2.47E-01	3.92E-01	3.38E-01	1.57E-01	8.37E-01	6.50E-01	7.70E-01	7.54E-01	4.56E-01	9.34E-01	2.69E-01	5.88E-01	5.92E-01	3.38E-01	4.42E-01	1.43E+00
Dibenz[a,h]anthracene	1.13E-07	8.76E-08	1.32E-07	8.80E-08	6.88E-08	6.37E-08	4.55E-08	8.38E-08	5.84E-08	9.81E-08	7.76E-08	6.59E-08	5.03E-08	8.00E-08	6.05E-08	2.51E-08	3.14E-08	9.21E-08	6.11E-08	6.57E-08	3.58E-08	8.16E-08	1.18E-07	9.21E-08	8.29E-08	9.65E-08	2.85E-08	7.96E-08	8.60E-08	9.26E-08	6.37E-08	8.55E-08	4.54E-08
p-Dichlorobenzene	2.27E-02	1.75E-02	2.63E-02	1.76E-02	1.38E-02	1.27E-02	9.11E-03	1.68E-02	1.17E-02	1.96E-02	1.55E-02	1.32E-02	1.01E-02	1.60E-02	1.21E-02	5.02E-03	6.28E-03	1.84E-02	1.22E-02	1.31E-02	7.16E-03	1.63E-02	2.36E-02	1.84E-02	1.66E-02	1.93E-02	5.70E-03	1.59E-02	1.72E-02	1.85E-02	1.27E-02	1.71E-02	9.07E-03
1,1-Dichloroethane	7.63E-03	5.89E-03	8.85E-03	5.91E-03	4.62E-03	4.28E-03	3.06E-03	5.63E-03	3.93E-03	6.59E-03	5.22E-03	4.43E-03	3.38E-03	5.38E-03	4.07E-03	1.69E-03	2.11E-03	6.19E-03	4.11E-03	4.42E-03	2.40E-03	5.49E-03	7.95E-03	6.19E-03	5.57E-03	6.48E-03	1.92E-03	5.35E-03	5.78E-03	6.22E-03	4.28E-03	5.74E-03	3.05E-03
1,2-Dichloropropane	1.05E-02	8.08E-03	1.22E-02	8.12E-03	6.35E-03	5.88E-03	4.20E-03	7.73E-03	5.39E-03	9.05E-03	7.16E-03	6.08E-03	4.64E-03	7.39E-03	5.59E-03	2.32E-03	2.90E-03	8.50E-03	5.64E-03	6.06E-03	3.30E-03	7.53E-03	1.09E-02	8.50E-03	7.65E-03	8.90E-03	2.63E-03	7.34E-03	7.94E-03	8.54E-03	5.88E-03	7.89E-03	4.18E-03
1,3-Dichloropropene	4.28E-02	3.30E-02	4.97E-02	3.32E-02	2.59E-02	2.40E-02	1.72E-02	3.16E-02	2.20E-02	3.70E-02	2.93E-02	2.48E-02	1.89E-02	3.02E-02	2.28E-02	9.46E-03	1.18E-02	3.47E-02	2.31E-02	2.48E-02	1.35E-02	3.08E-02	4.46E-02	3.47E-02	3.12E-02	3.64E-02	1.07E-02	3.00E-02	3.24E-02	3.49E-02	2.40E-02	3.22E-02	1.71E-02
Diesel particulate matter	8.33E+00	3.83E+00	7.55E+00	5.36E+00	4.14E+00	4.12E+00	3.17E+00	2.63E+00	7.66E-01	4.24E+00	8.54E+00	8.36E-01	2.92E+00	4.85E+00	3.69E+00	2.96E+00	2.68E+00	6.25E+00	4.19E+00	4.39E+00	2.30E+00	6.08E+00	1.49E+00	7.70E+00	7.69E+00	6.12E+00	3.24E+00	4.83E+00	8.52E+00	8.96E+00	4.44E+00	3.28E+00	4.50E+00
Ethyl chloride (Chloroethane)	1.49E-02	1.15E-02	1.73E-02	1.16E-02	9.06E-03	8.38E-03	5.99E-03	1.10E-02	7.69E-03	1.29E-02	1.02E-02	8.67E-03	6.61E-03	1.05E-02	7.97E-03	3.30E-03	4.13E-03	1.21E-02	8.05E-03	8.65E-03	4.71E-03	1.07E-02	1.56E-02	1.21E-02	1.09E-02	1.27E-02	3.75E-03	1.05E-02	1.13E-02	1.22E-02	8.38E-03	1.12E-02	5.97E-03
Ethyl benzene	3.69E-01	2.85E-01	4.29E-01	2.86E-01	2.24E-01	2.07E-01	1.48E-01	2.73E-01	1.90E-01	3.19E-01	2.53E-01	2.15E-01	1.64E-01	2.61E-01	1.97E-01	8.17E-02	1.02E-01	3.00E-01	1.99E-01	2.14E-01	1.16E-01	2.66E-01	3.85E-01	3.00E-01	2.70E-01	3.14E-01	9.28E-02	2.59E-01	2.80E-01	3.01E-01	2.07E-01	2.78E-01	1.48E-01
Ethylene dibromide (EDB)	2.32E-02	1.79E-02	2.69E-02	1.80E-02	1.41E-02	1.30E-02	9.31E-03	1.71E-02	1.19E-02	2.01E-02	1.59E-02	1.35E-02	1.03E-02	1.64E-02	1.24E-02	5.13E-03	6.42E-03	1.88E-02	1.25E-02	1.34E-02	7.31E-03	1.67E-02	2.42E-02	1.88E-02	1.69E-02	1.97E-02	5.83E-03	1.63E-02	1.76E-02	1.89E-02	1.30E-02	1.75E-02	9.27E-03
Ethylene dichloride (EDC)	9.17E-03	7.08E-03	1.06E-02	7.11E-03	5.56E-03	5.14E-03	3.68E-03	6.77E-03	4.72E-03	7.93E-03	6.27E-03	5.32E-03	4.06E-03	6.47E-03	4.89E-03	2.03E-03	2.54E-03	7.44E-03	4.94E-03	5.31E-03	2.89E-03	6.59E-03	9.55E-03	7.44E-03	6.70E-03	7.79E-03	2.30E-03	6.43E-03	6.95E-03	7.48E-03	5.15E-03	6.91E-03	3.66E-03
Formaldehyde	2.43E-02	1.88E-02	2.82E-02	1.89E-02	1.47E-02	1.36E-02	9.76E-03	1.80E-02	1.25E-02	2.10E-02	1.66E-02	1.41E-02	1.08E-02	1.72E-02	1.30E-02	5.38E-03	6.72E-03	1.97E-02	1.31E-02	1.41E-02	7.67E-03	1.75E-02	2.53E-02	1.97E-02	1.78E-02	2.07E-02	6.11E-03	1.70E-02	1.84E-02	1.98E-02	1.36E-02	1.83E-02	9.72E-03
1,2,3,4,6,7,8-HpCDD	3.72E-09	2.87E-09	4.32E-09	2.89E-09	2.26E-09	2.09E-09	1.49E-09	2.75E-09	1.91E-09	3.22E-09	2.54E-09	2.16E-09	1.65E-09	2.62E-09	1.99E-09	8.23E-10	1.03E-09	3.02E-09	2.00E-09	2.15E-09	1.17E-09	2.68E-09	3.88E-09	3.02E-09	2.72E-09	3.16E-09	9.35E-10	2.61E-09	2.82E-09	3.04E-09	2.09E-09	2.80E-09	1.49E-09
1,2,3,4,6,7,8-HpCDF	1.80E-09	1.39E-09	2.09E-09	1.40E-09	1.09E-09	1.01E-09	7.22E-10	1.33E-09	9.26E-10	1.56E-09	1.23E-09	1.04E-09	7.97E-10	1.27E-09	9.60E-10	3.98E-10	4.98E-10	1.46E-09	9.69E-10	1.04E-09	5.67E-10	1.29E-09	1.87E-09	1.46E-09	1.31E-09	1.53E-09	4.52E-10	1.26E-09	1.36E-09	1.47E-09	1.01E-09	1.36E-09	7.19E-10
1,2,3,4,7,8,9-HpCDF	4.65E-10	3.59E-10	5.40E-10	3.61E-10	2.82E-10	2.61E-10	1.87E-10	3.44E-10	2.39E-10	4.02E-10	3.18E-10	2.70E-10	2.06E-10	3.28E-10	2.48E-10	1.03E-10	1.29E-10	3.78E-10	2.51E-10	2.69E-10	1.47E-10	3.35E-10	4.85E-10	3.77E-10	3.40E-10	3.95E-10	1.17E-10	3.26E-10	3.52E-10	3.79E-10	2.61E-10	3.50E-10	1.86E-10
1,2,3,4,7,8-HxCDD	1.04E-09	8.00E-10	1.20E-09	8.04E-10	6.28E-10	5.82E-10	4.16E-10	7.66E-10	5.33E-10	8.96E-10	7.09E-10	6.02E-10	4.59E-10	7.31E-10	5.53E-10	2.29E-10	2.87E-10	8.42E-10	5.58E-10	6.00E-10	3.27E-10	7.46E-10	1.08E-09	8.41E-10	7.57E-10	8.81E-10	2.60E-10	7.27E-10	7.86E-10	8.46E-10	5.82E-10	7.81E-10	4.14E-10
1,2,3,6,7,8-HxCDD	1.02E-09	7.90E-10	1.19E-09	7.93E-10	6.20E-10	5.74E-10	4.11E-10	7.56E-10	5.27E-10	8.85E-10	7.00E-10	5.94E-10	4.53E-10	7.22E-10	5.46E-10	2.26E-10	2.83E-10	8.31E-10	5.51E-10	5.93E-10	3.23E-10	7.36E-10	1.07E-09	8.30E-10	7.47E-10	8.70E-10	2.57E-10	7.17E-10	7.75E-10	8.35E-10	5.74E-10	7.71E-10	4.09E-10
1,2,3,7,8,9-HxCDD	1.06E-09	8.16E-10	1.23E-09	8.20E-10	6.41E-10	5.94E-10	4.24E-10	7.81E-10	5.44E-10	9.14E-10	7.23E-10	6.14E-10	4.68E-10	7.46E-10	5.64E-10	2.34E-10	2.93E-10	8.59E-10	5.70E-10	6.13E-10	3.33E-10	7.61E-10	1.10E-09	8.58E-10	7.72E-10	8.99E-10	2.66E-10	7.42E-10	8.02E-10	8.63E-10	5.94E-10	7.97E-10	4.23E-10
1,2,3,4,7,8-HxCDF	1.57E-09	1.21E-09	1.82E-09	1.22E-09	9.51E-10	8.80E-10	6.29E-10	1.16E-09	8.07E-10	1.36E-09	1.07E-09	9.11E-10	6.94E-10	1.11E-09	8.37E-10	3.47E-10	4.34E-10	1.27E-09	8.45E-10	9.08E-10	4.94E-10	1.13E-09	1.63E-09	1.27E-09	1.15E-09	1.33E-09	3.94E-10	1.10E-09	1.19E-09	1.28E-09	8.80E-10	1.18E-09	6.27E-10
1,2,3,6,7,8-HxCDF	1.47E-09	1.13E-09	1.70E-09	1.14E-09	8.89E-10	8.23E-10	5.89E-10	1.08E-09	7.55E-10	1.27E-09	1.00E-09	8.52E-10	6.50E-10	1.03E-09	7.83E-10	3.24E-10	4.06E-10	1.19E-09	7.90E-10	8.50E-10	4.62E-10	1.06E-09	1.53E-09	1.19E-09	1.07E-09	1.25E-09	3.68E-10	1.03E-09	1.11E-09	1.20E-09	8.23E-10	1.10E-09	5.86E-10
1,2,3,7,8,9-HxCDF	4.94E-10	3.81E-10	5.74E-10	3.83E-10	3.00E-10	2.77E-10	1.98E-10	3.65E-10	2.54E-10	4.27E-10	3.38E-10	2.87E-10	2.19E-10	3.49E-10	2.64E-10	1.09E-10	1.37E-10	4.01E-10	2.66E-10	2.86E-10	1.56E-10	3.56E-10	5.15E-10	4.01E-10	3.61E-10	4.20E-10	1.24E-10	3.47E-10	3.75E-10	4.03E-10	2.77E-10	3.72E-10	1.98E-10
2,3,4,6,7,8-HxCDF	9.04E-10	6.97E-10	1.05E-09	7.01E-10	5.48E-10	5.07E-10	3.63E-10	6.67E-10	4.65E-10	7.81E-10	6.18E-10	5.25E-10	4.00E-10	6.37E-10	4.82E-10	2.00E-10	2.50E-10	7.34E-10	4.87E-10	5.23E-10	2.85E-10	6.50E-10	9.41E-10	7.33E-10	6.60E-10	7.68E-10	2.27E-10	6.33E-10	6.85E-10	7.37E-10	5.07E-10	6.81E-10	3.61E-10
Hydrochloric acid	2.06E+01	1.59E+01	2.39E+01	1.60E+01	1.25E+01	1.16E+01	8.27E+00	1.52E+01	1.06E+01	1.78E+01	1.41E+01	1.20E+01	9.12E+00	1.45E+01	1.10E+01	4.56E+00	5.70E+00	1.67E+01	1.11E+01	1.19E+01	6.49E+00	1.48E+01	2.15E+01	1.67E+01	1.50E+01	1.75E+01	5.17E+00	1.44E+01	1.56E+01	1.68E+01	1.16E+01	1.55E+01	8.23E+00
Indeno[1,2,3-cd]pyrene	8.42E-08	6.50E-08	9.78E-08	6.53E-08	5.11E-08	4.73E-08	3.38E-08	6.22E-08	4.34E-08	7.28E-08	5.76E-08	4.89E-08	3.73E-08	5.94E-08	4.49E-08	1.86E-08	2.33E-08	6.84E-08	4.54E-08	4.88E-08	2.66E-08	6.06E-08	8.78E-08	6.84E-08	6.15E-08	7.16E-08	2.12E-08	5.91E-08	6.39E-08	6.87E-08	4.73E-08	6.35E-08	3.37E-08
Lead	1.01E-03	7.52E-04	1.68E-03	7.79E-04	1.05E-03	6.14E-04	4.80E-04	5.56E-04	4.03E-04	7.73E-04	7.36E-04	4.90E-04	4.14E-04	7.80E-04	5.02E-04	4.06E-04	3.83E-04	6.22E-04	6.52E-04	6.15E-04	3.20E-04	1.18E-03	1.05E-03	9.63E-04	1.00E-03	8.84E-04	6.96E-04	5.54E-04	9.24E-04	9.31E-04	6.22E-04	6.63E-04	1.12E-03
Manganese	1.54E-03	1.19E-03	1.79E-03	1.19E-03	9.33E-04	8.63E-04	6.18E-04	1.14E-03	7.92E-04	1.33E-03	1.05E-03	8.94E-04	6.81E-04	1.09E-03	8.21E-04	3.40E-04	4.26E-04	1.25E-03	8.29E-04	8.91E-04	4.85E-04	1.11E-03	1.60E-03	1.25E-03	1.12E-03	1.31E-03	3.86E-04	1.08E-03	1.17E-03	1.26E-03	8.64E-04	1.16E-03	6.15E-04
Mercury	1.70E-01	1.31E-01	1.98E-01	1.32E-01	1.03E-01	9.55E-02	6.83E-02	1.26E-01	8.76E-02	1.47E-01	1.16E-01	9.88E-02	7.54E-02	1.20E-01	9.08E-02	3.77E-02	4.71E-02	1.38E-01	9.17E-02	9.86E-02	5.37E-02	1.23E-01	1.77E-01	1.38E-01	1.24E-01	1.45E-01	4.28E-02	1.19E-01	1.29E-01	1.39E-01	9.55E-02	1.28E-01	6.81E-02
Methyl bromide	2.41E-01	1.86E-01	2.80E-01	1.87E-01	1.46E-01	1.35E-01	9.67E-02	1.78E-01	1.24E-01	2.08E-01	1.65E-01	1.40E-01	1.07E-01	1.70E-01	1.29E-01	5.33E-02	6.67E-02	1.96E-01	1.30E-01	1.40E-01	7.60E-02	1.73E-01	2.51E-01	1.96E-01	1.76E-01	2.05E-01	6.05E-02	1.69E-01	1.83E-01	1.97E-01	1.35E-01	1.82E-01	9.63E-02
Methyl chloroform	1.24E-02	9.54E-03	1.43E-02	9.58E-03	7.49E-03	6.93E-03	4.96E-03	9.13E-03	6.36E-03	1.07E-02	8.45E-03	7.18E-03	5.47E-03	8.72E-03	6.59E-03	2.73E-03	3.42E-03	1.00E-02	6.66E-03	7.16E-03	3.90E-03	8.89E-03	1.29E-02	1.00E-02	9.03E-03	1.05E-02	3.10E-03	8.66E-03	9.37E-03	1.01E-02	6.94E-03	9.31E-03	4.94E-03
Methylene chloride	4.97E-02	3.83E-02	5.77E-02	3.85E-02	3.01E-02	2.79E-02	1.99E-02	3.67E-02	2.56E-02	4.30E-02	3.40E-02	2.89E-02	2.20E-02	3.51E-02	2.65E-02	1.10E-02	1.37E-02	4.04E-02	2.68E-02	2.88E-02	1.57E-02	3.57E-02	5.18E-02	4.03E-02	3.63E-02	4.22E-02	1.25E-02	3.48E-02	3.77E-02	4.05E-02	2.79E-02	3.74E-02	1.99E-02
Naphthalene	5.34E-02	4.12E-02	6.20E-02	4.14E-02	3.24E-02	3.00E-02	2.14E-02	3.95E-02	2.75E-02	4.62E-02	3.65E-02	3.10E-02	2.37E-02	3.77E-02	2.85E-02	1.18E-02	1.48E-02	4.34E-02	2.88E-02	3.09E-02	1.68E-02	3.84E-02	5.57E-02	4.33E-02	3.90E-02	4.54E-02	1.34E-02	3.75E-02	4.05E-02	4.36E-02	3.00E-02	4.02E-02	2.13E-02
Nickel	2.83E-02	2.26E-02	4.92E-02	2.39E-02	3.06E-02	1.96E-02	1.48E-02	1.55E-02	1.11E-02	2.15E-02	2.03E-02	1.37E-02	1.22E-02	2.04E-02	1.57E-02	1.42E-02	1.26E-02	1.74E-02	1.74E-02	1.85E-02	1.01E-02	3.03E-02	2.90E-02	2.51E-02	2.61E-02	2.72E-02	2.04E-02	1.50E-02	2.54E-02	2.53E-02	1.75E-02	2.01E-02	3.25E-02
1,2,3,4,6,7,8,9-OCDD	7.76E-09	5.99E-09	9.01E-09	6.02E-09	4.71E-09	4.35E-09	3.11E-09	5.73E-09	3.99E-09	6.71E-09	5.31E-09	4.51E-09	3.44E-09	5.47E-09	4.14E-09	1.72E-09	2.15E-09	6.30E-09	4.18E-09	4.49E-09	2.45E-09	5.58E-09	8.09E-09	6.30E-09	5.67E-09	6.60E-09	1.95E-09	5.44E-09	5.88E-09	6.33E-09	4.36E-09	5.84E-09	3.10E-09
1,2,3,4,6,7,8,9-OCDF	1.78E-09	1.37E-09	2.06E-09	1.38E-09	1.08E-09	9.98E-10	7.14E-10	1.31E-09	9.15E-10	1.54E-09	1.22E-09	1.03E-09	7.87E-10	1.25E-09	9.49E-10	3.93E-10	4.92E-10	1.44E-09	9.58E-10	1.03E-09	5.61E-10	1.28E-09	1.85E-09	1.44E-09	1.30E-09	1.51E-09	4.47E-10	1.25E-09	1.35E-09	1.45E-09	9.98E-10	1.34E-09	7.11E-10
1,2,3,7,8-PeCDD	9.14E-10	7.05E-10	1.06E-09	7.09E-10	5.54E-10	5.13E-10	3.67E-10	6.75E-10	4.71E-10	7.90E-10	6.25E-10	5.31E-10	4.05E-10	6.45E-10	4.88E-10	2.02E-10	2.53E-10	7.42E-10	4.93E-10	5.29E-10	2.88E-10	6.58E-10	9.52E-10	7.42E-10	6.68E-10	7.77E-10	2.30E-10	6.41E-10	6.93E-10	7.46E-10	5.13E-10	6.89E-10	3.65E-10
1,2,3,7,8-PeCDF	7.07E-09	5.46E-09	8.20E-09	5.48E-09	4.29E-09	3.97E-09	2.84E-09	5.22E-09	3.64E-09	6.11E-09	4.84E-09	4.11E-09	3.13E-09	4.99E-09	3.77E-09	1.56E-09	1.95E-09	5.74E-09	3.81E-09	4.09E-09	2.23E-09	5.08E-09	7.37E-09	5.74E-09	5.16E-09	6.01E-09	1.78E-09	4.96E-09	5.36E-09	5.77E-09	3.97E-09	5.32E-09	2.83E-09
2,3,4,7,8-PeCDF	1.06E-08	8.16E-09	1.23E-08	8.20E-09	6.41E-09	5.94E-09	4.24E-09	7.81E-09	5.44E-09	9.14E-09	7.23E-09	6.14E-09	4.68E-09	7.46E-09	5.64E-09	2.34E-09	2.93E-09	8.59E-09	5.70E-09	6.13E-09	3.33E-09	7.61E-09	1.10E-08	8.58E-09	7.72E-09	8.99E-09	2.66E-09	7.42E-09	8.02E-09	8.63E-09	5.94E-09	7.97E-09	4.23E-09
Perchloroethylene	2.05E-02	1.58E-02	2.37E-02	1.59E-02	1.24E-02	1.15E-02	8.21E-03	1.51E-02	1.05E-02	1.77E-02	1.40E-02	1.19E-02	9.06E-03	1.44E-02	1.09E-02	4.53E-03	5.66E-03	1.66E-02	1.10E-02	1.19E-02	6.45E-03	1.47E-02	2.13E-02	1.66E-02	1.49E-02	1.74E-02	5.14E-03	1.43E-02	1.55E-02	1.67E-02	1.15E-02	1.54E-02	8.18E-03
Selenium	2.42E-03	1.79E-03	3.21E-03	1.80E-03	1.92E-03	1.35E-03	1.01E-03	1.52E-03	1.08E-03	1.93E-03	1.65E-03	1.26E-03	1.08E-03	1.81E-03	1.19E-03	7.24E-04	7.69E-04	1.69E-03	1.28E-03	1.38E-03	7.31E-04	2.02E-03	2.41E-03	2.06E-03	1.95E-03	1.97E-03	1.05E-03	1.46E-03	1.90E-03	1.97E-03	1.33E-03	1.69E-03	1.64E-03
Styrene	9.35E-02	7.22E-02	1.09E-01	7.25E-02	5.67E-02	5.25E-02	3.75E-02	6.91E-02	4.81E-02	8.09E-02	6.40E-02	5.43E-02	4.14E-02	6.60E-02	4.99E-02	2.07E-02	2.59E-02	7.60E-02	5.04E-02	5.42E-02	2.95E-02	6.73E-02	9.75E-02	7.59E-02	6.83E-02	7.95E-02	2.35E-02	6.56E-02	7.09E-02	7.63E-02	5.25E-02	7.05E-02	3.74E-02
2,3,7,8-TCDD	8.98E-10	6.93E-10	1.04E-09	6.97E-10	5.45E-10	5.04E-10	3.60E-10	6.64E-10	4.62E-10	7.77E-10	6.14E-10	5.22E-10	3.98E-10	6.34E-10	4.79E-10	1.99E-10	2.48E-10	7.29E-10	4.84E-10	5.20E-10	2.83E-10	6.46E-10	9.36E-10	7.29E-10	6.56E-10	7.63E-10	2.26E-10	6.30E-10	6.81E-10	7.33E-10	5.04E-10	6.77E-10	3.59E-10
2,3,7,8-TCDF	4.44E-08	3.42E-08	5.15E-08	3.44E-08	2.69E-08	2.49E-08	1.78E-08	3.28E-08	2.28E-08	3.84E-08	3.04E-08	2.58E-08	1.97E-08	3.13E-08	2.37E-08	9.82E-09	1.23E-08	3.60E-08	2.39E-08	2.57E-08	1.40E-08	3.19E-08	4.62E-08	3.60E-08	3.24E-08	3.77E-08	1.11E-08	3.11E-08	3.36E-08	3.62E-08	2.49E-08	3.34E-08	1.77E-08
1,1,2,2-Tetrachloroethane	1.55E-02	1.20E-02	1.80E-02	1.21E-02	9.43E-03	8.72E-03	6.24E-03	1.15E-02	8.00E-03	1.34E-02	1.06E-02	9.03E-03	6.88E-03	1.10E-02	8.29E-03	3.44E-03	4.30E-03	1.26E-02	8.38E-03	9.00E-03	4.90E-03	1.12E-02	1.62E-02	1.26E-02	1.14E-02	1.32E-02	3.91E-03	1.09E-02	1.18E-02	1.27E-02	8.73E-03	1.17E-02	6.21E-03
Toluene	3.32E+00	2.56E+00	3.86E+00	2.58E+00	2.01E+00	1.86E+00	1.33E+00	2.45E+00	1.71E+00	2.87E+00	2.27E+00	1.93E+00	1.47E+00	2.34E+00	1.77E+00	7.35E-01	9.19E-01	2.70E+00	1.79E+00	1.92E+00	1.05E+00	2.39E+00	3.46E+00	2.70E+00	2.43E+00	2.82E+00	8.34E-01	2.33E+00	2.52E+00	2.71E+00	1.86E+00	2.50E+00	1.33E+00
1,1,2-Trichloroethane	2.06E-02	1.59E-02	2.39E-02	1.60E-02	1.25E-02	1.16E-02	8.27E-03	1.52E-02	1.06E-02	1.78E-02	1.41E-02	1.20E-02	9.12E-03	1.45E-02	1.10E-02	4.56E-03	5.70E-03	1.67E-02	1.11E-02	1.19E-02	6.49E-03	1.48E-02	2.15E-02	1.67E-02	1.50E-02	1.75E-02	5.17E-03	1.44E-02	1.56E-02	1.68E-02	1.16E-02	1.55E-02	8.23E-03
Trichloroethylene	1.62E-02	1.25E-02	1.88E-02	1.26E-02	9.83E-03	9.10E-03	6.51E-03	1.20E-02	8.34E-03	1.40E-02	1.11E-02	9.41E-03	7.18E-03	1.14E-02	8.65E-03	3.59E-03	4.48E-03	1.32E-02	8.74E-03	9.39E-03	5.11E-03	1.17E-02	1.69E-02	1.32E-02	1.18E-02	1.38E-02	4.07E-03	1.14E-02	1.23E-02	1.32E-02	9.10E-03	1.22E-02	6.48E-03
Vanadium	8.17E-02	6.54E-02	1.57E-01	7.36E-02	8.84E-02	5.98E-02	4.51E-02	4.65E-02	3.30E-02	6.27E-02	6.37E-02	4.01E-02	3.16E-02	5.46E-02	4.75E-02	4.07E-02	3.62E-02	5.24E-02	5.28E-02	5.72E-02	3.10E-02	9.43E-02	8.71E-02	7.21E-02	7.81E-02	8.30E-02	5.49E-02	4.42E-02	7.67E-02	7.55E-02	5.36E-02	5.69E-02	8.99E-02
Vinyl chloride	5.47E-02	4.22E-02	6.35E-02	4.25E-02	3.32E-02	3.07E-02	2.20E-02	4.04E-02	2.82E-02	4.73E-02	3.74E-02	3.18E-02	2.42E-02	3.86E-02	2.92E-02	1.21E-02	1.51E-02	4.45E-02	2.95E-02	3.17E-02	1.73E-02	3.94E-02	5.70E-02	4.44E-02	4.00E-02	4.65E-02	1.38E-02	3.84E-02	4.15E-02	4.47E-02	3.07E-02	4.12E-02	2.19E-02
Vinylidene chloride	1.50E-02	1.16E-02	1.74E-02	1.16E-02	9.09E-03	8.41E-03	6.02E-03	1.11E-02	7.71E-03	1.30E-02	1.03E-02	8.70E-03	6.64E-03	1.06E-02	8.00E-03	3.31E-03	4.15E-03	1.22E-02	8.08E-03	8.68E-03	4.73E-03	1.08E-02	1.56E-02	1.22E-02	1.09E-02	1.27E-02	3.76E-03	1.05E-02	1.14E-02	1.22E-02	8.41E-03	1.13E-02	5.99E-03
o-Xylene	5.24E-01	4.04E-01	6.08E-01	4.06E-01	3.17E-01	2.94E-01	2.10E-01	3.87E-01	2.69E-01	4.53E-01	3.58E-01	3.04E-01	2.32E-01	3.69E-01	2.79E-01	1.16E-01	1.45E-01	4.25E-01	2.82E-01	3.03E-01	1.65E-01	3.77E-01	5.45E-01	4.25E-01	3.82E-01	4.45E-01	1.32E-01	3.67E-01	3.97E-01	4.27E-01	2.94E-01	3.94E-01	2.09E-01
Xylenes (mixed)	2.68E+00	2.07E+00	3.12E+00	2.08E+00	1.63E+00	1.51E+00	1.08E+00	1.98E+00	1.38E+00	2.32E+00	1.84E+00	1.56E+00	1.19E+00	1.89E+00	1.43E+00	5.94E-01	7.42E-01	2.18E+00	1.45E+00	1.55E+00	8.46E-01	1.93E+00	2.80E+00	2.18E+00	1.96E+00	2.28E+00	6.74E-01	1.88E+00	2.03E+00	2.19E+00	1.51E+00	2.02E+00	1.07E+00

TABLE 9

SUMMARY OF MAXIMUM HOURLY CONCENTRATIONS AT KEY OFF-SITE RECEPTORS - 2010 METEOROLOGICAL DATA AND CURRENT FACILITY CONFIGURATION

Lehigh Southwest Cement Company

Cupertino, Facility

Chemical	Key Receptors														
	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	School	School	School	School	School	School	School	School	School	School	School	School	School	School	School
Acetaldehyde	2.44E-01	3.40E-01	9.44E-02	3.03E-01	4.61E-01	3.29E-01	2.58E-01	2.63E-01	3.50E-01	2.43E-01	4.73E-01	5.20E-01	3.29E-01	4.85E-01	3.54E-01
Acrolein	9.45E-03	1.32E-02	3.66E-03	1.17E-02	1.79E-02	1.27E-02	1.00E-02	1.02E-02	1.36E-02	9.40E-03	1.83E-02	2.01E-02	1.27E-02	1.88E-02	1.37E-02
Arsenic	1.65E-03	1.54E-03	8.18E-04	6.49E-04	1.20E-03	7.46E-04	6.40E-04	7.34E-04	7.99E-04	7.31E-04	1.08E-03	1.50E-03	7.07E-04	2.34E-03	1.18E-03
Benz[a]anthracene	2.76E-06	3.84E-06	1.07E-06	3.43E-06	5.21E-06	3.72E-06	2.92E-06	2.97E-06	3.96E-06	2.74E-06	5.35E-06	5.88E-06	3.72E-06	5.49E-06	4.01E-06
Benzene	2.03E+00	2.83E+00	7.87E-01	2.52E+00	3.84E+00	2.74E+00	2.15E+00	2.19E+00	2.92E+00	2.02E+00	3.94E+00	4.33E+00	2.74E+00	4.04E+00	2.95E+00
Benzo[a]pyrene	6.20E-08	8.64E-08	2.40E-08	7.70E-08	1.17E-07	8.35E-08	6.56E-08	6.68E-08	8.90E-08	6.17E-08	1.20E-07	1.32E-07	8.36E-08	1.23E-07	9.00E-08
Benzo[b]fluoranthene	3.93E-07	5.48E-07	1.52E-07	4.89E-07	7.44E-07	5.30E-07	4.16E-07	4.24E-07	5.65E-07	3.91E-07	7.62E-07	8.38E-07	5.30E-07	7.83E-07	5.71E-07
Benzo[k]fluoranthene	6.20E-08	8.64E-08	2.40E-08	7.70E-08	1.17E-07	8.35E-08	6.56E-08	6.68E-08	8.90E-08	6.17E-08	1.20E-07	1.32E-07	8.36E-08	1.23E-07	9.00E-08
Benzyl chloride	2.13E-02	2.97E-02	8.26E-03	2.65E-02	4.03E-02	2.88E-02	2.26E-02	2.30E-02	3.07E-02	2.12E-02	4.14E-02	4.55E-02	2.88E-02	4.25E-02	3.10E-02
Beryllium	4.28E-04	4.20E-04	2.55E-04	2.03E-04	3.63E-04	2.23E-04	1.87E-04	2.14E-04	2.41E-04	2.16E-04	3.31E-04	4.21E-04	2.25E-04	6.38E-04	3.21E-04
1,3-Butadiene	1.93E-02	2.69E-02	7.47E-03	2.40E-02	3.65E-02	2.60E-02	2.04E-02	2.08E-02	2.77E-02	1.92E-02	3.74E-02	4.11E-02	2.60E-02	3.84E-02	2.80E-02
Cadmium	7.22E-04	6.86E-04	4.24E-04	2.81E-04	5.33E-04	3.19E-04	2.72E-04	3.16E-04	3.45E-04	3.16E-04	4.74E-04	6.27E-04	3.18E-04	1.07E-03	5.06E-04
Carbon tetrachloride	1.30E-02	1.81E-02	5.02E-03	1.61E-02	2.45E-02	1.75E-02	1.37E-02	1.40E-02	1.86E-02	1.29E-02	2.52E-02	2.77E-02	1.75E-02	2.58E-02	1.89E-02
Chlorobenzene	1.17E-01	1.63E-01	4.52E-02	1.45E-01	2.21E-01	1.57E-01	1.24E-01	1.26E-01	1.68E-01	1.16E-01	2.26E-01	2.49E-01	1.57E-01	2.32E-01	1.70E-01
Chloroform	6.04E-03	8.42E-03	2.34E-03	7.50E-03	1.14E-02	8.14E-03	6.39E-03	6.51E-03	8.67E-03	6.01E-03	1.17E-02	1.29E-02	8.14E-03	1.20E-02	8.77E-03
Chromium, hexavalent	1.36E-03	1.23E-03	5.35E-04	7.18E-04	1.26E-03	7.89E-04	7.31E-04	8.22E-04	8.29E-04	6.94E-04	1.14E-03	1.62E-03	6.44E-04	1.90E-03	1.13E-03
Chrysene	8.13E-06	1.13E-05	3.15E-06	1.01E-05	1.54E-05	1.10E-05	8.61E-06	8.76E-06	1.17E-05	8.09E-06	1.58E-05	1.73E-05	1.10E-05	1.62E-05	1.18E-05
Copper	1.21E-02	1.11E-02	6.90E-03	4.09E-03	8.05E-03	4.65E-03	4.03E-03	4.61E-03	5.10E-03	4.95E-03	7.00E-03	9.44E-03	4.73E-03	1.71E-02	7.79E-03
Crystalline silica (respirable)	1.22E+00	8.62E-01	1.01E+00	2.61E-01	7.05E-01	2.63E-01	2.44E-01	2.95E-01	3.33E-01	3.53E-01	5.14E-01	5.21E-01	4.02E-01	1.47E+00	4.84E-01
Dibenz[a,h]anthracene	6.20E-08	8.64E-08	2.40E-08	7.70E-08	1.17E-07	8.35E-08	6.56E-08	6.68E-08	8.90E-08	6.17E-08	1.20E-07	1.32E-07	8.36E-08	1.23E-07	9.00E-08
p-Dichlorobenzene	1.24E-02	1.73E-02	4.80E-03	1.54E-02	2.34E-02	1.67E-02	1.31E-02	1.34E-02	1.78E-02	1.23E-02	2.40E-02	2.64E-02	1.67E-02	2.47E-02	1.80E-02
1,1-Dichloroethane	4.17E-03	5.81E-03	1.61E-03	5.18E-03	7.87E-03	5.61E-03	4.41E-03	4.49E-03	5.98E-03	4.14E-03	8.07E-03	8.88E-03	5.62E-03	8.29E-03	6.05E-03
1,2-Dichloropropane	5.72E-03	7.97E-03	2.21E-03	7.11E-03	1.08E-02	7.71E-03	6.05E-03	6.17E-03	8.22E-03	5.69E-03	1.11E-02	1.22E-02	7.71E-03	1.14E-02	8.31E-03
1,3-Dichloropropene	2.34E-02	3.26E-02	9.05E-03	2.90E-02	4.42E-02	3.15E-02	2.47E-02	2.52E-02	3.36E-02	2.32E-02	4.53E-02	4.98E-02	3.15E-02	4.65E-02	3.40E-02
Diesel particulate matter	4.71E+00	6.47E+00	2.66E+00	4.86E+00	1.65E+01	9.38E-01	8.92E-01	4.16E+00	9.52E+00	3.58E+00	9.81E+00	4.79E+00	7.29E+00	1.30E+01	9.64E+00
Ethyl chloride (Chloroethane)	8.16E-03	1.14E-02	3.16E-03	1.01E-02	1.54E-02	1.10E-02	8.64E-03	8.79E-03	1.17E-02	8.12E-03	1.58E-02	1.74E-02	1.10E-02	1.62E-02	1.19E-02
Ethyl benzene	2.02E-01	2.81E-01	7.81E-02	2.51E-01	3.81E-01	2.72E-01	2.14E-01	2.17E-01	2.90E-01	2.01E-01	3.91E-01	4.30E-01	2.72E-01	4.01E-01	2.93E-01
Ethylene dibromide (EDB)	1.27E-02	1.77E-02	4.91E-03	1.57E-02	2.40E-02	1.71E-02	1.34E-02	1.37E-02	1.82E-02	1.26E-02	2.46E-02	2.70E-02	1.71E-02	2.52E-02	1.84E-02
Ethylene dichloride (EDC)	5.01E-03	6.98E-03	1.94E-03	6.22E-03	9.47E-03	6.75E-03	5.30E-03	5.40E-03	7.19E-03	4.98E-03	9.71E-03	1.07E-02	6.75E-03	9.96E-03	7.28E-03
Formaldehyde	1.33E-02	1.85E-02	5.14E-03	1.65E-02	2.51E-02	1.79E-02	1.41E-02	1.43E-02	1.91E-02	1.32E-02	2.57E-02	2.83E-02	1.79E-02	2.64E-02	1.93E-02
1,2,3,4,6,7,8-HpCDD	2.03E-09	2.83E-09	7.87E-10	2.52E-09	3.84E-09	2.74E-09	2.15E-09	2.19E-09	2.92E-09	2.02E-09	3.94E-09	4.33E-09	2.74E-09	4.04E-09	2.95E-09
1,2,3,4,6,7,8-HpCDF	9.83E-10	1.37E-09	3.80E-10	1.22E-09	1.86E-09	1.32E-09	1.04E-09	1.06E-09	1.41E-09	9.78E-10	1.90E-09	2.09E-09	1.32E-09	1.96E-09	1.43E-09
1,2,3,4,7,8,9-HpCDF	2.54E-10	3.54E-10	9.83E-11	3.16E-10	4.80E-10	3.42E-10	2.69E-10	2.74E-10	3.65E-10	2.53E-10	4.92E-10	5.41E-10	3.42E-10	5.05E-10	3.69E-10
1,2,3,4,7,8-HxCDD	5.66E-10	7.89E-10	2.19E-10	7.03E-10	1.07E-09	7.63E-10	5.99E-10	6.10E-10	8.13E-10	5.63E-10	1.10E-09	1.21E-09	7.63E-10	1.13E-09	8.22E-10
1,2,3,6,7,8-HxCDD	5.59E-10	7.79E-10	2.16E-10	6.94E-10	1.06E-09	7.53E-10	5.92E-10	6.02E-10	8.03E-10	5.56E-10	1.08E-09	1.19E-09	7.53E-10	1.11E-09	8.12E-10
1,2,3,7,8,9-HxCDD	5.78E-10	8.05E-10	2.24E-10	7.18E-10	1.09E-09	7.79E-10	6.12E-10	6.23E-10	8.30E-10	5.75E-10	1.12E-09	1.23E-09	7.79E-10	1.15E-09	8.39E-10
1,2,3,4,7,8-HxCDF	8.57E-10	1.19E-09	3.32E-10	1.06E-09	1.62E-09	1.15E-09	9.07E-10	9.23E-10	1.23E-09	8.52E-10	1.66E-09	1.83E-09	1.15E-09	1.70E-09	1.24E-09
1,2,3,6,7,8-HxCDF	8.01E-10	1.12E-09	3.10E-10	9.96E-10	1.51E-09	1.08E-09	8.48E-10	8.64E-10	1.15E-09	7.97E-10	1.55E-09	1.71E-09	1.08E-09	1.59E-09	1.16E-09
1,2,3,7,8,9-HxCDF	2.70E-10	3.76E-10	1.05E-10	3.35E-10	5.10E-10	3.64E-10	2.86E-10	2.91E-10	3.88E-10	2.69E-10	5.23E-10	5.75E-10	3.64E-10	5.37E-10	3.92E-10
2,3,4,6,7,8-HxCDF	4.94E-10	6.88E-10	1.91E-10	6.13E-10	9.33E-10	6.65E-10	5.23E-10	5.32E-10	7.09E-10	4.91E-10	9.57E-10	1.05E-09	6.65E-10	9.82E-10	7.17E-10
Hydrochloric acid	1.13E+01	1.57E+01	4.35E+00	1.40E+01	2.13E+01	1.52E+01	1.19E+01	1.21E+01	1.62E+01	1.12E+01	2.18E+01	2.40E+01	1.52E+01	2.24E+01	1.63E+01
Indeno[1,2,3-cd]pyrene	4.60E-08	6.41E-08	1.78E-08	5.72E-08	8.70E-08	6.20E-08	4.87E-08	4.96E-08	6.61E-08	4.58E-08	8.92E-08	9.81E-08	6.20E-08	9.16E-08	6.68E-08
Lead	1.14E-03	1.22E-03	6.87E-04	5.41E-04	9.46E-04	6.04E-04	5.12E-04	5.89E-04	6.41E-04	6.10E-04	8.71E-04	1.18E-03	5.74E-04	1.81E-03	8.84E-04
Manganese	8.41E-04	1.17E-03	3.25E-04	1.04E-03	1.59E-03	1.13E-03	8.90E-04	9.06E-04	1.21E-03	8.36E-04	1.63E-03	1.79E-03	1.13E-03	1.67E-03	1.22E-03
Mercury	9.31E-02	1.30E-01	3.61E-02	1.16E-01	1.76E-01	1.25E-01	9.84E-02	1.00E-01	1.34E-01	9.25E-02	1.80E-01	1.98E-01	1.25E-01	1.85E-01	1.35E-01
Methyl bromide	1.32E-01	1.84E-01	5.10E-02	1.64E-01	2.49E-01	1.77E-01	1.39E-01	1.42E-01	1.89E-01	1.31E-01	2.55E-01	2.81E-01	1.78E-01	2.62E-01	1.91E-01
Methyl chloroform	6.75E-03	9.41E-03	2.61E-03	8.39E-03	1.28E-02	9.10E-03	7.15E-03	7.28E-03	9.70E-03	6.71E-03	1.31E-02	1.44E-02	9.10E-03	1.34E-02	9.81E-03
Methylene chloride	2.72E-02	3.78E-02	1.05E-02	3.37E-02	5.13E-02	3.66E-02	2.87E-02	2.93E-02	3.90E-02	2.70E-02	5.26E-02	5.79E-02	3.66E-02	5.40E-02	3.94E-02
Naphthalene	2.92E-02	4.07E-02	1.13E-02	3.63E-02	5.51E-02	3.93E-02	3.09E-02	3.15E-02	4.19E-02	2.90E-02	5.66E-02	6.22E-02	3.93E-02	5.81E-02	4.24E-02
Nickel	3.26E-02	3.14E-02	1.97E-02	1.50E-02	2.63E-02	1.68E-02	1.41E-02	1.93E-02	1.79E-02	1.63E-02	2.40E-02	3.39E-02	1.59E-02	4.75E-02	2.43E-02
1,2,3,4,6,7,8,9-OCDD	4.24E-09	5.91E-09	1.64E-09	5.27E-09	8.01E-09	5.71E-09	4.49E-09	4.57E-09	6.09E-09	4.22E-09	8.22E-09	9.03E-09	5.71E-09	8.43E-09	6.16E-09
1,2,3,4,6,7,8,9-OCDF	9.71E-10	1.35E-09	3.76E-10	1.21E-09	1.84E-09	1.31E-09	1.03E-09	1.05E-09	1.40E-09	9.66E-10	1.88E-09	2.07E-09	1.31E-09	1.93E-09	1.41E-09
1,2,3,7,8-PeCDD	4.99E-10	6.96E-10	1.93E-10	6.20E-10	9.44E-10	6.73E-10	5.29E-10	5.38E-10	7.17E-10	4.97E-10	9.68E-10	1.06E-09	6.73E-10	9.94E-10	7.25E-10
1,2,3,7,8-PeCDF	3.86E-09	5.38E-09	1.49E-09	4.80E-09	7.30E-09	5.20E-09	4.09E-09	4.16E-09	5.55E-09	3.84E-09	7.48E-09	8.23E-09	5.21E-09	7.68E-09	5.61E-09
2,3,4,7,8-PeCDF	5.78E-09	8.05E-09	2.24E-09	7.18E-09	1.09E-08	7.79E-09	6.12E-09	6.23E-09	8.30E-09	5.75E-09	1.12E-08	1.23E-08	7.79E-09	1.15E-08	8.39E-09
Perchloroethylene	1.12E-02	1.56E-02	4.33E-03	1.39E-02	2.11E-02	1.51E-02	1.18E-02	1.20E-02	1.61E-02	1.11E-02	2.17E-02	2.38E-02	1.51E-02	2.22E-02	1.62E-02
Selenium	1.96E-03	2.12E-03	9.93E-04	1.43E-03	2.37E-03	1.57E-03	1.27E-03	1.37E-03	1.69E-03	1.26E-03	2.30E-03	2.67E-03	1.58E-03	3.21E-03	1.94E-03
Styrene	5.11E-02	7.12E-02	1.98E-02	6.35E-02	9.66E-02	6.89E-02	5.41E-02	5.51E-02	7.34E-02	5.08E-02	9.90E-02	1.09E-01	6.89E-02	1.02E-01	7.42E-02
2,3,7,8-TCDD	4.91E-10	6.84E-10	1.90E-10	6.10E-10	9.27E-10	6.61E-10	5.19E-10	5.29E-10	7.05E-10	4.88E-10	9.51E-10	1.05E-09	6.61E-10	9.76E-10	7.13E-10
2,3,7,8-TCDF	2.42E-08	3.38E-08	9.38E-09	3.01E-08	4.58E-08	3.27E-08	2.57E-08	2.61E-08	3.48E-08	2.41E-08	4.70E-08	5.17E-08	3.27E-08	4.82E-08	3.52E-08
1,1,2,2-Tetrachloroethane	8.49E-03	1.18E-02	3.29E-03	1.06E-02	1.61E-02	1.14E-02	8.99E-03	9.15E-03	1.22E-02	8.45E-03	1.65E-02	1.81E-02	1.14E-02	1.69E-02	1.23E-02
Toluene	1.82E+00	2.53E+00	7.02E-01	2.25E+00	3.43E+00	2.45E+00	1.92E+00	1.96E+00	2.61E+00	1.81E+00	3.52E+00	3.87E+00	2.45E+00	3.61E+00	2.64E+00
1,1,2-Trichloroethane	1.13E-02	1.57E-02	4.35E-03	1.40E-02	2.13E-02	1.52E-02	1.19E-02	1.21E-02	1.62E-02	1.12E-02	2.18E-02	2.40E-02	1.52E-02	2.24E-02	1.63E-02
Trichloroethylene	8.86E-03	1.23E-02	3.43E-03	1.10E-02	1.67E-02	1.19E-02	9.37E-03	9.54E-03	1.27E-02	8.81E-03	1.72E-02	1.89E-02	1.19E-02	1.76E-02	1.29E-02
Vanadium	9.94E-02	9.76E-02	5.20E-02	4.42E-02	7.62E-02	5.09E-02	4.29E-02	5.81E-02	5.28E-02	4.94E-02	7.02E-02	1.06E-01	4.44E-02	1.43E-01	7.63E-02
Vinyl chloride	2.99E-02	4.17E-02	1.16E-02	3.72E-02	5.65E-02	4.03E-02	3.17E-02	3.22E-02	4.30E-02	2.97E-02	5.80E-02	6.37E-02	4.03E-02	5.95E-02	4.34E-02
Vinylidene chloride	8.19E-03	1.14E-02	3.17E-03	1.02E-02	1.55E-02	1.10E-02	8.67E-03	8.83E-03	1.18E-02	8.14E-03	1.59E-02	1.74E-02	1.10E-02	1.63E-02	1.19E-02
o-Xylene	2.86E-01	3.99E-01	1.11E-01	3.55E-01	5.41E-01	3.85E-01	3.03E-01	3.08E-01	4.11E-01	2.84E-01	5.54E-01	6.09E-01	3.86E-01	5.69E-01	4.15E-01
Xylenes (mixed)	1.47E+00	2.04E+00	5.68E-01	1.82E+00	2.77E+00	1.98E+00	1.55E+00	1.58E+00	2.11E+00	1.46E+00	2.84E+00	3.12E+00	1.98E+00	2.92E+00	2.13E+00

Chemical	Key Receptors																	
	57	63	65	66	1637	1716	11396	12566	13886	29527	30151	30292	30451	30513	30954	30955	30956
	MEIW - Acute (Future)	Residence	MEIW	Worker	PMI - Acute	PMI - Cancer/ chronic	MEIR - Acute (Current)	MEIR - Acute Future	MEIR - Cancer/ chronic	CS 508303	CS 507401	CS 508001	CS 508304	CS 508403	CS 511703	CS 511702	Residence
Acetaldehyde	6.83E-01	7.08E-01	9.82E-01	7.06E-01	2.74E+00	1.41E+00	1.28E+00	5.26E-01	8.80E-01	2.53E-01	8.05E-02	1.47E-01	2.52E-01	2.14E-01	4.82E-01	4.52E-01	6.64E-01
Acrolein	2.65E-02	2.75E-02	3.80E-02	2.73E-02	1.06E-01	5.46E-02	4.96E-02	2.04E-02	3.41E-02	9.79E-03	3.12E-03	5.71E-03	9.76E-03	8.30E-03	1.87E-02	1.75E-02	2.57E-02
Arsenic	3.55E-03	3.15E-03	3.48E-03	2.92E-03	6.61E-03	5.68E-03	2.79E-03	3.44E-03	3.70E-03	6.96E-04	2.31E-04	8.82E-04	5.37E-04	6.68E-04	1.37E-03	1.94E-03	1.52E-03
Benz[a]anthracene	7.73E-06	8.01E-06	1.11E-05	7.98E-06	3.09E-05	1.59E-05	1.45E-05	5.95E-06	9.95E-06	2.86E-06	9.11E-07	1.67E-06	2.85E-06	2.42E-06	5.45E-06	5.11E-06	7.51E-06
Benzene	5.69E+00	5.90E+00	8.18E+00	5.88E+00	2.28E+01	1.17E+01	1.07E+01	4.38E+00	7.33E+00	2.11E+00	6.71E-01	1.23E+00	2.10E+00	1.78E+00	4.02E+00	3.76E+00	5.54E+00
Benzo[a]pyrene	1.74E-07	1.80E-07	2.49E-07	1.79E-07	6.95E-07	3.58E-07	3.25E-07	1.34E-07	2.24E-07	6.42E-08	2.05E-08	3.75E-08	6.40E-08	5.44E-08	1.23E-07	1.15E-07	1.69E-07
Benzo[b]fluoranthene	1.10E-06	1.14E-06	1.58E-06	1.14E-06	4.41E-06	2.27E-06	2.07E-06	8.48E-07	1.42E-06	4.08E-07	1.30E-07	2.38E-07	4.06E-07	3.45E-07	7.78E-07	7.29E-07	1.07E-06
Benzo[k]fluoranthene	1.74E-07	1.80E-07	2.49E-07	1.79E-07	6.95E-07	3.58E-07	3.25E-07	1.34E-07	2.24E-07	6.42E-08	2.05E-08	3.75E-08	6.40E-08	5.44E-08	1.23E-07	1.15E-07	1.69E-07
Benzyl chloride	5.98E-02	6.20E-02	8.59E-02	6.18E-02	2.39E-01	1.23E-01	1.12E-01	4.60E-02	7.70E-02	2.21E-02	7.05E-03	1.29E-02	2.20E-02	1.87E-02	4.22E-02	3.95E-02	5.81E-02
Beryllium	9.39E-04	9.03E-04	9.72E-04	7.58E-04	1.97E-03	1.40E-03	8.23E-04	8.95E-04	1.02E-03	2.09E-04	6.60E-05	2.36E-04	1.71E-04	1.88E-04	4.34E-04	5.42E-04	4.55E-04
1,3-Butadiene	5.41E-02	5.61E-02	7.77E-02	5.59E-02	2.17E-01	1.11E-01	1.01E-01	4.16E-02	6.97E-02	2.00E-02	6.38E-03	1.17E-02	1.99E-02	1.70E-02	3.82E-02	3.58E-02	5.26E-02
Cadmium	1.57E-03	1.47E-03	1.50E-03	1.24E-03	2.85E-03	2.33E-03	1.18E-03	1.47E-03	1.63E-03	3.06E-04	9.82E-05	3.97E-04	2.42E-04	2.92E-04	6.45E-04	8.94E-04	6.42E-04
Carbon tetrachloride	3.63E-02	3.77E-02	5.22E-02	3.76E-02	1.46E-01	7.49E-02	6.81E-02	2.80E-02	4.68E-02	1.34E-02	4.29E-03	7.84E-03	1.34E-02	1.14E-02	2.57E-02	2.40E-02	3.54E-02
Chlorobenzene	3.27E-01	3.39E-01	4.70E-01	3.38E-01	1.31E+00	6.74E-01	6.13E-01	2.52E-01	4.21E-01	1.21E-01	3.85E-02	7.05E-02	1.21E-01	1.02E-01	2.31E-01	2.16E-01	3.18E-01
Chloroform	1.69E-02	1.75E-02	2.43E-02	1.75E-02	6.77E-02	3.49E-02	3.17E-02	1.30E-02	2.18E-02	6.26E-03	1.99E-03	3.65E-03	6.24E-03	5.30E-03	1.19E-02	1.12E-02	1.65E-02
Chromium, hexavalent	3.05E-03	2.75E-03	3.26E-03	2.61E-03	6.13E-03	5.07E-03	2.77E-03	3.78E-03	3.47E-03	7.17E-04	2.39E-04	5.50E-04	4.72E-04	5.86E-04	1.27E-03	1.46E-03	1.79E-03
Chrysene	2.28E-05	2.36E-05	3.27E-05	2.35E-05	9.12E-05	4.69E-05	4.27E-05	1.75E-05	2.93E-05	8.42E-06	2.68E-06	4.91E-06	8.40E-06	7.14E-06	1.61E-05	1.51E-05	2.21E-05
Copper	2.58E-02	2.30E-02	2.35E-02	2.02E-02	4.23E-02	3.83E-02	1.72E-02	2.33E-02	2.56E-02	4.66E-03	1.48E-03	6.68E-03	3.57E-03	4.47E-03	9.83E-03	1.42E-02	9.26E-03
Crystalline silica (respirable)	2.37E+00	2.33E+00	1.58E+00	1.47E+00	2.45E+00	2.26E+00	7.45E-01	2.09E+00	2.15E+00	3.52E-01	9.88E-02	6.83E-01	2.71E-01	2.99E-01	1.13E+00	1.20E+00	4.72E-01
Dibenz[a,h]anthracene	1.74E-07	1.80E-07	2.49E-07	1.79E-07	6.95E-07	3.58E-07	3.25E-07	1.34E-07	2.24E-07	6.42E-08	2.05E-08	3.75E-08	6.40E-08	5.44E-08	1.23E-07	1.15E-07	1.69E-07
p-Dichlorobenzene	3.47E-02	3.60E-02	4.99E-02	3.59E-02	1.39E-01	7.16E-02	6.51E-02	2.67E-02	4.47E-02	1.28E-02	4.09E-03	7.49E-03	1.28E-02	1.09E-02	2.45E-02	2.30E-02	3.38E-02
1,1-Dichloroethane	1.17E-02	1.21E-02	1.68E-02	1.21E-02	4.67E-02	2.41E-02	2.19E-02	8.98E-03	1.50E-02	4.32E-03	1.38E-03	2.52E-03	4.30E-03	3.66E-03	8.24E-03	7.72E-03	1.14E-02
1,2-Dichloropropane	1.60E-02	1.66E-02	2.30E-02	1.66E-02	6.42E-02	3.30E-02	3.00E-02	1.23E-02	2.06E-02	5.93E-03	1.89E-03	3.46E-03	5.91E-03	5.02E-03	1.13E-02	1.06E-02	1.56E-02
1,3-Dichloropropene	6.55E-02	6.79E-02	9.41E-02	6.76E-02	2.62E-01	1.35E-01	1.23E-01	5.04E-02	8.43E-02	2.42E-02	7.72E-03	1.41E-02	2.41E-02	2.05E-02	4.62E-02	4.33E-02	6.37E-02
Diesel particulate matter	2.28E+01	1.56E+01	2.27E+01	1.81E+01	4.92E+01	1.78E+01	1.04E+01	1.23E+01	1.27E+01	8.16E+00	1.49E+00	2.75E+00	3.01E+00	5.47E+00	8.12E+00	1.14E+01	8.85E+00
Ethyl chloride (Chloroethane)	2.28E-02	2.37E-02	3.28E-02	2.36E-02	9.15E-02	4.71E-02	4.28E-02	1.76E-02	2.94E-02	8.45E-03	2.69E-03	4.93E-03	8.43E-03	7.16E-03	1.61E-02	1.51E-02	2.22E-02
Ethyl benzene	5.65E-01	5.86E-01	8.12E-01	5.84E-01	2.26E+00	1.17E+00	1.06E+00	4.35E-01	7.28E-01	2.09E-01	6.66E-02	1.22E-01	2.08E-01	1.77E-01	3.99E-01	3.74E-01	5.50E-01
Ethylene dibromide (EDB)	3.55E-02	3.68E-02	5.10E-02	3.67E-02	1.42E-01	7.32E-02	6.65E-02	2.73E-02	4.57E-02	1.31E-02	4.19E-03	7.66E-03	1.31E-02	1.11E-02	2.51E-02	2.35E-02	3.45E-02
Ethylene dichloride (EDC)	1.40E-02	1.45E-02	2.02E-02	1.45E-02	5.62E-02	2.89E-02	2.63E-02	1.08E-02	1.81E-02	5.19E-03	1.65E-03	3.03E-03	5.17E-03	4.40E-03	9.90E-03	9.28E-03	1.36E-02
Formaldehyde	3.72E-02	3.86E-02	5.35E-02	3.84E-02	1.49E-01	7.67E-02	6.97E-02	2.86E-02	4.79E-02	1.38E-02	4.39E-03	8.03E-03	1.37E-02	1.17E-02	2.63E-02	2.46E-02	3.62E-02
1,2,3,4,6,7,8-HpCDD	5.69E-09	5.90E-09	8.18E-09	5.88E-09	2.28E-08	1.17E-08	1.07E-08	4.38E-09	7.33E-09	2.11E-09	6.71E-10	1.23E-09	2.10E-09	1.78E-09	4.02E-09	3.76E-09	5.54E-09
1,2,3,4,6,7,8-HpCDF	2.75E-09	2.85E-09	3.96E-09	2.84E-09	1.10E-08	5.67E-09	5.16E-09	2.12E-09	3.55E-09	1.02E-09	3.25E-10	5.94E-10	1.02E-09	8.63E-10	1.94E-09	1.82E-09	2.68E-09
1,2,3,4,7,8,9-HpCDF	7.12E-10	7.38E-10	1.02E-09	7.35E-10	2.85E-09	1.47E-09	1.33E-09	5.48E-10	9.17E-10	2.63E-10	8.39E-11	1.54E-10	2.62E-10	2.23E-10	5.02E-10	4.71E-10	6.92E-10
1,2,3,4,7,8-HxCDD	1.59E-09	1.64E-09	2.28E-09	1.64E-09	6.35E-09	3.27E-09	2.97E-09	1.22E-09	2.04E-09	5.87E-10	1.87E-10	3.42E-10	5.85E-10	4.97E-10	1.12E-09	1.05E-09	1.54E-09
1,2,3,6,7,8-HxCDD	1.57E-09	1.62E-09	2.25E-09	1.62E-09	6.27E-09	3.23E-09	2.93E-09	1.20E-09	2.02E-09	5.79E-10	1.85E-10	3.38E-10	5.77E-10	4.91E-10	1.10E-09	1.04E-09	1.52E-09
1,2,3,7,8,9-HxCDD	1.62E-09	1.68E-09	2.33E-09	1.67E-09	6.48E-09	3.34E-09	3.03E-09	1.25E-09	2.08E-09	5.99E-10	1.91E-10	3.49E-10	5.97E-10	5.07E-10	1.14E-09	1.07E-09	1.57E-09
1,2,3,4,7,8-HxCDF	2.40E-09	2.49E-09	3.45E-09	2.48E-09	9.61E-09	4.95E-09	4.50E-09	1.85E-09	3.09E-09	8.87E-10	2.83E-10	5.18E-10	8.85E-10	7.52E-10	1.69E-09	1.59E-09	2.33E-09
1,2,3,6,7,8-HxCDF	2.24E-09	2.33E-09	3.23E-09	2.32E-09	8.99E-09	4.63E-09	4.21E-09	1.73E-09	2.89E-09	8.30E-10	2.65E-10	4.84E-10	8.28E-10	7.04E-10	1.58E-09	1.48E-09	2.18E-09
1,2,3,7,8,9-HxCDF	7.56E-10	7.84E-10	1.09E-09	7.81E-10	3.03E-09	1.56E-09	1.42E-09	5.82E-10	9.74E-10	2.80E-10	8.92E-11	1.63E-10	2.79E-10	2.37E-10	5.34E-10	5.00E-10	7.36E-10
2,3,4,6,7,8-HxCDF	1.38E-09	1.43E-09	1.99E-09	1.43E-09	5.54E-09	2.85E-09	2.59E-09	1.06E-09	1.78E-09	5.11E-10	1.63E-10	2.98E-10	5.10E-10	4.33E-10	9.76E-10	9.14E-10	1.34E-09
Hydrochloric acid	3.15E+01	3.27E+01	4.53E+01	3.26E+01	1.26E+02	6.50E+01	5.91E+01	2.43E+01	4.06E+01	1.17E+01	3.72E+00	6.80E+00	1.16E+01	9.88E+00	2.22E+01	2.08E+01	3.06E+01
Indeno[1,2,3-cd]pyrene	1.29E-07	1.34E-07	1.85E-07	1.33E-07	5.16E-07	2.66E-07	2.42E-07	9.92E-08	1.66E-07	4.77E-08	1.52E-08	2.78E-08	4.75E-08	4.04E-08	9.10E-08	8.52E-08	1.25E-07
Lead	2.66E-03	2.45E-03	2.77E-03	2.08E-03	5.44E-03	3.94E-03	2.27E-03	2.59E-03	2.83E-03	5.96E-04	1.83E-04	6.00E-04	4.44E-04	5.10E-04	1.07E-03	1.52E-03	1.26E-03
Manganese	2.35E-03	2.44E-03	3.38E-03	2.43E-03	9.43E-03	4.85E-03	4.41E-03	1.81E-03	3.03E-03	8.71E-04	2.78E-04	5.08E-04	8.68E-04	7.38E-04	1.66E-03	1.56E-03	2.29E-03
Mercury	2.61E-01	2.70E-01	3.74E-01	2.69E-01	1.04E+00	5.37E-01	4.88E-01	2.01E-01	3.36E-01	9.63E-02	3.07E-02	5.63E-02	9.61E-02	8.17E-02	1.84E-01	1.72E-01	2.53E-01
Methyl bromide	3.69E-01	3.82E-01	5.30E-01	3.81E-01	1.48E+00	7.60E-01	6.91E-01	2.84E-01	4.75E-01	1.36E-01	4.35E-02	7.96E-02	1.36E-01	1.16E-01	2.60E-01	2.44E-01	3.59E-01
Methyl chloroform	1.89E-02	1.96E-02	2.72E-02	1.95E-02	7.57E-02	3.90E-02	3.54E-02	1.46E-02	2.44E-02	6.99E-03	2.23E-03	4.08E-03	6.97E-03	5.93E-03	1.33E-02	1.25E-02	1.84E-02
Methylene chloride	7.60E-02	7.89E-02	1.09E-01	7.86E-02	3.05E-01	1.57E-01	1.43E-01	5.85E-02	9.79E-02	2.81E-02	8.96E-03	1.64E-02	2.80E-02	2.38E-02	5.37E-02	5.03E-02	7.40E-02
Naphthalene	8.17E-02	8.48E-02	1.17E-01	8.44E-02	3.27E-01	1.68E-01	1.53E-01	6.29E-02	1.05E-01	3.02E-02	9.64E-03	1.76E-02	3.01E-02	2.56E-02	5.77E-02	5.40E-02	7.95E-02
Nickel	7.29E-02	6.65E-02	7.51E-02	5.70E-02	1.59E-01	1.11E-01	7.26E-02	1.02E-01	7.94E-02	1.64E-02	5.82E-03	1.75E-02	1.27E-02	1.39E-02	3.12E-02	3.93E-02	3.73E-02
1,2,3,4,6,7,8,9-OCDD	1.19E-08	1.23E-08	1.71E-08	1.23E-08	4.75E-08	2.45E-08	2.23E-08	9.14E-09	1.53E-08	4.39E-09	1.40E-09	2.56E-09	4.38E-09	3.72E-09	8.38E-09	7.85E-09	1.15E-08
1,2,3,4,6,7,8,9-OCDF	2.72E-09	2.82E-09	3.91E-09	2.81E-09	1.09E-08	5.61E-09	5.10E-09	2.09E-09	3.50E-09	1.01E-09	3.21E-10	5.87E-10	1.00E-09	8.53E-10	1.92E-09	1.80E-09	2.65E-09
1,2,3,7,8-PeCDD	1.40E-09	1.45E-09	2.01E-09	1.45E-09	5.60E-09	2.88E-09	2.62E-09	1.08E-09	1.80E-09	5.17E-10	1.65E-10	3.02E-10	5.16E-10	4.39E-10	9.87E-10	9.25E-10	1.36E-09
1,2,3,7,8-PeCDF	1.08E-08	1.12E-08	1.55E-08	1.12E-08	4.33E-08	2.23E-08	2.03E-08	8.33E-09	1.39E-08	4.00E-09	1.28E-09	2.33E-09	3.99E-09	3.39E-09	7.63E-09	7.15E-09	1.05E-08
2,3,4,7,8-PeCDF	1.62E-08	1.68E-08	2.33E-08	1.67E-08	6.48E-08	3.34E-08	3.03E-08	1.25E-08	2.08E-08	5.99E-09	1.91E-09	3.49E-09	5.97E-09	5.07E-09	1.14E-08	1.07E-08	1.57E-08
Perchloroethylene	3.13E-02	3.25E-02	4.50E-02	3.23E-02	1.25E-01	6.45E-02	5.87E-02	2.41E-02	4.03E-02	1.16E-02	3.69E-03	6.76E-03	1.15E-02	9.82E-03	2.21E-02	2.07E-02	3.05E-02
Selenium	4.68E-03	4.65E-03	5.46E-03	4.23E-03	1.32E-02	8.15E-03	5.96E-03	4.14E-03	5.43E-03	1.29E-03	4.18E-04	1.11E-03	1.20E-03	1.15E-03	2.66E-03	2.82E-03	3.17E-03
Styrene	1.43E-01	1.48E-01	2.06E-01	1.48E-01	5.73E-01	2.95E-01	2.68E-01	1.10E-01	1.84E-01	5.29E-02	1.69E-02	3.09E-02	5.28E-02	4.49E-02	1.01E-01	9.47E-02	1.39E-01
2,3,7,8-TCDD	1.37E-09	1.43E-09	1.97E-09	1.42E-09	5.50E-09	2.83E-09	2.58E-09	1.06E-09	1.77E-09	5.08E-10	1.62E-10	2.97E-10	5.07E-10	4.31E-10	9.70E-10	9.09E-10	1.34E-09
2,3,7,8-TCDF	6.79E-08	7.04E-08	9.76E-08	7.02E-08	2.72E-07	1.40E-07	1.27E-07	5.23E-08	8.75E-08	2.51E-08	8.01E-09	1.47E-08	2.50E-08	2.13E-08	4.79E-08	4.49E-08	6.60E-08
1,1,2,2-Tetrachloroethane	2.38E-02	2.47E-02	3.42E-02	2.46E-02	9.53E-02	4.90E-02	4.46E-02	1.83E-02	3.06E-02	8.80E-03	2.80E-03	5.13E-03	8.77E-03	7.46E-03	1.68E-02	1.57E-02	2.31E-02
Toluene	5.08E+00	5.27E+00	7.30E+00	5.25E+00	2.04E+01	1.05E+01	9.53E+00	3.91E+00	6.55E+00	1.88E+00	5.99E-01	1.10E+00	1.87E+00	1.59E+00	3.59E+00	3.36E+00	4.94E+00
1,1,2-Trichloroethane	3.15E-02	3.27E-02	4.53E-02	3.26E-02	1.26E-01	6.50E-02	5.91E-02	2.43E-02	4.06E-02	1.17E-02	3.72E-03	6.80E-03	1.16E-02	9.88E-03	2.22E-02	2.08E-02	3.06E-02
Trichloroethylene	2.48E-02	2.57E-02	3.56E-02	2.56E-02	9.93E-02	5.11E-02	4.65E-02	1.91E-02	3.20E-02	9.17E-03	2.92E-03	5.35E-03	9.15E-03	7.78E-03	1.75E-02	1.64E-02	2.41E-02
Vanadium	2.18E-01	1.94E-01	2.33E-01	1.80E-01	4.84E-01	3.57E-01	2.16E-01	3.12E-01	2.44E-01	4.83E-02	1.75E-02	5.15E-02	3.51E-02	4.26E-02	8.42E-02	1.17E-01	1.12E-01
Vinyl chloride	8.38E-02	8.69E-02	1.20E-01	8.65E-02	3.35E-01	1.73E-01	1.57E-01	6.45E-02	1.08E-01	3.10E-02	9.88E-03	1.81E-02	3.09E-02	2.63E-02	5.91E-02	5.54E-02	8.15E-02
Vinylidene chloride	2.29E-02	2.38E-02	3.30E-02	2.37E-02	9.18E-02	4.73E-02	4.30E-02	1.77E-02	2.95E-02	8.48E-03	2.70E-03	4.95E-03	8.46E-03	7.19E-03	1.62E-02	1.52E-02	2.23E-02
o-Xylene	8.01E-01	8.31E-01	1.15E+00	8.28E-01	3.21E+00	1.65E+00	1.50E+00	6.17E-01	1.03E+00	2.96E-01	9.44E-02	1.73E-01	2.95E-01	2.51E-01	5.65E-01	5.30E-01	7.79E-01
Xylenes (mixed)	4.11E+00	4.26E+00	5.90E+00	4.24E+00	1.64E+01	8.47E+00	7.70E+00	3.16E+00	5.29E+00	1.52E+00	4.84E-01	8.86E-01	1.51E+00	1.29E+00	2.90E+00	2.72E+00	3.99E+00

Notes
1. Receptor identifier in the HARP model.

Abbreviations
CS = Census Tract
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
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodibenzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
TCDD = Tetrachlorodibenzo-p-dioxin
TCDF = Tetrachlorodibenzofuran

TABLE 10

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company

Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
75070	Acetaldehyde	Kiln	•	•	•
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, hexavalent (& compounds)	Byproduct of manufacturing	•	•	
218019	Chrysene	Kiln	•		
7440508	Copper	Raw material			•
1175	Crystalline silica (respirable)	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 engine exhaust, particulate matter (Diesel PM)	Stationary sources	•	•	

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TABLE 10

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company

Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
75003	Ethyl chloride (Chloroethane)	Kiln		•	
100414	Ethyl benzene	Kiln	•	•	
106934	Ethylene dibromide (EDB)	Kiln	•	•	
107062	Ethylene dichloride (EDC)	Kiln	•	•	
50000	Formaldehyde	Kiln	•	•	•
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	Kiln	•	•	
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Kiln	•	•	
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Kiln	•	•	
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	Kiln	•	•	
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran	Kiln	•	•	
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran	Kiln	•	•	
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran	Kiln	•	•	
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran	Kiln	•	•	
7647010	Hydrochloric acid	Kiln		•	•
193395	Indeno[1,2,3-cd]pyrene	Kiln	•		
7439921	Lead	Raw material	•		

TABLE 10

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company
Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
7439965	Manganese	Raw material		•	
7439976	Mercury	Raw material		•	•
74839	Methyl bromide (Bromomethane)	Kiln		•	•
71556	Methyl chloroform (1,1,1-Trichloroethane)	Kiln		•	•
75092	Methylene chloride (Dichloromethane)	Kiln	•	•	•
91203	Naphthalene	Kiln	•	•	
7440020	Nickel	Raw material	•	•	•
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Kiln	•	•	
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Kiln	•	•	
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	Kiln	•	•	
57117416	1,2,3,7,8-Pentachlorodibenzofuran	Kiln	•	•	
57117314	2,3,4,7,8-Pentachlorodibenzofuran	Kiln	•	•	
127184	Perchloroethylene (Tetrachloroethene)	Kiln	•	•	•
7782492	Selenium	Raw material		•	
100425	Styrene	Kiln		•	•
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Kiln	•	•	
51207319	2,3,7,8-Tetrachlorodibenzofuran	Kiln	•	•	
79345	1,1,2,2-Tetrachloroethane	Kiln	•		

TABLE 10

HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY

Lehigh Southwest Cement Company
Cupertino Facility

CAS Number	CHEMICAL	Primary Emission Category[1]	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
108883	Toluene	Kiln		•	•
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. 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. 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 hazard only.

Abbreviations

* = Not applicable

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 (µg/m^3)$^{-1}$	Inhalation Cancer Potency Factor (mg/kg-d)$^{-1}$	Oral Cancer Potency Factor (mg/kg-d)$^{-1}$	Inhalation Chronic REL ug/m^3	Oral Chronic REL mg/kg-d	Acute REL ug/m^3
75070	Acetaldehyde	Kiln		2.7E-06	1.0E-02	*	1.4E+02	*	4.7E+02
107028	Acrolein	Kiln		*	*	*	3.5E-01	*	2.5E+00
7440382	Arsenic	Raw material	X	3.3E-03	1.2E+01	1.5E+00	1.5E-02	3.5E-06	2.0E-01
56553	Benz[a]anthracene	Kiln	X	1.1E-04	3.9E-01	1.2E+00	*	*	*
71432	Benzene	Kiln		2.9E-05	1.0E-01	*	6.0E+01	*	1.3E+03
50328	Benzo[a]pyrene	Kiln	X	1.1E-03	3.9E+00	1.2E+01	*	*	*
205992	Benzo[b]fluoranthene	Kiln	X	1.1E-04	3.9E-01	1.2E+00	*	*	*
207089	Benzo[k]fluoranthene	Kiln	X	1.1E-04	3.9E-01	1.2E+00	*	*	*
100447	Benzyl chloride	Kiln		4.9E-05	1.7E-01	*	*	*	2.4E+02
7440417	Beryllium	Raw material	X	2.4E-03	8.4E+00	*	7.0E-03	2.0E-03	*
106990	1,3-Butadiene	Kiln		1.7E-04	6.0E-01	*	2.0E+00	*	6.6E+02
7440439	Cadmium	Raw material	X	4.2E-03	1.5E+01	*	2.0E-02	5.0E-04	*
56235	Carbon tetrachloride	Kiln		4.2E-05	1.5E-01	*	4.0E+01	*	1.9E+03
108907	Chlorobenzene	Kiln		*	*	*	1.0E+03	*	*
67663	Chloroform	Kiln		5.3E-06	1.9E-02	*	3.0E+02	*	1.5E+02
18540299	Chromium, hexavalent (& compounds)	Byproduct of manufacturing	X	1.5E-01	5.1E+02	5.0E-01	2.0E-01	2.0E-02	*
218019	Chrysene	Kiln	X	1.1E-05	3.9E-02	1.2E-01	*	*	*
7440508	Copper	Raw material		*	*	*	*	*	1.0E+02
1175	Crystalline silica (respirable)	Raw material		*	*	*	3.0E+00	*	*
53703	Dibenz[a,h]anthracene	Kiln	X	1.2E-03	4.1E+00	4.1E+00	*	*	*
106467	p-Dichlorobenzene	Kiln		1.1E-05	4.0E-02	*	8.0E+02	*	*
75343	1,1-Dichloroethane	Kiln		1.6E-06	5.7E-03	*	*	*	*
78875	1,2-Dichloropropane	Kiln		1.8E-05	6.3E-02	*	*	*	*
542756	1,3-Dichloropropene	Kiln		1.6E-05	5.5E-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 ug/m^3	Oral Chronic REL mg/kg-d	Acute REL ug/m^3
9901	Diesel engine exhaust, particulate matter (Diesel PM)	Stationary sources		3.0E-04	1.1E+00	*	5.0E+00	*	*
75003	Ethyl chloride (Chloroethane)	Kiln		*	*	*	3.0E+04	*	*
100414	Ethyl benzene	Kiln		2.5E-06	8.7E-03	*	2.0E+03	*	*
106934	Ethylene dibromide (EDB)	Kiln		7.1E-05	2.5E-01	*	8.0E-01	*	*
107062	Ethylene dichloride (EDC)	Kiln		2.1E-05	7.2E-02	*	4.0E+02	*	*
50000	Formaldehyde	Kiln		6.0E-06	2.1E-02	*	9.0E+00	*	5.5E+01
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	Kiln	X	3.8E-01	1.3E+03	1.3E+03	4.0E-03	1.0E-06	*
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Kiln	X	3.8E-01	1.3E+03	1.3E+03	4.0E-03	1.0E-06	*
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Kiln	X	3.8E-01	1.3E+03	1.3E+03	4.0E-03	1.0E-06	*
39227286	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
57653857	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
19408743	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*

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 ug/m^3	Oral Chronic REL mg/kg-d	Acute REL ug/m^3
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
7647010	Hydrochloric acid	Kiln		*	*	*	9.0E+00	*	2.1E+03
193395	Indeno[1,2,3-cd]pyrene	Kiln	X	1.1E-04	3.9E-01	1.2E+00	*	*	*
7439921	Lead	Raw material	X	1.2E-05	4.2E-02	8.5E-03	*	*	*
7439965	Manganese	Raw material		*	*	*	9.0E-02	*	*
7439976	Mercury	Raw material		*	*	*	3.0E-02	* [3]	6.0E-01
74839	Methyl bromide (Bromomethane)	Kiln		*	*	*	5.0E+00	*	3.9E+03
71556	Methyl chloroform (1,1,1-Trichloroethane)	Kiln		*	*	*	1.0E+03	*	6.8E+04
75092	Methylene chloride (Dichloromethane)	Kiln		1.0E-06	3.5E-03	*	4.0E+02	*	1.4E+04
91203	Naphthalene	Kiln		3.4E-05	1.2E-01	*	9.0E+00	*	*
7440020	Nickel	Raw material	X	2.6E-04	9.1E-01	*	1.4E-02	1.1E-02	2.0E-01
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	Kiln	X	1.1E-02	3.9E+01	3.9E+01	1.3E-01	3.3E-05	*
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	Kiln	X	1.1E-02	3.9E+01	3.9E+01	1.3E-01	3.3E-05	*
40321764	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	Kiln	X	3.8E+01	1.3E+05	1.3E+05	4.0E-05	1.0E-08	*
57117416	1,2,3,7,8-Pentachlorodibenzofuran	Kiln	X	1.1E+00	3.9E+03	3.9E+03	1.3E-03	3.3E-07	*
57117314	2,3,4,7,8-Pentachlorodibenzofuran	Kiln	X	1.1E+01	3.9E+04	3.9E+04	1.3E-04	3.3E-08	*

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 (µg/m^3)$^{-1}$	Inhalation Cancer Potency Factor (mg/kg-d)$^{-1}$	Oral Cancer Potency Factor (mg/kg-d)$^{-1}$	Inhalation Chronic REL ug/m^3	Oral Chronic REL mg/kg-d	Acute REL ug/m^3
127184	Perchloroethylene (Tetrachloroethene)	Kiln		5.9E-06	2.1E-02	*	3.5E+01	*	2.0E+04
7782492	Selenium	Raw material		*	*	*	2.0E+01	*	*
100425	Styrene	Kiln		*	*	*	9.0E+02	*	2.1E+04
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin	Kiln	X	3.8E+01	1.3E+05	1.3E+05	4.0E-05	1.0E-08	*
51207319	2,3,7,8-Tetrachlorodibenzofuran	Kiln	X	3.8E+00	1.3E+04	1.3E+04	4.0E-04	1.0E-07	*
79345	1,1,2,2-Tetrachloroethane	Kiln		5.8E-05	2.0E-01	*	*	*	*
108883	Toluene	Kiln		*	*	*	3.0E+02	*	3.7E+04
79005	1,1,2-Trichloroethane	Kiln		1.6E-05	5.7E-02	*	*	*	*
79016	Trichloroethylene	Kiln		2.0E-06	7.0E-03	*	6.0E+02	*	*
1314621	Vanadium	Raw material		*	*	*	*	*	3.0E+01
75014	Vinyl chloride	Kiln		7.8E-05	2.7E-01	*	*	*	1.8E+05
75354	Vinylidene chloride	Kiln		*	*	*	7.0E+01	*	*
95476	o-Xylene	Kiln		*	*	*	7.0E+02	*	2.2E+04
1330207	Xylenes (mixed)	Kiln		*	*	*	7.0E+02	*	2.2E+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. 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 hazard only.

Abbreviations

* = Not applicable

TABLE 12

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

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category [3]	Point of Maximum Impact (PMI) Receptor #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65 [5]	
			2006 [4]	% Cont.	2010 [4]	% Cont.	2006 [4]	% Cont.
Methyl chloroform	71556	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
1,1,2-Trichloroethane	79005	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-Butadiene	106990	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%
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746016	Kiln	**3.3E-07**	0.00%	**2.0E-07**	0.0%	**1.7E-07**	0.00%
Acetaldehyde	75070	Kiln	**4.0E-06**	0.001%	**2.4E-06**	0.002%	**3.2E-06**	0.003%
Acrolein	107028	Kiln	**6.3E-05**	0.02%	**3.8E-05**	0.03%	**5.0E-05**	0.04%
Arsenic	7440382	Raw material	**1.8E-01**	63%	**7.4E-02**	57%	**7.0E-02**	56%
Benz(a)anthracene	56553	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%
Benzene	71432	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Benzyl chloride	100447	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Beryllium	7440417	Raw material	**1.9E-03**	0.7%	**9.6E-04**	0.7%	**9.2E-04**	0.7%
Cadmium	7440439	Raw material	**1.4E-03**	0.5%	**6.0E-04**	0.5%	**5.9E-04**	0.5%
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%

TABLE 12

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

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category [3]	Point of Maximum Impact (PMI) Receptor #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65 [5]	
			2006 [4]	% Cont.	2010 [4]	% Cont.	2006 [4]	% Cont.
Chloroform	67663	Kiln	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	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Chromium, hexavalent	18540299	Byproduct of manufacturing	**3.0E-04**	0.10%	**1.5E-04**	0.12%	**1.3E-04**	0.11%
Dibenz(a,h)anthracene	53703	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Diesel engine exhaust	9901	Stationary sources	**1.0E-04**	0.03%	**1.3E-04**	0.10%	**1.6E-04**	0.12%
Ethylene dibromide (EDB)	106934	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethylene dichloride (EDC)	107062	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethyl benzene	100414	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethyl chloride (Chloroethane)	75003	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Formaldehyde	50000	Kiln	**3.4E-06**	0.001%	**2.1E-06**	0.002%	**2.7E-06**	0.002%
Hydrochloric acid	7647010	Kiln	**2.5E-03**	0.87%	**1.5E-03**	1.2%	**2.0E-03**	1.6%
Indeno(1,2,3-cd)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%	0.0E+00	0.0%	0.0E+00	0.0%
Methyl bromide (Bromomethane)	74839	Kiln	**6.1E-05**	0.02%	**3.7E-05**	0.03%	**4.9E-05**	0.04%

TABLE 12

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

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category [3]	Point of Maximum Impact (PMI) Receptor #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65 [5]	
			2006 [4]	% Cont.	2010 [4]	% Cont.	2006 [4]	% Cont.
Methylene chloride (Dichloromethane)	75092	Kiln	0.0E+00	0.0%	0.0E+00	0.000%	0.0E+00	0.0%
Naphthalene	91203	Kiln	**7.6E-06**	0.003%	**4.6E-06**	0.004%	**6.1E-06**	0.00%
Nickel	7440020	Raw material	**8.9E-02**	31%	**4.5E-02**	35%	**4.4E-02**	35%
p-Dichlorobenzene	106467	Kiln	**3.6E-08**	0.00001%	**2.2E-08**	0.00002%	**2.9E-08**	0.00002%
Perchloroethylene	127184	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Selenium	7782492	Raw material	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Crystalline Silica	1175	Raw material	**1.2E-02**	4.0%	**7.2E-03**	5.6%	**6.8E-03**	5.4%
Styrene	100425	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%
1,1,2,2-Tetrachloroethane	79345	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Toluene	108883	Kiln	**1.4E-05**	0.005%	**8.5E-06**	0.01%	**1.1E-05**	0.01%
Vanadium pentoxide	1314621	Raw material	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Vinyl chloride	75014	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	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	**9.5E-07**	0.0003%	**5.7E-07**	0.0004%	**7.6E-07**	0.001%
Xylenes (mixed)	1330207	Kiln	**4.9E-06**	0.002%	**2.9E-06**	0.002%	**3.9E-06**	0.003%
		Total Hazard Index [6]	**2.9E-01**	100%	**1.3E-01**	100%	**1.3E-01**	100%

TABLE 12

POTENTIAL CHRONIC HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL RESPIRATORY SYSTEM HEALTH EFFECTS ENDPOINTS [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 C.
2. All evaluated Toxic Air Contaminants (TACs) are presented; not all have chronic noncancer effects on the respiratory system. TACs without chronic effects on the applicable organ system or health endpoint 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. Represents the year of meteorological data used to estimate results for this receptor.
5. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
6. Chronic hazard indexes 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 - RESPIRATORY HEALTH EFFECTS ENDPOINTS[1]

Lehigh Southwest Cement Company
Cupertino Facility

Source ID	Point of Maximum Impact (PMI) Receptor #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) [2] Receptor #65	
	2006 [3]	% Cont.	2010 [3]	% Cont.	2006 [3]	% Cont.
KILN	4.0E-03	1.4%	2.4E-03	1.8%	3.1E-03	2.5%
Point Sources						
1D4	3.2E-03	1.1%	2.6E-03	2.0%	2.5E-03	2.0%
2D1	2.1E-03	0.70%	7.2E-04	0.55%	7.5E-04	0.60%
3D1	8.8E-04	0.30%	3.9E-04	0.30%	4.8E-04	0.39%
3D4	6.6E-04	0.23%	4.7E-04	0.36%	4.7E-04	0.38%
3D5	5.4E-04	0.18%	3.8E-04	0.29%	3.9E-04	0.31%
4D3	9.6E-04	0.33%	4.9E-04	0.38%	5.7E-04	0.45%
4D4	1.0E-03	0.35%	5.1E-04	0.39%	5.8E-04	0.46%
5D1	1.2E-03	0.43%	5.5E-04	0.42%	6.5E-04	0.52%
5D11_20	2.2E-03	0.8%	1.9E-03	1.4%	1.4E-03	1.14%
5D2	1.1E-03	0.39%	5.5E-04	0.42%	6.4E-04	0.51%
5D23	1.1E-03	0.4%	1.0E-03	0.80%	1.1E-03	0.86%
5D27	2.5E-04	0.1%	3.3E-04	0.25%	2.9E-04	0.23%
5D28	5.7E-04	0.2%	3.0E-04	0.23%	2.5E-04	0.20%
5D3	1.2E-03	0.43%	9.4E-04	0.72%	1.1E-03	0.87%
5D5	7.8E-03	2.7%	4.3E-03	3.3%	4.9E-03	3.9%
5D6	7.8E-03	2.7%	4.0E-03	3.1%	5.4E-03	4.3%
6D1	6.6E-03	2.3%	5.9E-03	4.5%	4.6E-03	3.7%
6D12	4.8E-03	1.6%	1.9E-03	1.5%	1.7E-03	1.4%
6D17	6.7E-03	2.3%	2.7E-03	2.1%	2.0E-03	1.6%
6D19	2.7E-03	0.92%	2.0E-03	1.5%	1.4E-03	1.1%
6D2	5.3E-03	1.8%	2.2E-03	1.7%	1.4E-03	1.1%
6D8	1.5E-03	0.53%	7.2E-04	0.55%	4.9E-04	0.39%
8D31	1.4E-04	0.05%	1.1E-03	0.81%	7.6E-04	0.61%
999D	1.1E-02	3.8%	1.2E-02	9.4%	1.1E-02	8.5%
S501	2.1E-05	0.01%	7.0E-06	0.01%	9.0E-06	0.01%
S502	3.4E-05	0.01%	2.6E-05	0.02%	6.4E-05	0.05%

TABLE 13

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

Lehigh Southwest Cement Company
Cupertino Facility

Source ID	Point of Maximum Impact (PMI) Receptor #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) [2] Receptor #65	
	2006 [3]	% Cont.	2010 [3]	% Cont.	2006 [3]	% Cont.
Fugitive/Volume Sources						
1	6.8E-03	2.3%	3.3E-03	2.6%	3.2E-03	2.6%
2	1.4E-02	4.6%	4.9E-03	3.8%	4.8E-03	3.8%
3	4.6E-02	16%	9.1E-03	7.0%	9.2E-03	7.3%
4A	6.6E-02	23%	6.1E-03	4.7%	7.0E-03	5.6%
4B	3.1E-02	11%	7.7E-03	5.9%	9.7E-03	7.7%
4C	3.4E-02	12%	6.3E-03	4.9%	6.3E-03	5.0%
4D	3.2E-03	1.1%	9.1E-03	7.0%	8.5E-03	6.8%
5	2.1E-03	0.71%	3.4E-03	2.6%	3.2E-03	2.6%
6A	1.8E-03	0.60%	6.5E-03	5.0%	5.5E-03	4.4%
6B	8.8E-04	0.30%	8.3E-03	6.4%	7.7E-03	6.2%
6C	1.0E-02	3.6%	4.6E-03	3.5%	4.5E-03	3.6%
6D	1.2E-03	0.40%	7.2E-03	5.6%	5.7E-03	4.6%
7PD7	3.4E-04	0.11%	8.8E-04	0.68%	5.4E-04	0.43%
7	4.5E-05	0.02%	4.7E-04	0.37%	3.2E-04	0.26%
8	1.2E-04	0.04%	1.4E-03	1.1%	1.4E-03	1.1%
Inhalation Pathways	4.8E-02	16%	2.5E-02	19%	2.4E-02	19%
Non-Inhalation Pathways	2.4E-01	84%	1.0E-01	81%	1.0E-01	81%
Total Hazard Index [4]	2.9E-01	100%	1.3E-01	100%	1.3E-01	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 C.
2. Exposure adjusted within the HARP model per a standard work schedule (49 wks/yr, 5 days/wk, 8 hrs/day).
3. Represents the year of meteorological data used to estimate results for this receptor.
4. Chronic hazard indexes for the PMI, 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 - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category	Point of Maximum Impact (PMI)				Maximum Exposed Individual Resident (MEIR)				Maximum Exposed Individual Worker (MEIW)			
			Receptor ID #1637		Receptor ID #1637		Receptor ID #11396		Receptor ID #12566		Receptor ID #65		Receptor ID #57	
			Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.
Acetaldehyde	75070	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Acrolein	107028	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Arsenic	7440382	Raw material	**3.3E-02**	1.8%	0.00E+00	0.0%	**1.4E-02**	1.7%	0.0E+00	0.0%	**1.7E-02**	2.7%	0.0E+00	0.0%
Benz[a]anthracene	56553	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Benzene	71432	Kiln	**1.8E-02**	1.0%	**5.7E-05**	0.0%	**8.2E-03**	1.0%	**3.7E-05**	0.0%	**6.3E-03**	1.0%	**4.6E-05**	0.0%
Benzo[a]pyrene	50328	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Benzyl chloride	100447	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Beryllium	7440417	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
1,3-Butadiene	106990	Kiln	**3.3E-04**	0.0%	0.00E+00	0.0%	**1.5E-04**	0.0%	0.0E+00	0.0%	**1.2E-04**	0.0%	0.0E+00	0.0%
Cadmium	7440439	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Carbon Tetrachloride	56235	Kiln	**7.7E-05**	0.0%	0.00E+00	0.0%	**3.6E-05**	0.0%	0.0E+00	0.0%	**2.8E-05**	0.0%	0.0E+00	0.0%
Chlorobenzene	108907	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Chloroform	67663	Kiln	**4.5E-04**	0.0%	0.00E+00	0.0%	**2.1E-04**	0.0%	0.0E+00	0.0%	**1.6E-04**	0.0%	0.0E+00	0.0%
Chromium VI	18540299	Byproduct of manufacturing	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Chrysene	218019	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Copper	7440508	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
p-Dichlorobenzene	106467	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%

TABLE 14

POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category	Point of Maximum Impact (PMI)				Maximum Exposed Individual Resident (MEIR)				Maximum Exposed Individual Worker (MEIW)			
			Receptor ID #1637		Receptor ID #1637		Receptor ID #11396		Receptor ID #12566		Receptor ID #65		Receptor ID #57	
			Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.
Diesel PM	9901	Stationary sources	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethyl Chloride	75003	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethylbenzene	100414	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethylene dibromide	106934	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethylene dichloride	107062	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Formaldehyde	50000	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Hydrochloric Acid	7647010	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Indeno[1,2,3-c,d]pyrene	193395	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Lead	7439921	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Manganese	7439965	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Mercury	7439976	Raw material	**1.7E+00**	97%	0.00E+00	0%	**8.1E-01**	97%	0.0E+00	0%	**6.2E-01**	96%	0.0E+00	0%
Methyl Bromide	74839	Kiln	**3.8E-04**	0.0%	0.00E+00	0.0%	**1.8E-04**	0.0%	0.0E+00	0.0%	**1.4E-04**	0.0%	0.0E+00	0.0%
Methyl chloroform (1,1,1-trichloroethane)	71556	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Methylene chloride	75092	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%

TABLE 14

POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Chemical [2]	CAS Number	Primary Emission Category	Point of Maximum Impact (PMI)				Maximum Exposed Individual Resident (MEIR)				Maximum Exposed Individual Worker (MEIW)			
			Receptor ID #1637		Receptor ID #1637		Receptor ID #11396		Receptor ID #12566		Receptor ID #65		Receptor ID #57	
			Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.	Current	% Cont.	Future	% Cont.
Naphthalene	91203	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Nickel	7440020	Raw material	0.0E+00	0.0%	**6.6E-01**	100.0%	0.0E+00	0.0%	**4.7E-01**	100.0%	0.0E+00	0.0%	**3.5E-01**	100.0%
1,2,3,4,6,7,8,9-OCDD	3268879	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Perchloroethylene	127184	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Selenium	7782492	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Styrene	100425	Kiln	**2.7E-05**	0.0%	0.00E+00	0.0%	**1.3E-05**	0.0%	0.0E+00	0.0%	**9.8E-06**	0.0%	0.0E+00	0.0%
2,3,7,8-TCDD	1746016	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	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%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
1,1,2,2-	79345	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Thallium	7440280	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Toluene	108883	Kiln	**5.5E-04**	0.0%	0.00E+00	0.0%	**2.6E-04**	0.0%	0.0E+00	0.0%	**2.0E-04**	0.0%	0.0E+00	0.0%
1,1,2-Trichloroethane	79005	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Trichloroethylene	79016	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Vanadium	1314621	Raw material	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Vinyl Chloride	75014	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Vinylidene chloride	75354	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
o-xylene	95476	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Xylenes (mixed)	1330207	Kiln	0.0E+00	0.0%	0.00E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Total Hazard Index [3]			**1.8E+00**	100%	**6.6E-01**	100%	**8.4E-01**	100%	**4.7E-01**	100%	**6.5E-01**	100%	**3.5E-01**	100%

TABLE 14

POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY CHEMICAL - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Notes

1. Maximum acute hazard index was highest for reproductive and developmental system effects for current facility stack configuration and highest for immune system effects for future facility stack configuration. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix C.
2. All evaluated toxic air contaminants (TACs) presented; not all have acute noncancer effects on the reproductive, developmental and immune systems; TACs without acuteeffects on the applicable target organ system or health endpoint are shaded.
3. Acute hazard indexes for the MEIR and MEIW are below 1, the regulatory notification level for the AB2588 program.

Abbreviation

% Cont. = Percent contribution to total

TABLE 15

POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY SOURCE - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

	Point of Maximum Impact (PMI) Receptor #1637		Point of Maximum Impact (PMI) Receptor #1637		Exposed Individual Resident (MEIR) Receptor #11396		Exposed Individual Resident (MEIR) Receptor #12566		Exposed Individual Worker (MEIW) Receptor #65		Exposed Individual Worker (MEIW) Receptor #57	
Source ID	Current [2]	% Cont.	Future [2]	% Cont.	Current [2]	% Cont.	Future [2]	% Cont.	Current [2]	% Cont.	Future [2]	% Cont.
KILN	1.8E+00	99%	3.1E-04	0%	8.3E-01	99%	2.0E-04	0%	6.3E-01	97.7%	2.5E-04	0.07%
Point Sources												
1D4	9.6E-04	0.05%	2.9E-02	4.4%	3.8E-04	0.05%	1.6E-02	3.4%	3.2E-04	0.05%	6.0E-03	1.7%
2D1	2.2E-04	0.01%	2.0E-03	0.30%	7.0E-05	0.01%	1.7E-03	0.35%	2.5E-04	0.04%	1.4E-03	0.39%
3D1	1.9E-04	0.01%	1.7E-03	0.25%	5.8E-05	0.01%	5.1E-04	0.11%	7.3E-05	0.01%	1.0E-03	0.30%
3D4	3.3E-04	0.02%	4.6E-03	0.69%	1.4E-04	0.02%	2.7E-03	0.57%	1.2E-04	0.02%	9.4E-04	0.27%
3D5	3.1E-04	0.02%	2.3E-03	0.34%	1.3E-04	0.02%	1.3E-03	0.27%	1.1E-04	0.02%	4.5E-04	0.13%
4D3	5.2E-04	0.03%	6.2E-03	0.94%	2.5E-04	0.03%	4.1E-03	0.86%	1.4E-04	0.02%	1.4E-03	0.41%
4D4	5.0E-04	0.03%	5.9E-03	0.90%	2.5E-04	0.03%	3.5E-03	0.75%	1.4E-04	0.02%	1.3E-03	0.37%
5D1	5.2E-04	0.03%	6.2E-03	0.94%	2.4E-04	0.03%	3.8E-03	0.82%	1.5E-04	0.02%	1.4E-03	0.41%
5D11_20	3.5E-03	0.20%	2.5E-03	0.38%	5.7E-04	0.07%	2.1E-03	0.44%	9.6E-04	0.15%	1.1E-03	0.32%
5D2	4.7E-04	0.03%	5.7E-03	0.85%	2.5E-04	0.03%	3.8E-03	0.81%	1.4E-04	0.02%	1.2E-03	0.35%
5D23	5.3E-04	0.03%	8.6E-03	1.3%	9.3E-05	0.01%	3.4E-03	0.73%	2.2E-04	0.03%	1.3E-03	0.37%
5D27	2.3E-04	0.01%	3.7E-03	0.56%	3.8E-05	0.00%	1.3E-03	0.28%	2.9E-05	0.00%	8.4E-04	0.24%
5D28	7.8E-05	0.00%	1.3E-03	0.19%	3.2E-05	0.00%	4.7E-04	0.10%	7.1E-05	0.01%	8.2E-04	0.23%
5D3	7.0E-04	0.04%	8.4E-03	1.3%	3.3E-04	0.04%	4.0E-03	0.84%	2.2E-04	0.03%	2.0E-03	0.57%
5D5	1.0E-03	0.06%	1.5E-01	23%	4.7E-04	0.06%	1.0E-01	21%	2.8E-04	0.04%	3.4E-02	9.8%
5D6	9.2E-04	0.05%	1.4E-01	21%	5.0E-04	0.06%	1.0E-01	22%	2.8E-04	0.04%	3.0E-02	8.8%
6D1	7.2E-04	0.04%	1.2E-02	1.7%	5.5E-04	0.07%	1.5E-02	3.1%	5.2E-04	0.08%	7.9E-03	2.3%
6D12	4.1E-04	0.02%	1.0E-02	1.5%	1.7E-04	0.02%	5.6E-03	1.2%	2.1E-04	0.03%	6.6E-03	1.9%
6D17	2.6E-04	0.01%	6.5E-03	0.98%	2.0E-04	0.02%	6.3E-03	1.3%	2.0E-04	0.03%	5.3E-03	1.5%
6D19	2.1E-04	0.01%	5.2E-03	0.79%	1.1E-04	0.01%	2.4E-03	0.51%	9.7E-05	0.01%	2.2E-03	0.64%
6D2	2.1E-04	0.01%	5.2E-03	0.78%	2.0E-04	0.02%	5.8E-03	1.2%	1.6E-04	0.02%	5.6E-03	1.62%
6D8	7.2E-05	0.00%	1.8E-03	0.27%	5.8E-05	0.01%	9.6E-04	0.20%	5.7E-05	0.01%	1.3E-03	0.36%
8D31	5.0E-05	0.00%	8.8E-04	0.13%	2.2E-05	0.00%	6.9E-04	0.15%	4.3E-05	0.01%	1.5E-03	0.43%
999D	2.1E-03	0.12%	5.7E-02	8.52%	2.1E-03	0.25%	6.8E-02	14%	1.8E-03	0.28%	4.7E-02	13%
S501	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%
S502	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%	0.0E+00	0.00%

TABLE 15

POTENTIAL ACUTE HAZARD INDEXES AT THE PMI, MEIW AND MEIR BY SOURCE - REPRODUCTIVE AND DEVELOPMENTAL HEALTH EFFECTS ENDPOINTS [1]

Lehigh Southwest Cement Company
Cupertino Facility

Source ID	Point of Maximum Impact (PMI) Receptor #1637		Point of Maximum Impact (PMI) Receptor #1637		Exposed Individual Resident (MEIR) Receptor #11396		Exposed Individual Resident (MEIR) Receptor #12566		Exposed Individual Worker (MEIW) Receptor #65		Exposed Individual Worker (MEIW) Receptor #57	
	Current [2]	**% Cont.**	**Future [2]**	**% Cont.**	**Current [2]**	**% Cont.**	**Future [2]**	**% Cont.**	**Current [2]**	**% Cont.**	**Future [2]**	**% Cont.**
Fugitive/Volume Sources												
1	6.8E-04	0.04%	1.3E-02	1.9%	3.0E-04	0.04%	2.2E-02	4.6%	2.2E-04	0.03%	1.4E-02	3.9%
2	9.9E-04	0.05%	1.9E-02	2.8%	2.1E-04	0.03%	1.9E-02	4.0%	2.8E-04	0.04%	2.2E-02	6.2%
3	6.2E-04	0.03%	6.8E-03	1.0%	8.6E-05	0.01%	3.1E-03	0.66%	3.2E-04	0.05%	2.1E-03	0.60%
4A	1.3E-03	0.07%	1.6E-02	2.4%	3.1E-04	0.04%	3.3E-03	0.71%	7.8E-04	0.12%	2.6E-02	7.4%
4B	1.5E-03	0.09%	1.9E-02	2.9%	6.0E-04	0.07%	3.8E-03	0.80%	1.4E-03	0.21%	1.3E-02	3.7%
4C	1.3E-03	0.07%	1.6E-02	2.4%	7.0E-04	0.08%	4.2E-03	0.90%	1.3E-03	0.20%	2.4E-02	6.9%
4D	6.7E-04	0.04%	8.5E-03	1.3%	1.7E-04	0.02%	4.2E-03	0.90%	1.0E-03	0.16%	1.2E-02	3.4%
5	6.1E-04	0.03%	1.0E-02	1.6%	1.5E-04	0.02%	8.2E-03	1.7%	8.2E-04	0.13%	1.6E-02	4.7%
6A	2.7E-04	0.02%	7.9E-03	1.2%	4.9E-05	0.01%	1.6E-02	3.5%	4.7E-04	0.07%	2.1E-02	5.9%
6B	1.5E-03	0.08%	4.4E-02	6.6%	5.3E-05	0.01%	1.5E-02	3.2%	8.0E-04	0.12%	8.2E-03	2.4%
6C	1.3E-04	0.01%	3.8E-03	0.57%	5.3E-04	0.06%	6.0E-03	1.3%	4.9E-04	0.08%	1.9E-02	5.4%
6D	7.3E-04	0.04%	2.1E-02	3.2%	7.7E-05	0.01%	7.8E-03	1.6%	2.1E-04	0.03%	7.2E-03	2.1%
7PD7	3.3E-05	0.00%	8.2E-04	0.12%	5.1E-06	0.00%	5.0E-04	0.11%	2.5E-05	0.00%	5.1E-04	0.15%
7	7.1E-05	0.00%	1.2E-03	0.19%	9.9E-06	0.00%	5.5E-04	0.12%	2.6E-05	0.00%	8.7E-04	0.25%
8	1.6E-04	0.01%	1.9E-03	0.29%	1.2E-05	0.00%	4.1E-04	0.09%	1.9E-04	0.03%	2.8E-04	0.08%
Total Hazard Index [3]	**1.8E+00**	100%	**6.6E-01**	100%	**8.4E-01**	100%	**4.7E-01**	100%	**6.5E-01**	100%	**3.5E-01**	100%

Notes

1. Maximum acute hazard index was highest for reproductive and developmental system effects for current facility stack configuration and highest for immune system effects for future facility stack configuration. Hazard indexes for chemicals contributing to other target systems/organs are presented in Appendix C.
2. Maximum hazards evaluated were for the current facility configuration using 2010 meteorological data; the acute hazards predicted for the future facility configuration are lower.

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 #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65	
			2006 [3]	% Cont.	2010 [3]	% Cont.	2006 [3]	% Cont.
Acetaldehyde	75070	Kiln	2.8E-09	0.0%	1.7E-09	0.0%	2.6E-10	0.0%
Acrolein	107028	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Arsenic	7440382	Raw material	1.9E-06	6.8%	7.8E-07	8.2%	1.4E-07	13%
Benz(a)anthracene	56553	Kiln	3.7E-11	0.0%	2.2E-11	0.0%	3.1E-12	0.0%
Benzene	71432	Kiln	1.6E-07	0.9%	9.5E-08	1.0%	1.5E-08	1.4%
Benzo(a)pyrene	50328	Kiln	8.3E-12	0.0%	5.0E-12	0.0%	6.9E-13	0.0%
Benzo(b)fluoranthene	205992	Kiln	5.2E-12	0.0%	3.1E-12	0.0%	4.4E-13	0.0%
Benzo(k)fluoranthene	207089	Kiln	8.3E-13	0.0%	5.0E-13	0.0%	6.9E-14	0.0%
Benzyl chloride	100447	Kiln	4.2E-09	0.0%	2.5E-09	0.0%	3.9E-10	0.0%
Beryllium	7440417	Raw material	5.6E-08	0.3%	2.8E-08	0.3%	3.1E-09	0.3%
1,3-Butadiene	106990	Kiln	1.3E-08	0.1%	8.0E-09	0.1%	1.2E-09	0.1%
Cadmium	7440439	Raw material	2.1E-07	1.1%	8.9E-08	0.9%	1.0E-08	1.0%
Carbon Tetrachloride	56235	Kiln	2.2E-09	0.0%	1.3E-09	0.0%	2.1E-10	0.0%
Chlorobenzene	108907	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Chloroform	67663	Kiln	1.3E-10	0.0%	7.9E-11	0.0%	1.2E-11	0.0%
Chromium VI	18540299	Byproduct of manufacturing	1.5E-05	82%	7.8E-06	82%	7.9E-07	76%
Chrysene	218019	Kiln	1.1E-11	0.0%	6.5E-12	0.0%	9.1E-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	3.0E-12	0.0%	1.8E-12	0.0%	2.6E-13	0.0%
p-Dichlorobenzene	106467	Kiln	5.7E-10	0.0%	3.4E-10	0.0%	5.3E-11	0.0%
1,1-Dichloroethane	75343	Kiln	2.7E-11	0.0%	1.6E-11	0.0%	2.5E-12	0.0%
1,2-Dichloropropane	78875	Kiln	4.1E-10	0.0%	2.5E-10	0.0%	3.8E-11	0.0%
1,3-Dichloropropene	542756	Kiln	1.5E-09	0.0%	8.9E-10	0.0%	1.4E-10	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 #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65	
			2006 [3]	% Cont.	2010 [3]	% Cont.	2006 [3]	% Cont.
Diesel PM	9901	Stationary sources	2.7E-07	1.5%	3.5E-07	3.7%	4.9E-08	4.7%
Ethyl Chloride	75003	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
Ethylbenzene	100414	Kiln	2.0E-09	0.0%	1.2E-09	0.0%	1.9E-10	0.0%
Ethylene dibromide	106934	Kiln	3.6E-09	0.0%	2.2E-09	0.0%	3.4E-10	0.0%
Ethylene dichloride	107062	Kiln	4.1E-10	0.0%	2.5E-10	0.0%	3.8E-11	0.0%
Formaldehyde	50000	Kiln	3.2E-10	0.0%	1.9E-10	0.0%	3.0E-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	6.1E-13	0.0%	3.7E-13	0.0%	5.1E-14	0.0%
Lead	7439921	Raw material	3.5E-09	0.0%	1.8E-09	0.0%	2.8E-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	1.1E-10	0.0%	6.6E-11	0.0%	1.0E-11	0.0%
Naphthalene	91203	Kiln	4.0E-09	0.0%	2.4E-09	0.0%	3.7E-10	0.0%
Nickel	7440020	Raw material	5.6E-07	3.0%	2.8E-07	3.0%	3.2E-08	3.1%
Perchloroethylene	127184	Kiln	2.7E-10	0.0%	1.6E-10	0.0%	2.5E-11	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	7.1E-10	0.0%	4.3E-10	0.0%	7.4E-11	0.0%
1,1,2,2-Tetrachloroethane	79345	Kiln	1.9E-09	0.0%	1.2E-09	0.0%	1.8E-10	0.0%
Toluene	108883	Kiln	0.0E+00	0.0%	0.0E+00	0.0%	0.0E+00	0.0%
1,1,2-Trichloroethane	79005	Kiln	7.3E-10	0.0%	4.4E-10	0.0%	6.8E-11	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 #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65	
			2006 [3]	% Cont.	2010 [3]	% Cont.	2006 [3]	% Cont.
Trichloroethylene	79016	Kiln	7.1E-11	0.0%	4.3E-11	0.0%	6.6E-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	9.2E-09	0.1%	5.5E-09	0.1%	8.6E-10	0.1%
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) [4]			**1.8E-05**	100%	**9.5E-06**	100%	**--**	**--**
Total Risk (Excluding LASF) [4]			**1.1E-05**	--	**--**	--	**1.0E-06**	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. Represents the year of meteorological data used to estimate results for this receptor.
4. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime. LASF not applicable to adult workers such as the MEIW.

TABLE 16

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

Lehigh Southwest Cement Company
Cupertino Facility

Abbreviations

Cont. = contribution
LASF - Lifetime age sensitivity factor
-- = not applicable

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 #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65	
	2006 [1]	% Cont.	2010 [1]	% Cont.	2006 [1]	% Cont.
KILN	2.8E-07	2%	1.7E-07	2%	2.6E-08	3%
Point Sources						
1D4	2.9E-08	0.16%	2.3E-08	0.24%	3.6E-09	0.35%
2D1	3.4E-08	0.19%	1.2E-08	0.13%	1.9E-09	0.18%
3D1	1.5E-08	0.08%	6.5E-09	0.07%	1.2E-09	0.12%
3D4	1.4E-08	0.08%	1.0E-08	0.11%	1.4E-09	0.14%
3D5	5.6E-09	0.03%	3.9E-09	0.04%	6.9E-10	0.07%
4D3	1.5E-08	0.08%	7.5E-09	0.08%	1.3E-09	0.13%
4D4	1.6E-08	0.08%	7.7E-09	0.08%	1.3E-09	0.13%
5D1	1.9E-08	0.10%	8.3E-09	0.09%	1.5E-09	0.14%
5D11_20	4.0E-07	2.2%	3.3E-07	3.5%	3.1E-08	3.0%
5D2	1.7E-08	0.09%	8.3E-09	0.09%	1.5E-09	0.14%
5D23	2.0E-07	1.1%	1.9E-07	2.0%	2.3E-08	2.2%
5D27	4.4E-08	0.24%	5.9E-08	0.62%	6.2E-09	0.59%
5D28	1.0E-07	0.56%	5.4E-08	0.58%	5.4E-09	0.52%
5D3	1.9E-08	0.10%	1.4E-08	0.15%	2.5E-09	0.24%
5D5	5.5E-08	0.30%	3.0E-08	0.32%	4.4E-09	0.42%
5D6	5.5E-08	0.30%	2.9E-08	0.30%	4.9E-09	0.47%
6D1	1.2E-06	6.4%	1.0E-06	11.1%	9.9E-08	9.5%
6D12	1.1E-06	6.0%	4.5E-07	4.7%	4.9E-08	4.7%
6D17	1.6E-06	8.5%	6.3E-07	6.7%	5.5E-08	5.3%
6D19	6.3E-07	3.4%	4.6E-07	4.9%	3.8E-08	3.6%
6D2	1.2E-06	6.7%	5.0E-07	5.3%	4.0E-08	3.8%
6D8	3.6E-07	1.9%	1.7E-07	1.8%	1.4E-08	1.3%
8D31	1.2E-09	0.007%	9.6E-09	0.10%	1.1E-09	0.10%
999D	1.4E-06	7.8%	1.6E-06	17%	1.7E-07	16%
S501	5.8E-08	0.31%	1.9E-08	0.20%	2.8E-09	0.27%
S502	9.3E-08	0.51%	7.1E-08	0.75%	2.0E-08	1.93%

amec

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 #1716		Maximum Exposed Individual Resident (MEIR) Receptor #13886		Maximum Exposed Individual Worker (MEIW) Receptor #65	
	2006 [1]	% Cont.	2010 [1]	% Cont.	2006 [1]	% Cont.
Fugitive/Volume Sources						
1	6.9E-08	0.37%	3.4E-08	0.36%	5.0E-09	0.48%
2	1.4E-07	0.74%	5.0E-08	0.53%	7.5E-09	0.72%
3	6.9E-07	3.7%	1.4E-07	1.44%	2.1E-08	2.0%
5	4.4E-08	0.24%	7.2E-08	0.76%	9.2E-09	0.88%
7	4.1E-09	0.02%	4.4E-08	0.46%	3.5E-09	0.34%
8	1.3E-09	0.007%	1.5E-08	0.16%	2.3E-09	0.22%
4A	3.8E-06	21%	3.5E-07	3.7%	5.2E-08	4.9%
4B	1.8E-06	9.8%	4.5E-07	4.7%	7.1E-08	6.8%
4C	2.0E-06	11%	3.7E-07	3.9%	4.6E-08	4.4%
4D	1.8E-07	1.0%	5.3E-07	5.6%	6.3E-08	6.0%
6A	8.7E-08	0.47%	3.2E-07	3.4%	3.4E-08	3.2%
6B	4.3E-08	0.23%	4.1E-07	4.3%	4.7E-08	4.5%
6C	5.2E-07	2.8%	2.2E-07	2.4%	2.8E-08	2.6%
6D	5.7E-08	0.31%	3.6E-07	3.8%	3.5E-08	3.3%
7PD7	7.8E-08	0.42%	2.0E-07	2.2%	1.5E-08	1.5%
Inhalation Pathways	1.7E-05	91%	8.8E-06	93%	9.0E-07	87%
Non-Inhalation Pathways	1.7E-06	9%	7.0E-07	7%	1.4E-07	13%
TOTAL (including LASF) [2]	1.8E-05	100%	9.5E-06	100%	--	--
TOTAL excluding LASF) [2]	1.1E-05	--	--	--	1.0E-06	100%

TABLE 17

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

Lehigh Southwest Cement Company
Cupertino Facility

Note

1. Represents the year of meteorological data used to estimate results for this receptor.
2. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime. LASF not applicable to adult workers such as the MEIW.

Abbreviations

Cont. = contribution
LASF - Lifetime age sensitivity factor
-- = not applicable

TABLE 18

POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS

Lehigh Southwest Cement Company
Cupertino Facility

Receptor Number	UTM Coordinates [1]	Receptor Type [2,3]	Description	2006 Meteorological Data [4]		
				Inhalation Pathways	Non-Inhalation Pathways	Total
20	584608 , 4130709	Daycare (18 months - 5 yrs)	De Anza College Child Development Center 21250 Stevens Creek Boulevard, Cupertino 95014	3.9E-07	5.2E-08	4.4E-07
21	585721 , 4128215	Daycare (6 wks - 4 yrs)	Kindercare Learning Center 1515 S. De Anza Boulevard	5.0E-07	6.8E-08	5.7E-07
22	580371 , 4135348	Preschool	Children's House of Los Altos 770 Berry Avenue, Los Altos 94024	6.1E-07	8.1E-08	7.0E-07
23	581784 , 4132851	Preschool	Foothill Preschool 2100 Woods Lane, Los Altos 94024	1.3E-06	1.7E-07	1.5E-06
24	579699 , 4135148	Preschool	Los Altos Christian Preschool 625 Magdalena Avenue, Los Altos 94024	5.8E-07	8.1E-08	6.6E-07
25	579790 , 4135231	Preschool	Los Altos United Methodist Children's Center 655 Magdalena Avenue, Los Altos 94024	5.7E-07	7.9E-08	6.4E-07
26	583373 , 4130991	Preschool	Play & Learn Preschool Daycare 10067 Byrne Avenue, Cupertino 95014	1.0E-06	1.3E-07	1.2E-06
27	585749 , 4129341	School-Age Care	Happy Childhood Education 1091 S. DeAnza Boulevard, San Jose 95129	5.8E-07	7.5E-08	6.5E-07
28	581289 , 4135590	School	Blach Intermediate School 1120 Covington Rd, Los Altos 94024	5.7E-07	7.3E-08	6.4E-07
29	583251 , 4132945	School	Creekside Private School 10300 Creston Dr. Cupertino 95014	8.3E-07	1.1E-07	9.3E-07
30	583348 , 4132945	School	Cupertino Junior High School 1650 S. Bernardo Ave, Sunnyvale 94087	8.0E-07	1.0E-07	9.0E-07
31	584603 , 4132007	School	Garden Gate Elementary School 10500 Ann Arbor Avenue, Cupertino 95014	5.8E-07	7.6E-08	6.5E-07
32	584167 , 4132593	School	Homestead High School 21370 Homestead Rd, Cupertino 95014	6.1E-07	8.1E-08	6.9E-07
33	584043 , 4129779	School	Kennedy Middle School 821 Bubb Rd, Cupertino 95014	1.0E-06	1.3E-07	1.2E-06

TABLE 18

POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS

Lehigh Southwest Cement Company
Cupertino Facility

Receptor Number	UTM Coordinates [1]	Receptor Type [2,3]	Description	2006 Meteorological Data [4]		
				Inhalation Pathways	Non-Inhalation Pathways	Total
34	583832 , 4130282	School	Lincoln Elementary School 21710 McClellan Road, Cupertino 95014	9.3E-07	1.2E-07	1.1E-06
35	580364 , 4135237	School	Loyola School 770 Berry Avenue, Los Altos 94024	6.5E-07	8.5E-08	7.3E-07
36	586260 , 4129393	School	Meyerholz Elementary School 6990 Melvin Drive, San Jose 95129	4.9E-07	6.5E-08	5.6E-07
37	581344 , 4135423	School	Miramonte School 1175 Altamead Drive, Los Altos 94024	5.9E-07	7.7E-08	6.7E-07
38	581301 , 4133301	School	Development Center 1160 St. Joseph Avenue, Los Altos 94024	1.3E-06	1.6E-07	1.4E-06
39	582476 , 4135016	School	Mountain View High School 3535 Truman Avenue, Mountain View 94040	5.7E-07	7.5E-08	6.5E-07
40	582218 , 4134902	School	Oak Elementary School 1501 Oak Avenue, Los Altos 94024	6.3E-07	8.2E-08	7.2E-07
41	584472 , 4128982	School	Regnart Elementary and CDC 1180 Yorkshire Drive, Cupertino 95014	7.9E-07	1.0E-07	8.9E-07
42	583464 , 4134099	School	South Peninsula Hebrew Day School 1030 Astoria Drive, Sunnyvale 94087	6.2E-07	7.9E-08	7.0E-07
43	581052 , 4136201	School	St. Francis High School 1885 Miramonte Avenue, Mountain View 94040	4.7E-07	6.3E-08	5.4E-07
44	581553 , 4133763	School	St. Simon Elementary School 1840 Grant Road, Los Altos 94024	1.0E-06	1.3E-07	1.1E-06
45	582896 , 4131568	School	Stevens Creek Elementary School 10300 Ainsworth Drive, Cupertino 95014	1.1E-06	1.5E-07	1.3E-06
46	583736 , 4134738	School	Stratford School 1196 Lime Drive, Sunnyvale 94087	5.2E-07	6.8E-08	5.9E-07

TABLE 18

POTENTIAL CARCINOGENIC RISK AT THE SENSITIVE RECEPTORS

Lehigh Southwest Cement Company

Cupertino Facility

Receptor Number	UTM Coordinates [1]	Receptor Type [2,3]	Description	2006 Meteorological Data [4]		
				Inhalation Pathways	Non-Inhalation Pathways	Total
47	580133 , 4133320	School	Waldorf School-Peninsula 11311 Mora Drive, Los Altos 94024	1.3E-06	1.8E-07	1.5E-06
48	583118 , 4133107	School	West Valley Elementary School 1635 Belleville Way, Sunnyvale 94087	8.6E-07	1.1E-07	9.6E-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. Per BAAQMD guidance (2010), cancer risks for student receptors over the age of 2 years (schools and preschools) are multiplied by an ASF of 3; risks at daycare locations that serve children under 2 years are multiplied by an age-weighted ASF as follows:
   ASF 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]
   ASF 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]
4. Represents the year of meteorological data used to estimate results for these receptors; the 9-yr cancer risk presented combines two year of exposure under the current stack configuration and seven years under the future stack configuration.

Abbreviation:

ASF = Age-Specific Sensitivity Factor

TABLE 19

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

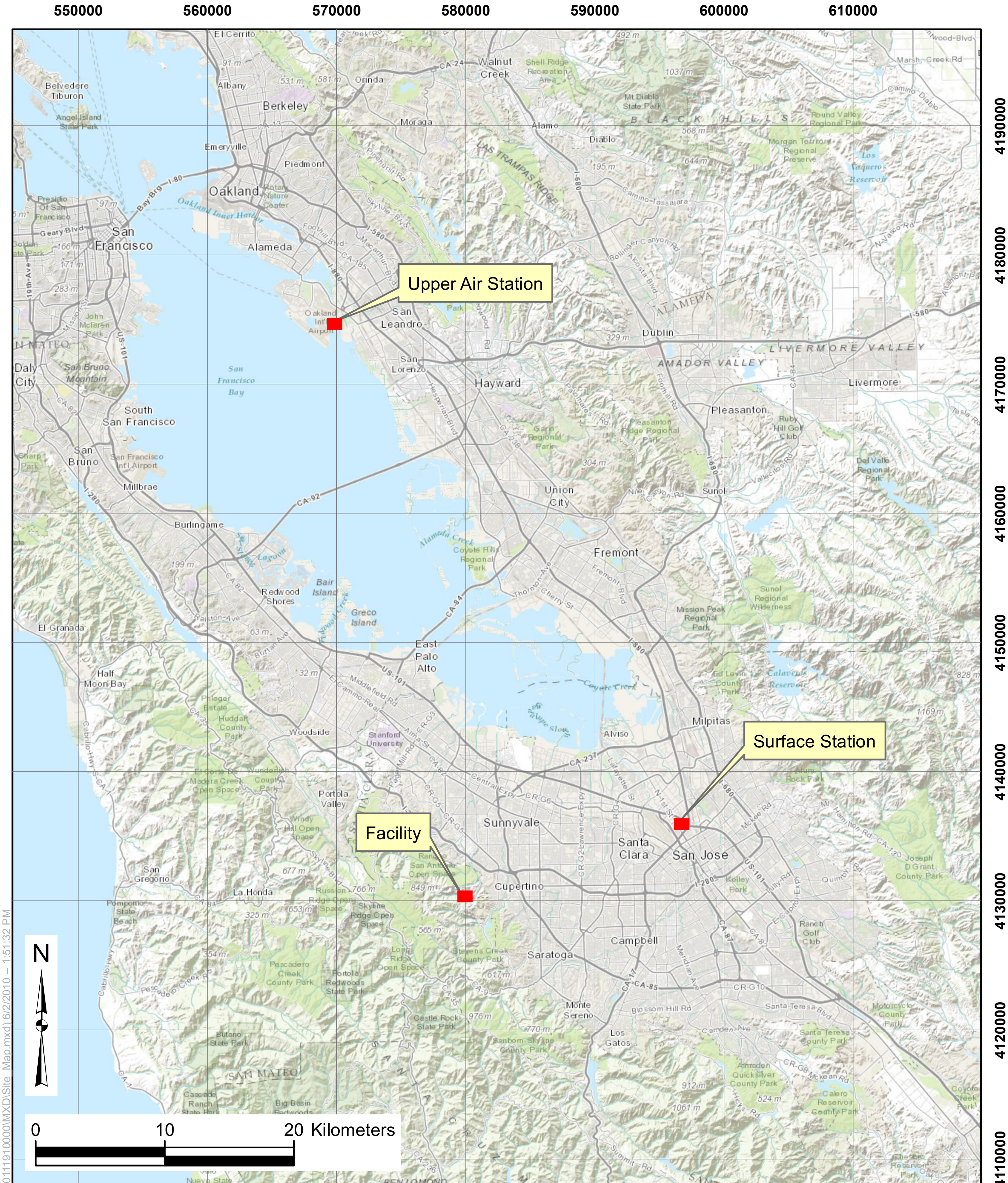
Description	Model ID #[2]	Maximum Annual Production Limit		
		Residential Cancer Risk[3,4]	Resident Population	Residential Cancer Burden[5]
Census Tract 507401	30151	6.3E-07	5624	3.5E-03
Census Tract 507600	8	7.2E-07	5563	4.0E-03
Census Tract 507701	4	1.7E-06	4039	6.9E-03
Census Tract 507702	6	2.0E-06	6126	1.2E-02
Census Tract 507703	3	4.2E-06	7706	3.2E-02
Census Tract 507805	2	1.7E-06	5397	9.1E-03
Census Tract 507806	15	1.1E-06	5889	6.5E-03
Census Tract 507807	5	1.4E-06	3219	4.5E-03
Census Tract 507808	7	1.4E-06	5508	8.0E-03
Census Tract 507905	17	1.1E-06	5784	6.3E-03
Census Tract 507906	16	9.6E-07	4460	4.3E-03
Census Tract 508001	30292	8.1E-07	7377	5.9E-03
Census Tract 508301	11	1.6E-06	4410	7.1E-03
Census Tract 508303	29527	1.1E-06	2562	2.9E-03
Census Tract 508304	30451	8.9E-07	7957	7.1E-03
Census Tract 508401	12	1.0E-06	6834	7.0E-03
Census Tract 508403	30513	9.3E-07	2817	2.6E-03
Census Tract 509901	19	1.1E-06	1934	2.2E-03
Census Tract 509902	9	1.0E-06	4838	4.9E-03
Census Tract 510001	18	1.5E-06	6116	9.3E-03
Census Tract 510002	10	2.1E-06	3553	7.3E-03
Census Tract 510100	1	2.9E-06	2948	8.4E-03
Census Tract 510200	14	9.9E-07	4328	4.3E-03
Census Tract 511701	13	8.2E-07	4017	3.3E-03
Census Tract 511702	30955	2.1E-06	2684	5.8E-03
Census Tract 511703	30954	2.2E-06	8526	1.8E-02
Total			130216	1.9E-01

TABLE 19

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

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. Cancer risk predicted using 2006 meterological data.
5. A cancer burden less than one indicates that over a 70-year period under the worst-case exposure assumptions, there is less than a one-in-a-million chance that a member of the community would be expected to contract cancer based on exposure to Facility emissions.

FIGURES



Map Document: (X:\Projects\0111910000\MXD\Site_Map.mxd) 6/2/2010 -- 1:51:32 PM

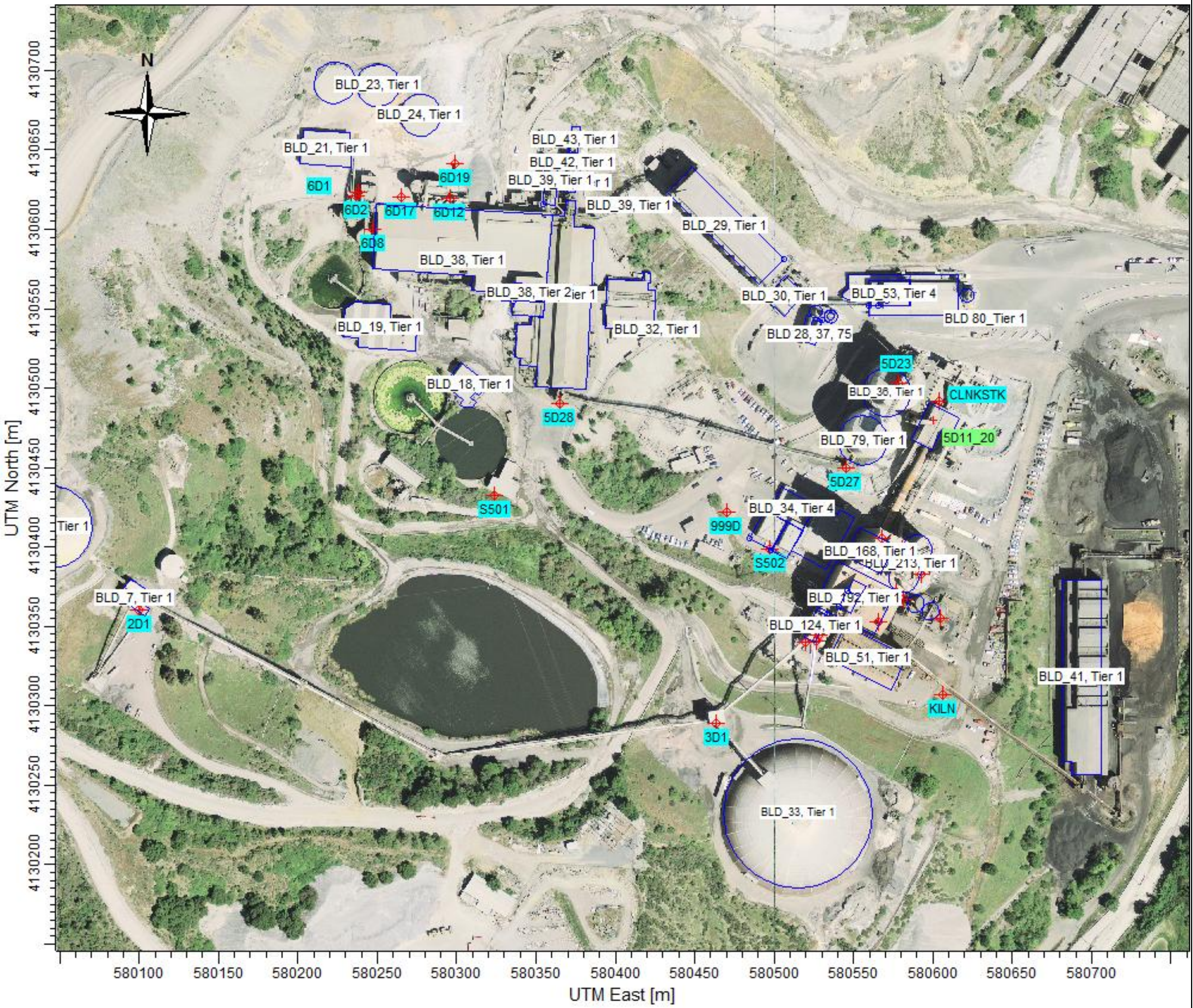
JOB NO.:	0111910030
DATE:	6/02/2010
SCALE:	1" = 10 kms
PROJ:	UTM Zone 10
DATUM:	NAD 83

Lehigh Southwest Cement Company
Cupertino Facility

Facility Location

FIGURE
1

amec



Explanation

⊕ Point Sources

— Building Outline

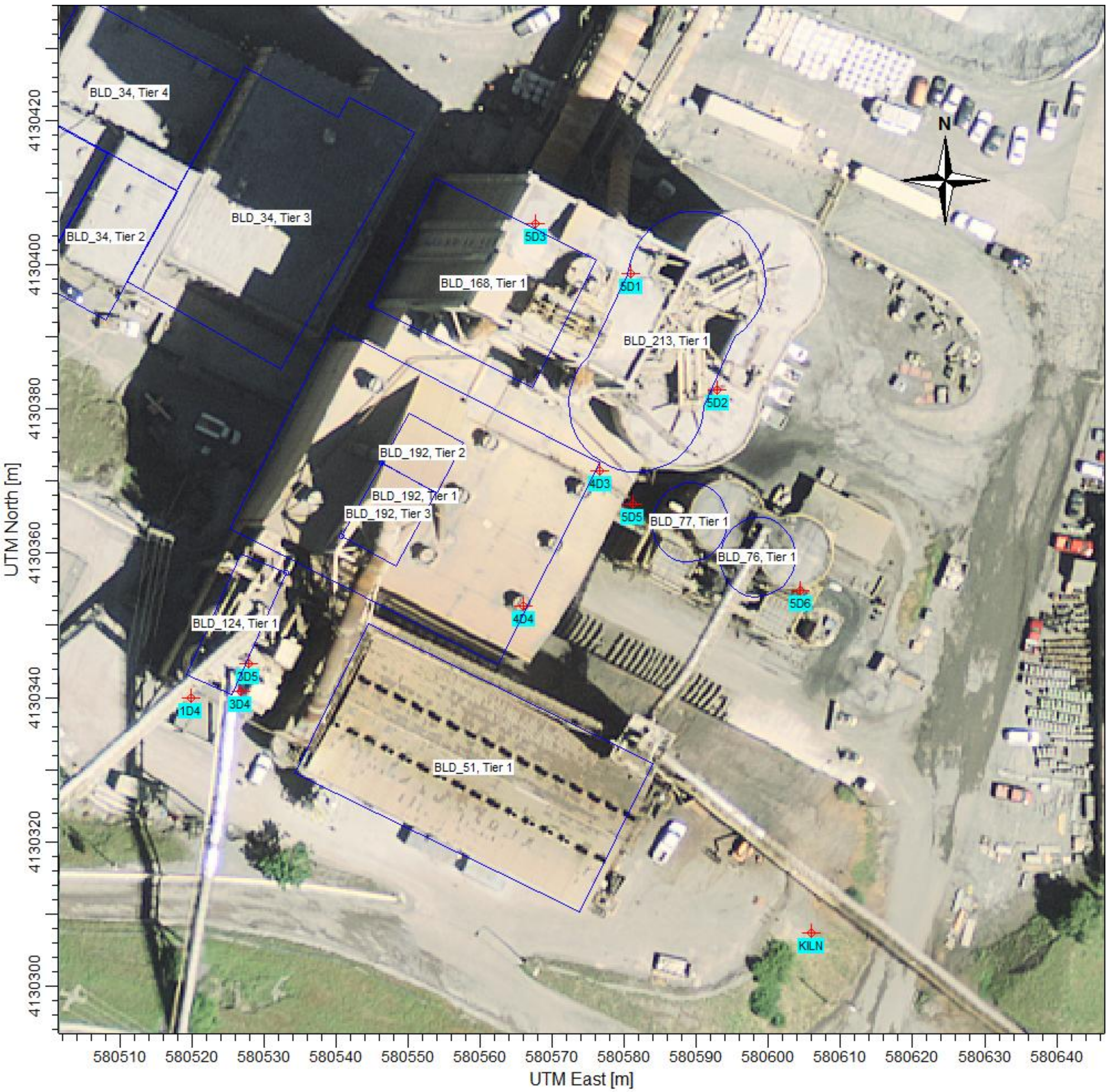
JOB NO.	01119100030
DESIGN:	SO
DRAWN:	AMEC E&I
DATE:	12/09/2013
SCALE:	

Lehigh Southwest Company – Cupertino Facility

Point Sources and Buildings Used in the Air Dispersion Modeling

Figure 2A

amec

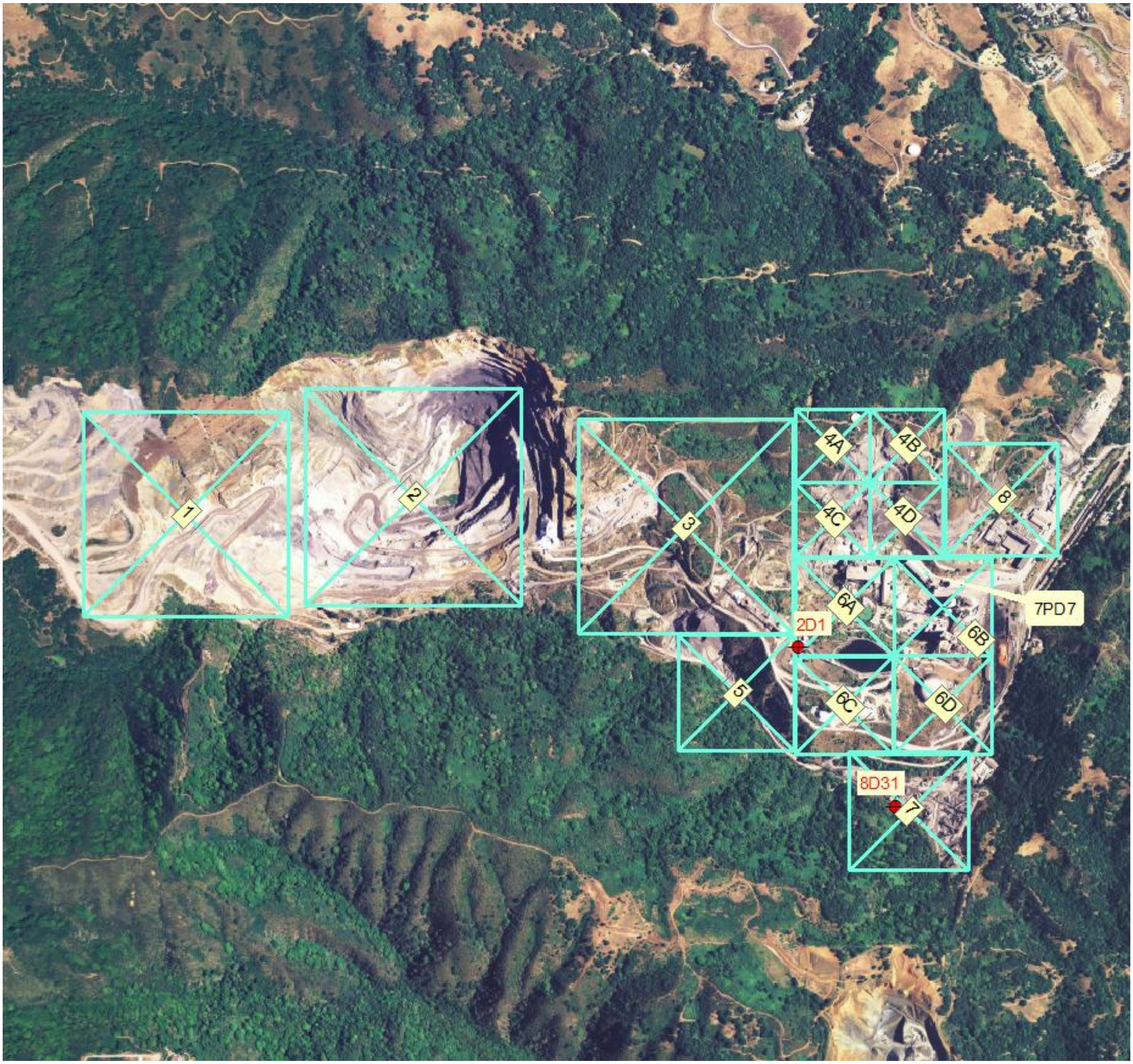


Explanation

Point Sources

Building Outline

JOB NO.	01119100030	Lehigh Southwest Company – Cupertino Facility	amec
DESIGN:	SO		
DRAWN:	AMEC E&I	Point Sources and Buildings Near Kiln Used in the Air Dispersion Modeling	Figure 2B
DATE:	6/3/2013		
SCALE:	NA		



Explanation

2D1 and 8D31 Point Sources

Volume Sources including 7PD7

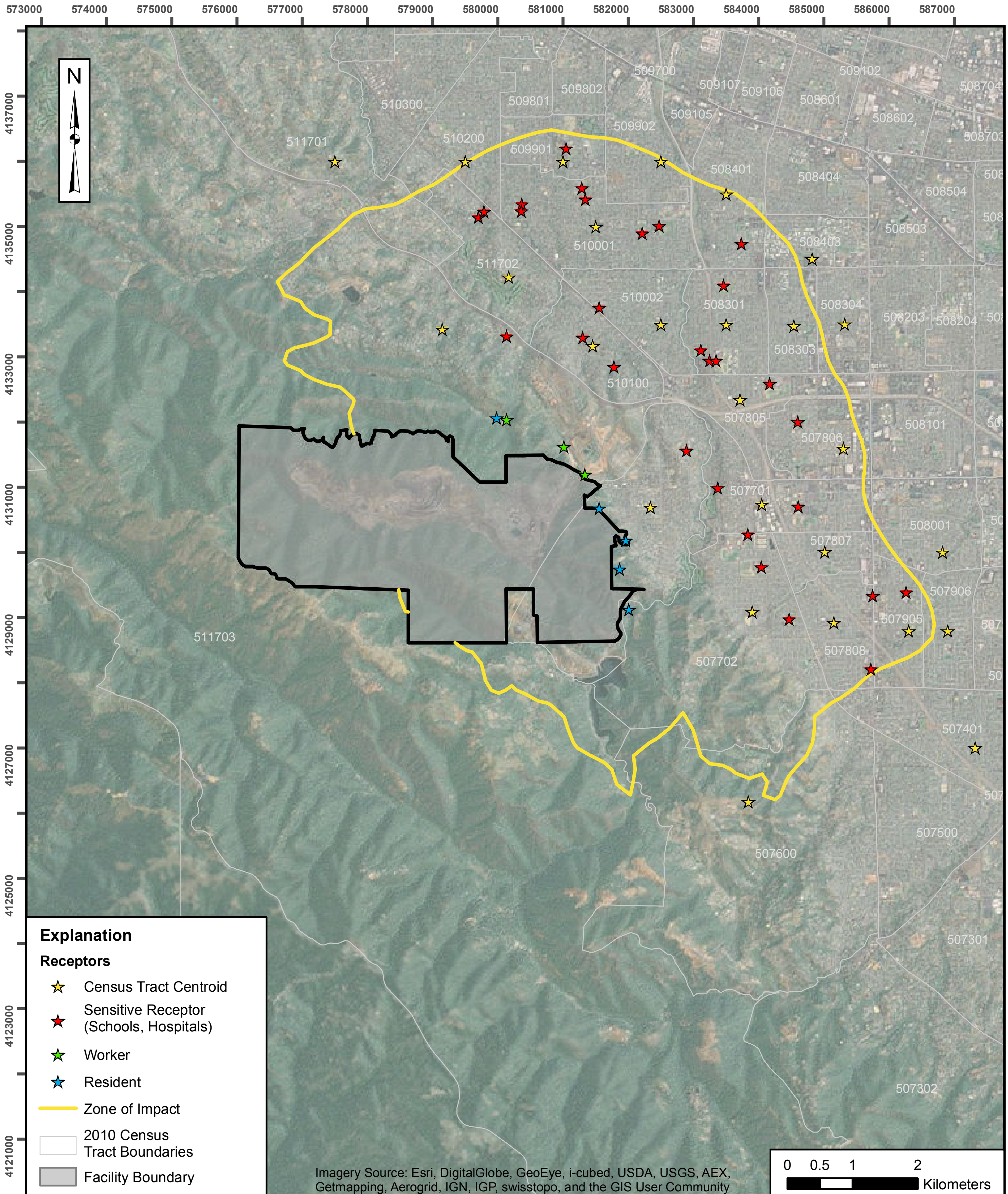
JOB NO.	01119100030
DESIGN:	SO
DRAWN:	AMEC E&I
DATE:	4/30/2013
SCALE:	

Lehigh Southwest Company – Cupertino Facility

Volume Fugitive Sources and Other Point Sources Used in the Air Dispersion Modeling

Figure 2C

amec



JOB NO.	0111910030
DESIGN:	SO
DRAWN:	AMEC GIS
DATE:	12/20/2013
SCALE:	1" = 2 km

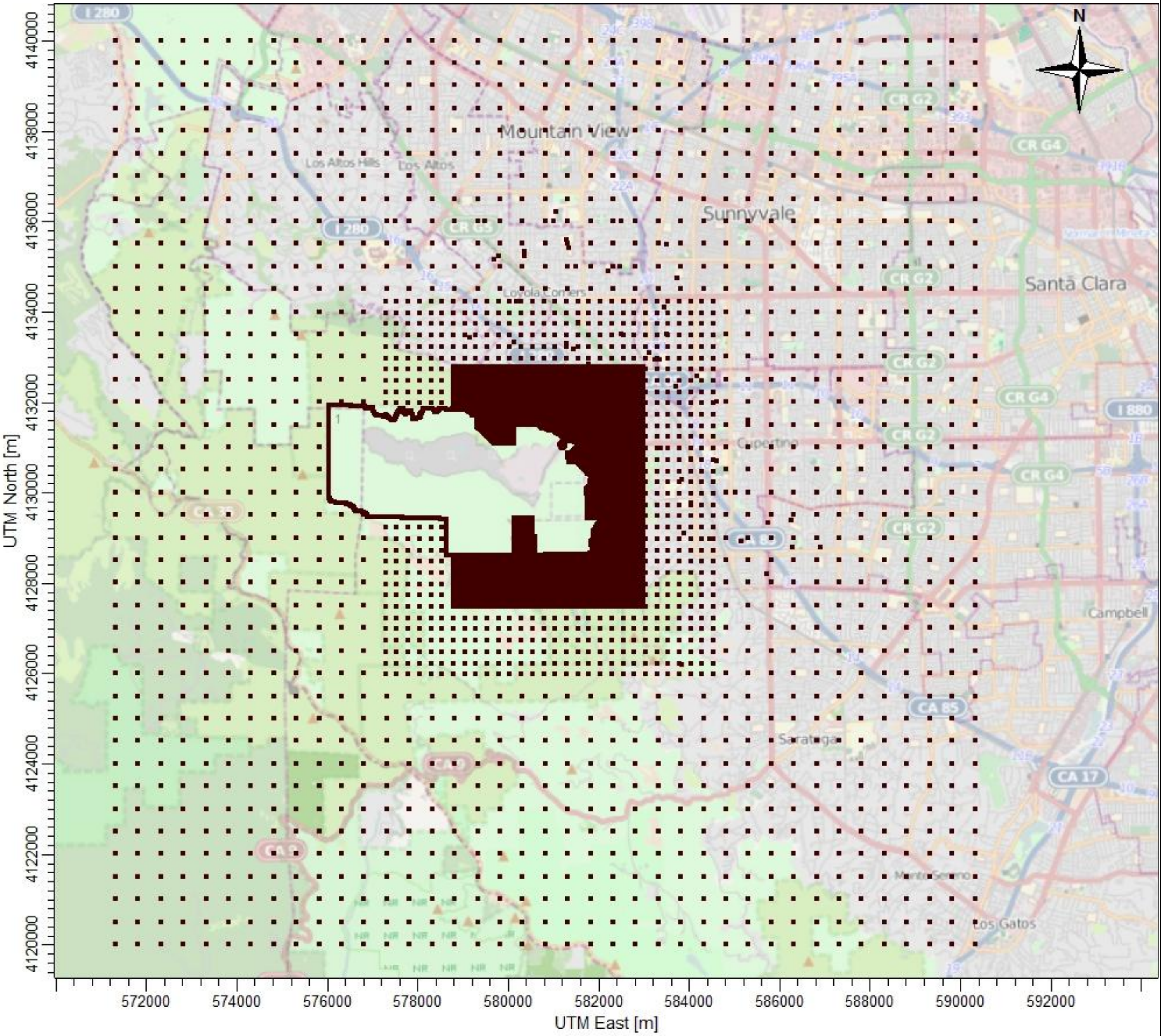
Lehigh Southwest Company - Cupertino Facility

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

Figure
3A

amec

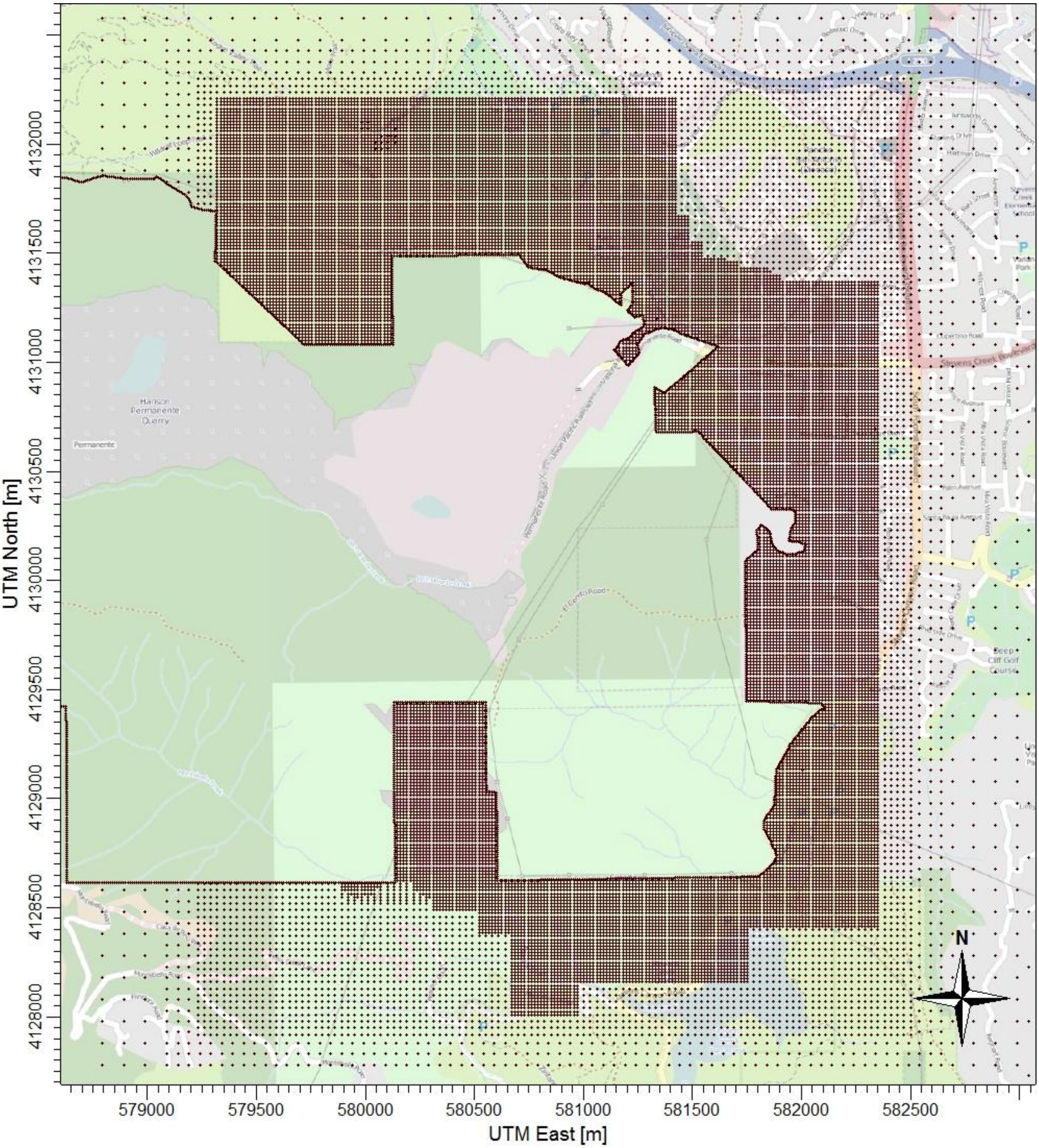
Path: X:\Projects\2013 Projects\0111910030 Lehigh Stack\MXD\Figure3A.mxd



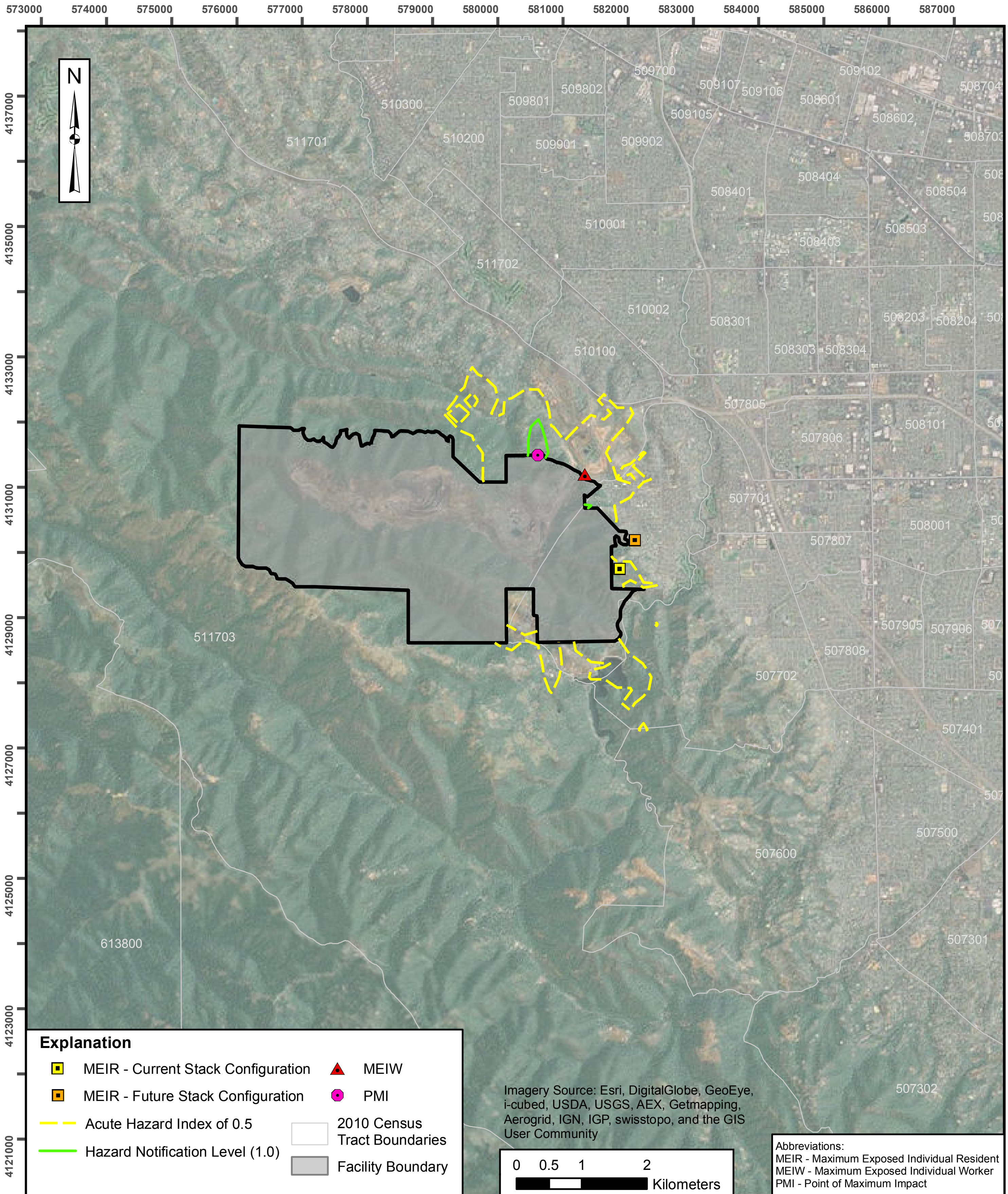
Explanation

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

JOB NO.	01119100030	Lehigh Southwest Company – Cupertino Facility	
DESIGN:	SO		
DRAWN:	AMEC E&I		
DATE:	12/06/2013	Proposed Receptor Network	Figure 3B
SCALE:			



JOB NO. 01119100000	Lehigh Southwest Company – Cupertino Facility		amec
DESIGN: SO			
DRAWN: AMEC E&I			
DATE: 12/06/2013	Fine Receptor Grid	Figure 3C	
SCALE:			



JOB NO.	0111910030
DESIGN:	SO
DRAWN:	AMEC GIS
DATE:	12/03/2013
SCALE:	1" = 2 km

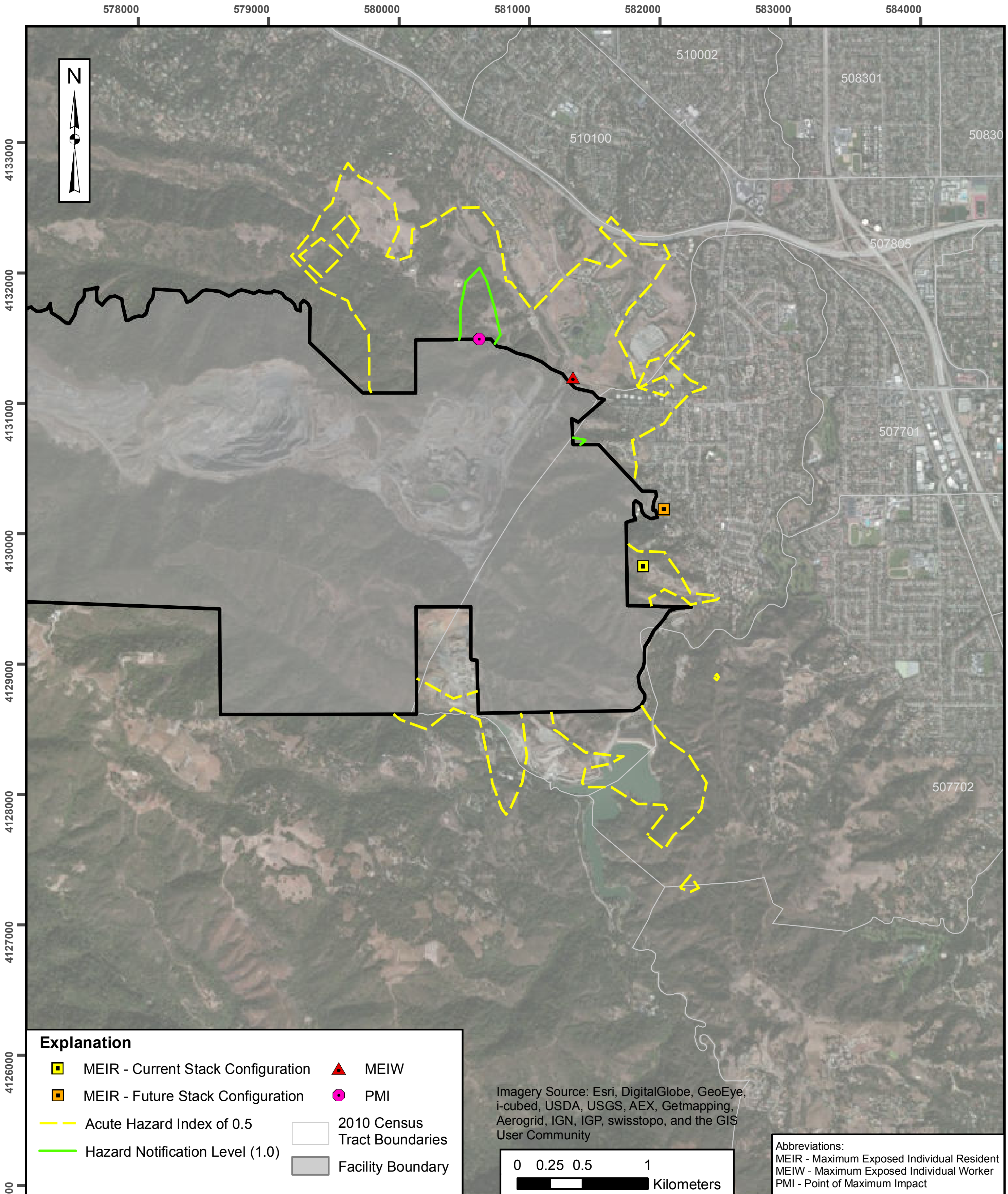
Lehigh Southwest Company - Cupertino Facility

Acute Noncarcinogenic Hazard Isopleths for Developmental Health Effects

Figure 4A

amec

Path: X:\Projects\2013 Projects\0111910030 Lehigh Stack\MXD\Figure4A.mxd



JOB NO. 0111910030
DESIGN: SO
DRAWN: AMEC GIS
DATE: 12/03/2013
SCALE: 1" = 1 km

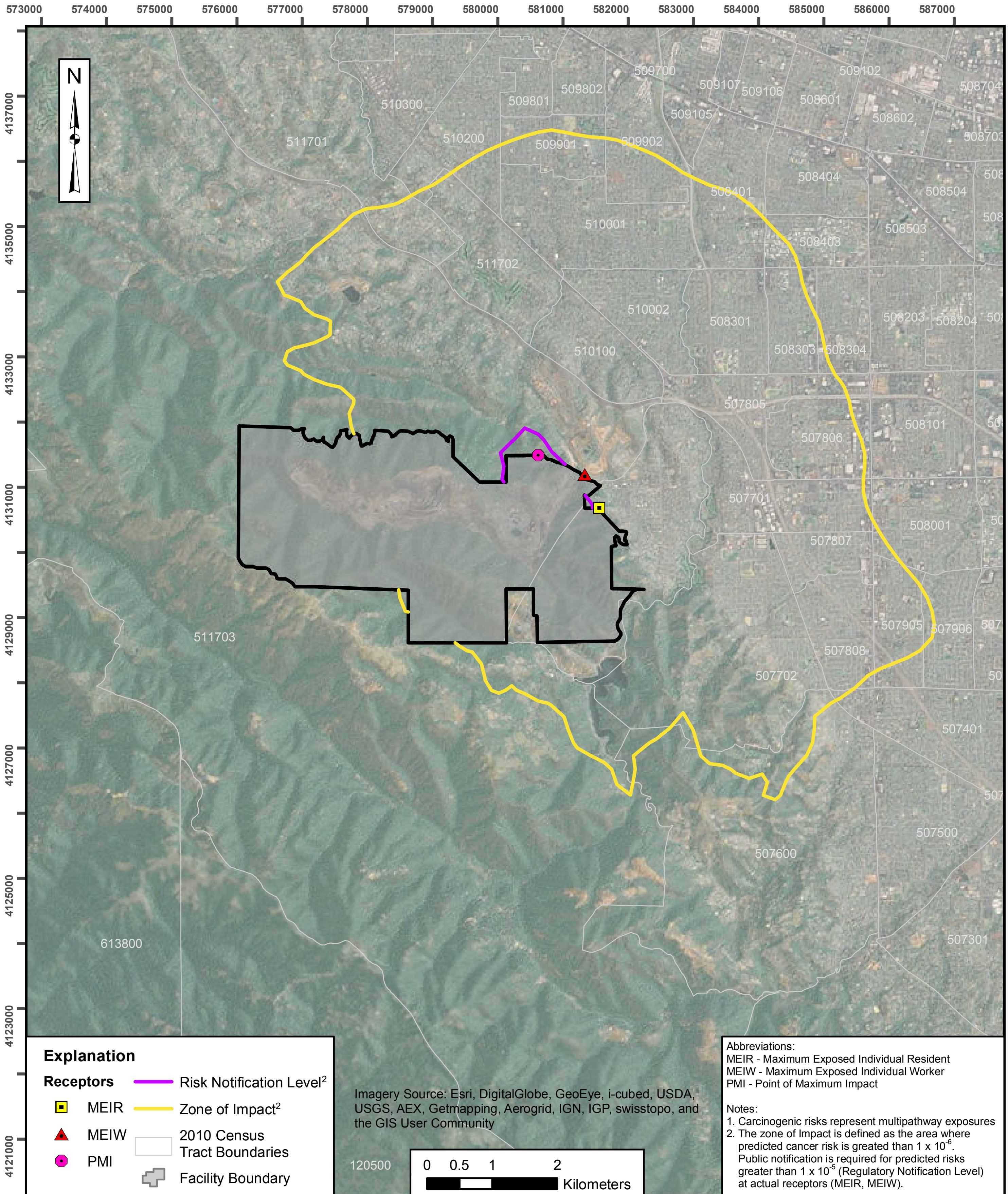
Lehigh Southwest Company - Cupertino Facility

Acute Noncarcinogenic Hazard Isopleths within Approximately 2 Kilometers of Facility

Figure 4B

amec

Path: X:\Projects\2013 Projects\0111910030 Lehigh Stack\MXD\Figure4B.mxd



JOB NO.	0111910030
DESIGN:	SO
DRAWN:	AMEC GIS
DATE:	12/20/2013
SCALE:	1" = 2 km

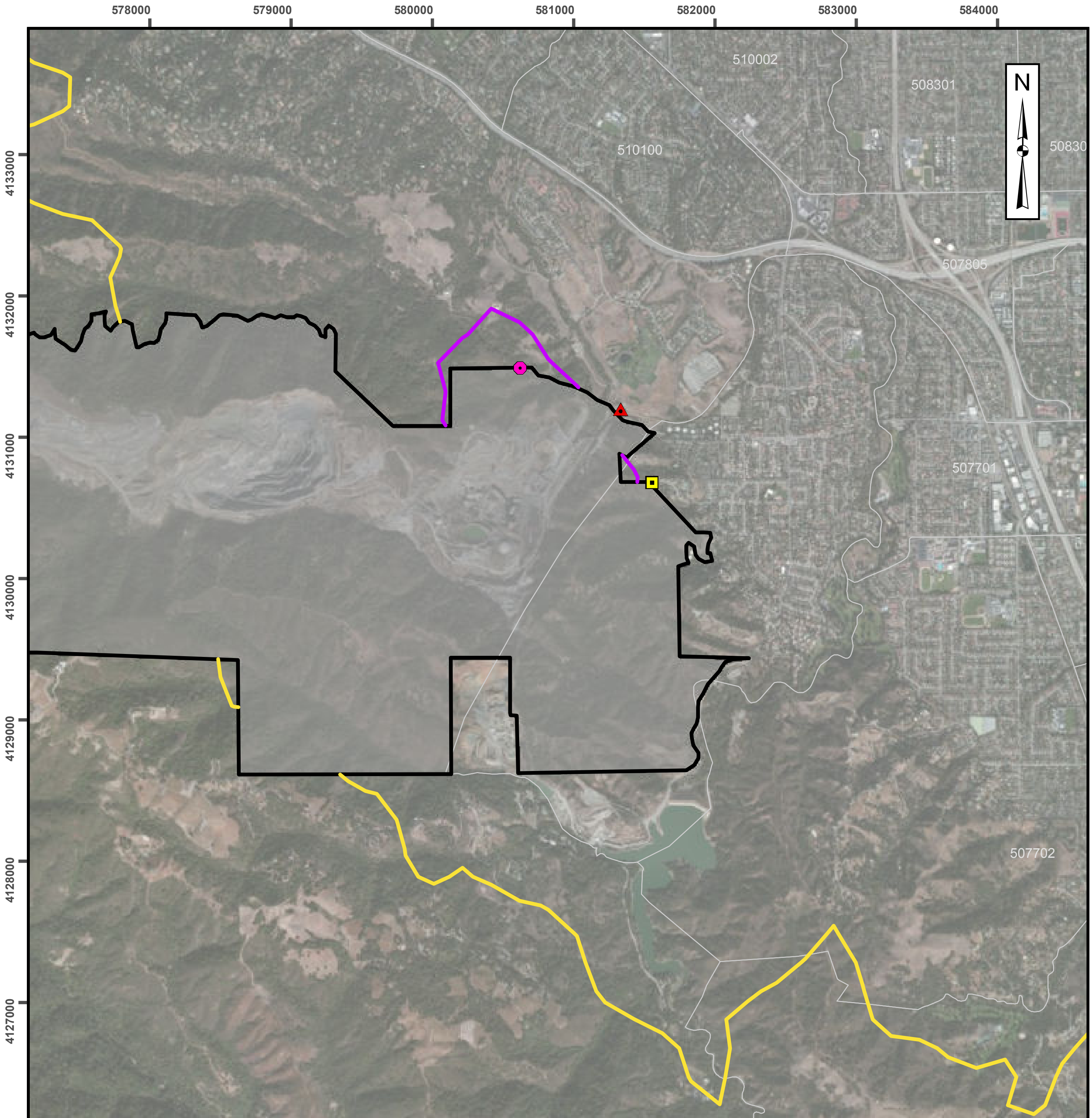
Lehigh Southwest Company - Cupertino Facility

Carcinogenic Risk Isopleths[1]

Figure 5A

amec

Path: X:\Projects\2013 Projects\0111910030 Lehigh Stack\MXD\Figure5A.mxd



Explanation

Receptors

- MEIR
- MEIW
- PMI
- Risk Notification Level[2]
- Zone of Impact[2]
- 2010 Census Tract Boundaries
- Facility Boundary

Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 0.25 0.5 1 Kilometers

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

Notes:
1. Carcinogenic risks represent multipathway exposures
2. The zone of Impact is defined as the area where predicted cancer risk is greated than 1 x 10^{-6}. Public notification is required for predicted risks greater than 1 x 10^{-5} (Regulatory Notification Level) at actual receptors (MEIR, MEIW).

JOB NO.	0111910030
DESIGN:	SO
DRAWN:	AMEC GIS
DATE:	12/20/2013
SCALE:	1" = 1 km

Lehigh Southwest Company - Cupertino Facility

Carcinogenic Risk Isopleths[1]
within Approximately 2 Kilometers of Facility

Figure 5B

amec

Path: X:\Projects\2013 Projects\0111910030 Lehigh Stack\MXD\Figure5B.mxd

APPENDIX A

Windrose for Lehigh Meteorologic Data

APPENDIX B

AERMOD Modeling Input and Output Files

APPENDIX C

HARP Modeling Input and Output Files