

County of Santa Clara

Department of Planning and Development
Planning Office

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MEMORANDUM

Date: September 30, 2010

To: **President Ken Yeager and Members of the Board of Supervisors**

Jeffrey V. Smith, County Executive
Gary Graves, Deputy County Executive
Sylvia Gallegos, Deputy County Executive

From: Gary Rudholm, Senior Planner, Planning Office *GR*
Michael M. Lopez, Planning Manager, Planning Office *MML*

Re: **Responses to comments made during the Public Comment portion of the Board of Supervisors Meeting on September 28, 2010, related to Lehigh Southwest Cement Plant and the Permanente Quarry**

During the Public Comment portion of the September 28, 2010, meeting of the Board of Supervisors three speakers made statements to the Board regarding the Lehigh Southwest Cement Plant air emissions, and the Notices of Violation (NOV) for the adjacent Permanente Quarry issued by the County. The aforementioned NOV's require reclamation plan amendment applications that are currently under review by the Planning Office. The three speakers included Barry Chang, Joyce Eden, and Derek Wong. In order to ensure the Board and the County Executive have clear and accurate information related to the issues raised by these speakers staff has prepared the following responses for your information.

SPEAKER ONE: Barry Chang :

"Good Morning, Supervisors. This is Barry Chang from Cupertino City Counsel. This is my fifth time coming over here to ask please put the Leigh High Southwest Cement Plant's Notice of Violation on your agenda on the next meeting, please, because this is impacting the public health. As we all know, that the air pollution has no boundary. It flows to everywhere. It's not only Cupertino residents will get it; all the county residents will get it. And, then it spills out quite a lot of toxins in the air. Okay, just NOx alone is over 5,000 tons a year, and sulfur dioxide is over 21 hundred tons a year, and, plus the mercury, we all know is over-- average over 500 pounds a year. That's very toxic. So, please, put on your agenda. I don't understand why the County give them two notice of violations, there is no enforcement. In the EPA Notice of Violation and also Water resource Notice of Violation, there's enforcement. Thank you."

Response:

Emissions from the facility are regulated by the Bay Area Air Quality Management District (BAAQMD). Therefore, we contacted BAAQMD staff for assistance with preparing responses to the comments.

NO_x and SO₂:

Staff from the Bay Area Air Quality Management District (BAAQMD) provided information related to NO_x and SO₂ emissions in correspondence provided via email (copy attached). The basis for the amount of emissions stated by the speaker appears to be information contained in the Title V permit¹ issued to Lehigh cement. The Title V permit is still in effect. According to the BAAQMD, the Title V permit allows a maximum NO_x of 5,072 tons per year at this facility. BAAQMD pointed out that the current emissions from the facility are calculated at 1,235 tons per year.

BAAQMD staff further explained that SO₂ emissions are also limited under the Title V permit to a maximum of 2,107 tons per year, and they calculate that current emissions to be 420 tons per year.

Mercury:

A Health Risk Assessment (HRA) was recently distributed by the BAAQMD, which contains information regarding Mercury emissions. A copy of the executive summary from the HRA is attached, for reference, including Table ES-2, which shows that the average annual emission rate for mercury by the Lehigh plant is 582 pounds per year. (See additional information under response to speaker #3, below.)

SPEAKER TWO – Joyce Eden

“Hi. Joyce Eden, West Valley Citizens Air Watch, Cupertino. I’m speaking also about the ongoing violation of the mining operation that Santa Clara County has issued a Notice of Violation only after a member of our organization had to call and call and call the County to get them to go out there to see what was going on, and see if, in fact, it was a violation, which it is. It’s ongoing, and the staff solution is to allow it to continue. So, as a Board of Supervisor, we’re asking you to direct the staff to not be so compliant with this pollution and allowing violations like this to continue because it doesn’t feel to us as if the rules and regulations that the County has mean anything if this is the outcome of it. So, and you can see this pile that is illegally placed not only did they not make them remove it, they allowed them to continue growing it. You can see it from the Powerline Trail at Rancho, not very far up and Stevens Creek Boulevard.”

Response:

This comment relates to a Notice of Violation (NOV) issued by the County on June 20, 2008 related to the unapproved use of an area referred to as the East Materials Storage Area (EMSA) of the Permanente Quarry. The mine operator was required to cease operations under the NOV.

¹ The Title V Permit is a compilation of all existing applicable air quality requirements including emissions limits and standards, monitoring, record keeping, and reporting requirements. The Title V permit renewal is required every five years subject to public notice and the EPA review process. (Source: BAAQMD web site.)

The original complaint made to the County was that petroleum coke was being stored in this location. Following a field inspection the County determined the material that was suspected to be petroleum coke was actually overburden excavated from the mine pit. The NOV provided the operator with two options for addressing the violation:, (1) remove the material, or (2) apply for and obtain an amendment to the existing approved reclamation plan for Permanente Quarry. An approved amended reclamation plan would authorize retaining the material in the EMSA and provide for reclamation consistent with state and County mine reclamation standards. The mine operator chose to apply for the reclamation plan amendment and this application is under review.

The operator approached the County and explained that immediate use of the EMSA is necessary for operational reasons, because the approved location to permanently store the overburden is running out of room. Without using the EMSA the operator would be forced to leave the material in the pit, which would prevent the operator from excavating some of the remaining mineral reserves. The County signed an agreement with Lehigh stipulating a rigorous schedule to complete the work necessary to submit a reclamation plan amendment application, and all other information required to complete the environmental impact review. The agreement also stipulates that the County retains its authority to impose fines against the operator, if necessary.

SPEAKER THREE: Derek Wong

"I'm Derek Wong. As a recent—just graduated college and moving back into this area, I just want to state my concern over some of the toxic chemicals that are being released by the cement plant as stated earlier such as Mercury, 587 pounds per year, which is over 8 times the limit set by the EPA. Thank you."

Response:

As noted above, the BAAQMD regulates toxic emissions from the facility. A Health Risk Assessment (HRA) was recently distributed by the BAAQMD containing information regarding Mercury emissions. A copy of the executive summary from the HRA is attached, for reference, including Table ES-2, which shows that the "Average Annual . . . Emission Rate" for mercury by the Lehigh plant is 582 pounds per year during 2005, which was the high end of the plant's production. This same table shows the current rate to be 337 pounds per year, due to reduced production.

According to Thu Bui of the BAAQMD, the data shown on Table ES-2 is presented as required by the U.S. EPA. The 582 pounds represents the total mercury input from raw materials and fuel that is processed by the cement plant when it produces cement. The raw materials and fuel used by Lehigh, during the high production year of 2005, contained 582 pounds of mercury. This figure is not the amount of material that is actually emitted into the air. Current technology does not provide a means to measure the actual mercury emissions; however, in the future all cement plants will be required to measure continuous mercury emissions that do reach the air. This requirement will take effect in 2013.

According to Ms. Bui, the EPA has established new additional standards that will take effect in 2013. Among these will be a reduction in the amount of mercury emitted into the air in cement production. The new standard will allow for a maximum of 55 pounds of mercury per 1 million tons of clinker

processed. Currently, Lehigh is allowed to process 1.6 million tons of clinker. Effective 2013, under the new standard, Lehigh will be limited to 88 pounds of total mercury emissions.

ATTACHMENTS:

- Correspondence via email dated September 29, 2010, from Scott Lutz, BAAQMD
- Executive Summary, "AB 2588 Health Risk Assessment for 2008 CEIR Emissions and Current Low Production Emissions," September 2010.

cc:

Colleen Valles, District One
Gustavo Caraveo, District Two
Mike Donohoe, District Three
Tony Filice, District Four
Scott Strickland, District Five

Miguel Márquez, County Counsel
Orry P. Korb, Assistant County Counsel
Lizanne Reynolds, Deputy County Counsel

Jody Hall Esser, Director, Department of Planning & Development
Rob Eastwood, Senior Planner

From: "Scott Lutz" <SLutz@baaqmd.gov>
Subject: **NOx, SO2, mercury**
Date: September 29, 2010 5:41:26 PM PDT
To: <gary.rudholm@pln.sccgov.org>
Cc: "Thu Bui" <TBui@baaqmd.gov>, "Brian Bateman" <BBateman@baaqmd.gov>

Gary-

You requested that I verify emission levels for Lehigh claimed by a citizen at the county board hearing:

5000 tons/yr of NO_x
2100 tons/yr of SO₂
581 lb/yr of mercury

Lehigh reported 581 lb/yr of mercury in CEIR and HRA based on 2005 emission inventory, however because of reduced production rates (2008 data), mercury emissions are now estimated to be 337 lb/yr]

The claimed NO_x emission levels are consistent with the maximum potential to emit based on permit limitations found in permit condition 11780, see excerpt below; also reiterated in proposed Title V permit:

<http://www.baaqmd.gov/Divisions/Engineering/Public-Notices-on-Permits/2009/081209-17947/Lehigh-Southwest-Cement-Company.aspx>

11780 C. Emission Limits: (Basis: Regulation 2-2-212)

1. The maximum allowable emission rate for Nitrogen Oxides from all kiln emission points shall not exceed both
 - i) 1158 lb/hour and
 - ii) a maximum concentration of 615 ppm (dry basis) without correction for oxygen both measured as an average over a 2 hour period. (Basis: RACT)

Maximum Potential to Emit = (1158 lb/hr * 24 hr/day * 365 day/yr) / 2000 lb/ton = 5072 ton/yr

Current emissions of NO_x are calculated as 1235 tons/yr

The claimed SO₂ emission levels are consistent with the maximum potential to emit based on permit limitations found in permit condition 2786; reiterated in proposed Title V permit :

2786 A. Gaseous Emission Limitations:



Lehigh Southwest Cement Company

Permanente Plant
24001 Stevens Creek Boulevard
Phone (408) 996-4000
Fax (408) 725-1019
www.lehighpermanente.com

September 14, 2010

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

Subject: Health Risk Assessment Report- Permanente Plant

To: Scott Lutz

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

The HRA report clearly shows that no notification is required based on the District's 10×10^{-6} notification level, based on current production conditions (2008 – 2009) with the District's January 2010 incorporation of 2009 OEHHA Lifetime Age Sensitivity Factor (LASF).

Based on the current 2008 – 2009 plant infrastructure combined with the consideration of the LASF, the model predicts a potential future production increase to 951,790 short tons of clinker and 994,020 short tons of cement to be below the notification level.

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

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

Sincerely,

Henrik Wesseling
Plant Manager
Lehigh Southwest Cement Company – Permanente Plant

cc: Brian Bateman – BAAQMD
Shane Alesi – Lehigh HTC
Stuart Tomlinson – LSCC
Scott Renfrew – LSCC



**AB 2588 HEALTH RISK ASSESSMENT
FOR 2008 CEIR EMISSIONS AND
CURRENT LOW PRODUCTION EMISSIONS**
Cupertino Facility
Cupertino, California

Prepared for:
Lehigh Southwest Cement Company
Cupertino, California

Prepared by:
AMEC Geomatrix, Inc.
Oakland, California

September 2010

Project 0111910000.00003.5

AMEC Geomatrix



**AB 2588 HEALTH RISK ASSESSMENT
FOR 2008 CEIR EMISSIONS AND
CURRENT LOW PRODUCTION EMISSIONS**
Lehigh Southwest Cement Company
Cupertino Facility

EXECUTIVE SUMMARY

At the request of the Bay Area Air Quality Management District (BAAQMD), AMEC Geomatrix, Inc. (AMEC) conducted an AB25588 health risk assessment (HRA) for the Permanente Plant in Cupertino, California (the Facility). The HRA considered two emission scenarios: (1) emissions for a current production rate based on an average of production rates in 2008 and 2009 and (2) emissions for production rates in 2005 as reported in the 2008 Comprehensive Emission Inventory (2008 CEIR). 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). Notification is required based on results at actual receptors (MEIR and MEIW), and not based on conditions at the PMI if a receptor is not present at that location. In this evaluation, the PMI occurs in an open-space area northeast of the facility and no permanent receptors are present.

Based on current operating conditions at the Facility (average of 2008/2009 production rates), potential human health risks for cancer and noncancer endpoints were below levels requiring notification for the MEIR and MEIW. As shown in Table ES-1, this conclusion includes the analysis using the lifetime age sensitivity factor (LASF) for carcinogens, which was recently adopted by BAAQMD in January 2010 (BAAQMD, 2010).

Based on historical operating conditions in 2005, potential human health risks for cancer and noncancer endpoints were below levels requiring notification for the MEIR and MEIW based on the regulations in place at the time those emissions occurred. Only when the LASF, which was adopted in 2010, is applied to emissions based on 2005 production, is the predicted cancer risk at the BAAQMD notification level. Predicted noncancer health effects are below notification levels at the MEIR and MEIW for both historical and current production rates. Application of the LASF to emissions that occurred 5 years prior to its adoption for the purpose of requiring notification is not consistent with the intent of AB2588.

As a final step, we conducted an evaluation to address potential future increases in production. We identified annual production rates for clinker and cement that would result in predicted cancer risks just below the 1×10^{-5} notification level (e.g., 9×10^{-6}) at the MEIR including consideration of the LASF. We applied an adjusted production rate factor to sources associated with production, but not to some wind-driven fugitive sources such as stockpiles.



Based on the evaluation, predicted cancer risk at the MEIR is below the notification level when a factor of 0.68 is applied to 2005 production rates. This corresponds to production of 951,790 short tons of clinker and 994,020 short tons of cement. Production rates are anticipated to be at or below this level through 2011.

In the future, when production rates increase above the rates identified in the previous paragraph, National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements to reduce emissions likely will have been implemented. Other modifications to plant operations may also have occurred. At the time production rates increase beyond 68 percent of 2005 production or in 4 years (which is required by the AB2588 regulation), whichever comes first, this HRA will be revised to reflect current conditions at the Facility at that time.

DETAILED HRA REPORT SUMMARY

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

- emissions reported in the Comprehensive Emission Inventory Report (CEIR) For Lehigh Southwest Cement Company's Cupertino Facility (AMEC, 2009);
- air dispersion coefficients developed as part of site-specific air dispersion modeling using AERMOD presented herein to predict off-site ground level chemical concentrations; and
- the Hotspots Analysis and Reporting Program (HARP) model developed by the California Air Resources Board to perform the calculations for carcinogenic, chronic noncarcinogenic, and acute noncarcinogenic health effects at the maximum exposed individual resident (MEIR), maximum exposed individual worker (MEIW), and point of maximum impact (PMI). The PMI in this case is in open space near the facility but does not represent an actual off-site person.

Sixty-nine chemicals regulated under AB 2588 were identified as being emitted from 42 sources at the Facility. General categories of emissions included the kiln, raw materials, combustion byproducts, and stationary sources. The total annual and hourly emissions emitted from the Facility in 2007 are presented in Table ES-1. Table ES-2 identifies the health effect categories for each of these chemicals (i.e., acute and chronic noncarcinogenic health effects, and carcinogenic health effects) identified by the Office of Environmental Health Hazard Assessment (OEHHA, 2009).

The HARP model incorporates the ground level concentrations predicted by the air dispersion modeling into exposure and risk assessment algorithms. The results from HARP provide the necessary information to generate the zone of impact (ZOI; i.e., the geographical area potentially affected by emissions based on predicted carcinogenic risk of 1×10^{-6}), to identify the potentially exposed populations, and to quantify potential health risks. The ZOI is different from the regulatory notification level (1×10^{-5}), the level above which public notification is required by BAAQMD.



Chronic Noncarcinogenic Health Hazards

The highest target organ-specific hazard indexes for the MEIR (receptor #2085) were 0.3 and 0.2, respectively, based on 2008 CEIR emissions and the current low production scenario. The highest target organ-specific hazard indexes for the MEIW (receptor #10963) were 0.1 and 0.09, respectively, based on 2008 CEIR emissions and the current low production scenario. The organ/system endpoint with the highest hazard indexes was the central nervous system. These values for the MEIW and MEIR are below the BAAQMD regulatory notification level of 1.0, indicating notification is not required.

Predicted chronic noncarcinogenic hazard index at the PMI (receptor #226) was 0.4 and 0.2, respectively, based on the 2008 CEIR emissions and the current low production scenario. The organ/system endpoint with the highest hazard index was the central nervous system. The predicted chronic noncarcinogenic hazard indexes are below the regulatory notification level of 1, indicating notification is not required. The chemical contributing most significantly to predicted chronic hazard index at the PMI is mercury (75 percent), which occurs naturally in the raw materials used to make cement. The kiln contributes most significantly to the chronic hazard index (84 percent).

Acute Noncarcinogenic Health Hazards

The highest target organ-specific hazard indexes for the MEIW (receptor #10963) and MEIR (receptor #2085) were 0.6 and 0.8, respectively. The organ/system endpoint with the highest hazard indexes was the developmental endpoint. These estimated acute hazard indexes are well below the BAAQMD regulatory notification level of 1.0, indicating notification is not required.

Predicted acute noncarcinogenic hazard index at the PMI (receptor #130) was 2. The organ/system endpoint with the highest hazard indexes was the developmental endpoint. The predicted acute noncarcinogenic hazard index is greater than the regulatory notification level of 1. The chemical contributing most significantly to predicted risk is mercury (97 percent of the total at the PMI), which occurs naturally in the raw materials used to make cement. The kiln contributes most significantly to the chronic hazard index (99 percent). Because there is no specific off-site receptor at the location of the PMI, notification would not be required by the BAAQMD. The AB 2588 program focuses on exposure for residents and workers, and none are present at the PMI for the Facility.

Potential Carcinogenic Risks

The theoretical carcinogenic risks for the MEIR (receptor #2085) were 1×10^{-5} and 8×10^{-6} , respectively, for 2008 CEIR emissions and current low production emissions, including the



lifetime age sensitivity factor (LASF) for carcinogens published by OEHHA in 2009 (OEHHA, 2009). If the LASF is excluded the theoretical carcinogenic risks for the MEIR would be 8×10^{-6} and 5×10^{-6} , respectively, for the 2008 CEIR emissions and current low production emissions. The theoretical carcinogenic risks for the MEIW (receptor #10963) were 1×10^{-6} and 7×10^{-7} , respectively, for 2008 CEIR emissions and current low production emissions. The LASF does not apply to an adult worker. Considering the MEIR and MEIW scenarios, only the estimated theoretical excess cancer risk for the MEIR based on the 2008 CEIR emissions including the LASF (which was not in effect when the emissions occurred) were at the BAAQMD regulatory notification level of 1×10^{-5} . Predicted cancer risks were below the notification level for the current low production emissions and 2008 CEIR emissions excluding the LASF. Notification is not considered necessary because current conditions do not exceed the notification level as demonstrated by the current low production scenario and 2008 CEIR emissions are at the notification level only when the LASF is applied, which was not in effect at that time.

Predicted cancer risk at the PMI (receptor #226) was 2×10^{-5} and 1×10^{-5} , respectively, based on 2008 CEIR emissions and current low production emissions, including the LASF. If the LASF is excluded the theoretical carcinogenic risks for the MEIR would be 1×10^{-5} and 7×10^{-6} , respectively, for the 2008 CEIR emissions and current low production emissions. The predicted cancer risk at the PMI for 2008 CEIR emissions including the LASF is greater than the 1×10^{-5} regulatory notification level. The chemicals contributing most significantly to predicted risk at the PMI are hexavalent chromium (55 percent) and benzene (26 percent). The kiln contributes most significantly to the cancer risk (37 to 39 percent). Because there is no specific off-site receptor at the location of the PMI, no action with respect to emissions should be required. The AB 2588 program focuses on long-term exposure for residents and workers, and none are present at the PMI for the Facility.

If production rates for cement and clinker are 68 percent of the production rate used to develop emissions in the 2008 CEIR (2005 production), predicted cancer risk would be 9.5×10^{-6} , just below the BAAQMD notification level. Using 68 percent of the 2005 production rates, the optimal production rates would be 951,790 short tons of clinker and 994,020 short tons of cement. The 2008 CEIR emission estimates were based on 2005 production rates that were among the highest over the last 5 years period.

The carcinogenic risk estimated for the sensitive receptors 5×10^{-7} to 3×10^{-6} for the 2008 CEIR emissions and 3×10^{-7} to 2×10^{-6} for the current low production emissions are below the BAAQMD regulatory notification level (1×10^{-5}). Sensitive receptors include schools, day care centers, and hospitals.



Population Cancer Burden

The predicted excess cancer burden was 0.3 based on 2008 CEIR emissions and 0.2 based on current low production emissions (Table ES-4). These results are lower than 1, indicating that over a 70-year period under the worst-case exposure assumptions, no member of the community would be expected to contract cancer based on exposure to Facility emissions. Therefore, the cancer burden calculations indicate that the community as a whole would not have an increased incidence of cancer from emissions at the higher, historical production rates or current operations.



TABLE ES-1

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

Description	Cancer Risk		Cancer Risk including LASF ²		Chronic Noncancer Hazard Index		Acute Noncancer Hazard Index
	Average 2008/2009 Production (Current Low Production)	2005 Production (2008 CEIR)	Average 2008/2009 Production (Current Low Production)	2005 Production (2008 CEIR)	Average 2008/2009 Production (Current Low Production)	2005 Production (2008 CEIR)	
Regulatory Notification Level ¹	1E-05	1E-05	1E-05	1E-05	1.0	1.0	1.0
Maximum Exposed Individual Resident (MEIR)	5E-06	8E-06	8E-06	1E-05	2E-01	3E-01	0.6
Does total exceed regulatory notification level?	No	No	No	No	No	No	No
Maximum Exposed Individual Worker (MEIW)	--	--	7E-07	1E-06	9E-02	1E-01	0.8
Does total exceed regulatory notification level?	--	--	No	No	No	No	No
Point of Maximum Impact (PMI) ³	8E-06	1E-05	1E-05	2E-05	2E-01	4E-01	2.0
Does total exceed regulatory notification level?	No	No	No	Yes	No	No	Yes

Notes

1. Regulatory notification level is the threshold above which public notification would be required by BAAQMD.
2. The LASF (1.7) incorporates the potential increased sensitivity of children to carcinogens compared to adults averaged over a 70-year lifetime.
3. Notification would not be required at the PMI because a permanent receptor is not present at this location.

Abbreviations

- = Not applicable to MEIW
- LASF = Lifetime age sensitivity factor



TABLE ES-2
ANNUAL AVERAGE AND MAXIMUM HOURLY EMISSION RATES
 Lehigh Southwest Cement Company
 Cupertino Facility

CAS No.	Chemical	Annual Average (lb/yr)			Maximum Hourly (lb/hr)
		2008 CEIR	Current Low Production	Current Production	
7439921	Lead	1.94E+00	1.16E+00	3.96E-04	
7439965	Manganese	3.99E+00	2.32E+00	5.79E-04	
7439976	Mercury	5.82E+02	3.37E+02	8.44E-02	
74839	Methyl bromide	6.25E+02	3.63E+02	9.07E-02	
71556	Methyl chloroform (1,1,1-trichloroethane)	3.21E+01	1.86E+01	4.65E-03	
75092	Methylene chloride	1.29E+02	7.48E+01	1.87E-02	
91203	Naphthalene	1.39E+02	8.04E+01	2.01E-02	
7440020	Nickel	5.19E+01	3.10E+01	1.07E-02	
3268879	1,2,3,4,6,7,8,9-OCDD	2.02E-05	1.17E-05	2.92E-09	
39001020	1,2,3,4,6,7,8,9-OCDF	4.61E-06	2.87E-06	6.69E-10	
40321764	1,2,3,7,8-PeCDD	2.37E-06	1.38E-06	3.44E-10	
57117416	1,2,3,7,8-PeCDF	1.83E-05	1.06E-05	2.66E-09	
57117314	2,3,4,7,8-PeCDF	2.74E-05	1.59E-05	3.98E-09	
127184	Perchloroethylene	5.31E+01	3.08E+01	7.70E-03	
7782492	Selenium	5.38E+00	3.17E+00	9.17E-04	
100425	Styrene	2.43E+02	1.41E+02	3.52E-02	
1746016	2,3,7,8-TCDD	2.33E-06	1.35E-06	3.38E-10	
51207319	2,3,7,8-TCDF	1.15E-04	6.89E-05	1.67E-08	
79345	1,1,2,2-Tetrachloroethane	4.03E+01	2.34E+01	5.85E-03	
106883	Toluene	8.65E+03	5.01E+03	1.25E+00	
79005	1,1,2-Trichloroethane	5.34E+01	3.10E+01	7.75E-03	
79016	Trichloroethylene	4.21E+01	2.44E+01	6.10E-03	
1314621	Vanadium	1.47E+02	8.69E+01	3.06E-02	
75014	Vinyl chloride	1.42E+02	8.22E+01	2.06E-02	
75354	Vinylidene chloride	3.89E+01	2.25E+01	5.64E-03	
95476	o-Xylene	1.36E+03	7.89E+02	1.97E-01	
1330207	Xylenes (mixed)	6.94E+03	4.03E+03	1.01E+00	

Abbreviations

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



TABLE ES-3
HEALTH EFFECT CATEGORIES FOR CHEMICALS EMITTED FROM THE FACILITY¹
 Lehigh Southwest Cement Company
 Cupertino Facility

CAS No.	Chemical	Primary Emission Category ²	Carcinogenic Risk	Chronic Noncarcinogenic Effects	Acute Noncarcinogenic Effects
55673897	1,2,3,4,7,8,9-HpCDF	Kiln	•	•	
39227286	1,2,3,4,7,8-HxCDD	Kiln	•	•	
57653857	1,2,3,6,7,8-HxCDD	Kiln	•	•	
19408743	1,2,3,7,8,9-HxCDD	Kiln	•	•	
70648269	1,2,3,4,7,8-HxCDF	Kiln	•	•	
57117449	1,2,3,6,7,8-HxCDF	Kiln	•	•	
72918219	1,2,3,7,8,9-HxCDF	Kiln	•	•	
60851345	2,3,4,6,7,8-HxCDF	Kiln	•	•	
7647010	Hydrochloric acid	Kiln			•
193395	Indeno[1,2,3-c,d]pyrene	Kiln	•		
7439921	Lead	Raw material	•		
7439965	Manganese	Raw material		•	
7439976	Mercury	Raw material		•	•
74839	Methyl bromide	Kiln		•	•
71556	Methyl chloroform	Kiln		•	•
75092	Methylene chloride	Kiln	•	•	•
91203	Naphthalene	Kiln	•	•	
7440020	Nickel	Raw material	•	•	•
3268879	1,2,3,4,6,7,8,9-OCDD	Kiln	•	•	
39001020	1,2,3,4,6,7,8,9-OCDF	Kiln	•	•	
40321764	1,2,3,7,8-PeCDD	Kiln	•	•	
57117416	1,2,3,7,8-PeCDF	Kiln	•	•	
57117314	2,3,4,7,8-PeCDF	Kiln	•	•	
127184	Perchloroethylene	Kiln	•	•	•
7782492	Selenium	Raw material		•	
100425	Styrene	Kiln		•	•
1746016	2,3,7,8-TCDD	Kiln	•	•	
51207319	2,3,7,8-TCDF	Kiln	•	•	
79345	1,1,2,2-Tetrachloroethane	Kiln	•	•	
108883	Toluene	Kiln		•	•
79005	1,1,2-Trichloroethane	Kiln	•	•	
79016	Trichloroethylene	Kiln	•	•	