



## FACT SHEET

July 06, 2010

### Background

- The Lehigh Southwest Cement Plant (formerly Hanson) is located in unincorporated Santa Clara County, west of Cupertino at the end of Stevens Creek Boulevard. Mining at the site dates back to the 1880's, and the cement plant was established in 1939.
- The facility excavates limestone from an on-site quarry for use as a raw material in cement manufacturing. The limestone, and other raw materials, are crushed into a fine powder and blended in the correct proportions. This blended raw material is heated in a pre-heater and rotary kiln where it reaches temperatures of about 2,800 degrees Fahrenheit. The material formed in the kiln, known as "clinker", is subsequently ground and blended with gypsum to form Portland cement. In addition to cement, the facility also produces and sells construction aggregates.
- Nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM), are the primary criteria air pollutants emitted from cement manufacturing. Small quantities of volatile organic compounds (VOC), including the toxic air contaminant (TAC) benzene, are also emitted from the kiln. TAC emissions also include trace metals such as mercury, cadmium, chromium, arsenic, and nickel. The kiln exhaust is equipped with NO<sub>x</sub> and SO<sub>2</sub> continuous emissions monitors to determine compliance with applicable emission limitations. PM and metallic TAC emissions are controlled at the facility by fabric filtration, which is used at various material crushing, grinding, and loading operations, and at the kiln, which is the largest source of emissions.
- Lehigh is subject to a number of District, State, and federal air quality rules and regulations that are delineated in the facility's Title V Permit. A Health Risk Assessment (HRA) completed under the Air Toxics Hot Spots Program indicates that the maximum public health risks associated with the facility's TAC emissions are under thresholds requiring public notification or mandatory risk reduction measures. This HRA is currently being updated to reflect a comprehensive TAC emissions inventory update (see page 5).

### Public Comments/Issues

- Starting in November 2007, District staff has met with representatives of the West Valley Citizen Air Watch (WVCAW) and worked to answer questions from the group about the Quarry Reclamation Plan Amendment proposal, and other air quality

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issues associated with the facility. The Reclamation Plan Amendment entails modification of the existing Reclamation Plan, approved in 1985 under the requirements of the Surface Mining and Reclamation Act (California Public Resources Code, § 2710, et seq.), for activities at the facility's quarry. The proposed Reclamation Plan Amendment, which is being processed by Santa Clara County, would expand the existing Reclamation Plan area to include previously disturbed areas, add a new quarry pit, and extend the expected completion date of mining and reclamation activities, possibly by 25 years. District staff has subsequently processed a number of public records requests, and answered many additional questions from the public, associated with the Lehigh facility.

- On October 22, 2008 and June 11, 2009, District staff participated in community meetings organized by Santa Clara County to answer questions about the facility and the Reclamation Plan Amendment. A variety of concerns were expressed at these meetings including the potential location of a new quarry pit close to residential areas, the use of petroleum coke as a fuel, visible emissions from the kiln, general dust emissions and deposition, mercury emissions, hexavalent chromium emissions, emissions from truck traffic, and the facility's compliance history.
- Lehigh submitted an application to renew its Title V Permit on April 28, 2008. A Title V Permit is a compilation of all existing applicable air quality requirements including emissions limits and standards, monitoring, record keeping, and reporting requirements. Title V Permit renewals are required every five years, and the existing Title V Permit continues in force until the District takes final action on the renewal application. The District conducted a public hearing in Cupertino on September 17, 2009 to solicit comments on the draft Title V permit renewal for the Lehigh facility, and a written public comment period was also held. Approximately one hundred individuals or groups provided comments covering a wide variety of topics.
- Members of the public have raised concerns regarding an Notice of Violation (NOV) issued by the U.S. EPA to the Lehigh facility on March 9, 2010, for alleged violations of the Clean Air Act's Prevention of Significant Deterioration (PSD) permit program. The NOV was part of a national review of PSD applicability for the cement manufacturing industry.

### Facility Status

#### A. Permits

- The Lehigh facility started using 100 percent petroleum coke as a fuel on May 30, 2007 after receiving a permit from the District for this fuel change. Prior to this project, the typical fuel mix had consisted of 90 percent coal and 10 percent coke. Emissions data show that this fuel change has reduced SO<sub>2</sub> and CO emissions, and has had no significant effect on the emissions of other regulated air pollutants. On October 31, 2008, at the request of EPA Region IX, Lehigh submitted a

demonstration that the fuel change project did not trigger federal PSD permit requirements. The facility was also required by EPA to provide additional information on potential facility modifications as a part of the national EPA review of PSD applicability for the cement manufacturing industry. The NOV issued by EPA on March 9, 2010, for alleged violation of PSD permit requirements, did not include the coke switching project.

- Lehigh has withdrawn a permit application that had been submitted to further increase the permitted coke usage at their facility. A separate application for the use of bio-fuels in the kiln has been placed on an inactive status at the request of the applicant.
- On January 5, 2010, the District withdrew the proposed Title V permit renewal for the Lehigh facility. This was done because EPA is expected to adopt significantly more stringent standards for mercury and other TACs from cement plants in amendments to 40 CFR 63, Subpart LLL, National Emission Standards for Hazardous Air Pollutants (NESHAP) from the Portland Cement Manufacturing Industry. The proposed EPA rule amendments were published on May 6, 2009, and the final rule had been scheduled for adoption no later than June 6, 2010. The deadline for final rule adoption, however, has recently been extended to August 6, 2010 (based on a settlement agreement between EPA and petitioners for reconsideration of the existing NESHAP). Since the requirements of this amended NESHAP will need to be incorporated into the Title V permit, the District will re-issue the draft Lehigh permit renewal after the requirements of the amended NESHAP have been incorporated. It is expected that this can be done within 45 days of promulgation of the amended NESHAP (i.e., on or around September 20, 2010).

## B. Compliance

- Since July 2004, there have been twenty-five violations at the Lehigh facility that resulted in the issuance of twenty-three Notices of Violation by the District. The violations can be characterized as emissions-related, administrative, or permit-related in nature. There were fifteen emissions-related violations; most were issued for excessive visible emissions of dust or smoke from various facility sources. The facility expeditiously took corrective action and brought these violations into compliance. There were eight administrative violations, which included various record keeping deficiencies and late reporting of required reports. Lehigh took corrective action on these violations and brought them into compliance. The two permit-related violations documented unpermitted material stockpiles. Lehigh has obtained the necessary permits and is currently in compliance with District permit requirements. Lehigh has been in intermittent compliance, similar to other Title V facilities; there is currently no ongoing violation, or pattern of recurrent violation, that represents ongoing noncompliance.

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- The NOV issued by EPA to Lehigh on March 9, 2010, concerns a series of physical modifications made to the facility between 1996 and 1999. EPA alleges that these modifications should have undergone pre-construction PSD permit review, but the owners of the facility at the time failed to apply for a PSD permit, which would have required additional emissions controls for NO<sub>x</sub> and SO<sub>2</sub>. The NOV issued by EPA does not contain a detailed listing of the specific projects involved, as these were all claimed confidential by Lehigh. This NOV is similar to other EPA enforcement actions against various cement plants in other states. The Lehigh NOV remains an active enforcement case by EPA without final resolution.
- EPA did not include in its NOV any projects at the Lehigh facility that occurred after EPA adopted major reforms to the PSD regulations on December 31, 2002. According to EPA, “[t]hese reforms were aimed at providing much needed flexibility and regulatory certainty, and at removing barriers and creating incentives for sources to improve environmental performance through emissions reductions, pollution prevention, and improved energy efficiency” (*Supplemental Analysis of the Environmental Impact of the 2002 Final NSR Improvement Rule*, U.S. EPA, Nov. 21, 2002). The reforms modified PSD applicability tests which, in some cases, had resulted in projects being identified as a major modification even though the project decreased emissions (because of the program’s “actual-to-potential” applicability test and “last two years” baseline emissions procedure, both of which were eliminated with the reforms). In addition, the reforms added to the clarity and certainty of the scope of the program’s routine maintenance exclusion to reduce the unintended consequences of discouraging worthwhile projects that are in fact outside the scope of the program.

### C. Toxic Air Contaminants

- District staff has conferred with staff of Monterey Bay Unified Air Pollution Control District (MBUAPCD) and South Coast Air Quality Management District (SCAQMD) regarding the reason for elevated levels of hexavalent chromium reported downwind of cement plants located in Davenport and Oro Grande, California. It is believed that these elevated hexavalent chromium levels are the result of the use of steel slag as a raw material and/or the use of uncovered clinker storage piles. The Lehigh facility uses a naturally occurring iron ore that has much lower chromium levels than steel slag, and also utilizes enclosed silos rather than open storage piles for clinker storage.
- Following an article appearing in the San Francisco Chronicle, District staff provided community members with information regarding the health effects associated with mercury emissions from the Lehigh cement kiln. Based on HRA results, the mercury health risks were determined to be below Reference Exposure Levels (RELs) established by Cal/EPA’s Office of Environmental Health Hazard Assessment (OEHHA). RELs are concentrations at or below which no adverse non-cancer health effects are anticipated in the general human population, and are designed to protect

the most sensitive individuals in the population by the inclusion of margins of safety. The mercury RELs were revised by OEHHA on December 19, 2008, to explicitly include consideration of possible differential effects on the health of infants, children and other sensitive subpopulations, in accordance with the mandate of the Children's Environmental Health Protection Act.

- The District required that Lehigh collect additional data regarding hexavalent chromium, mercury, other metallic TACs, and crystalline silica, in fugitive dust and other sources at the facility in addition to the kiln. This comprehensive TAC emissions inventory update was submitted to the District on March 30, 2009. Lehigh also subsequently revised mercury emission estimates from the kiln, upward to 581 lb/yr, based on the use of a more conservative mass balance approach (the prior approach for estimating emissions had been based on stack testing). The District has performed preliminary air dispersion modeling analyses based on the updated emissions inventory. These preliminary analyses indicate that, although the risk levels resulting from the facility's TAC emissions are higher than the results of the previous HRA, the Air Toxics Hot Spots Program action levels are still likely not exceeded. One possible exception to this that was identified is a narrow band of nearby receptor locations at which the mercury air concentrations appear to be very close to levels that would require public notification. The District has required that Lehigh prepare and submit a more refined update to their HRA in order to determine if public notification requirements have been triggered. This updated HRA is expected to be submitted for District review by September 1, 2010.
- In a letter to the District dated December 2, 2009, Lehigh outlined the actions that the company is taking to upgrade its emission control system in order to comply with the upcoming NESHAP amendments. The District issued permits in 2010 that allow for the initial phase of this control system upgrade. The initial phase involves injecting a sorbent material (hydrated lime) into the flue gases, filtering out the sorbent/pollutant complex, and incorporating the captured pollutants into the finished cement. This technology reduces emissions of several pollutants including hydrochloric acid, sulfur dioxide, and mercury (the latter of which is reduced by approximately 25 percent). On June 23, 2010 Lehigh held a press conference announcing the installation of these new emission controls. The second phase of the emission control system upgrade, which involves activated carbon injection, is expected to increase control of mercury emissions to about 90 percent.

#### D. Ambient Air Monitoring

- Because of concerns about elevated hexavalent chromium air concentrations found near some cement plants, the U.S. EPA and the District installed ambient air monitoring equipment at Stevens Creek Elementary School, located approximately two miles from Lehigh, to measure hexavalent chromium as part of EPA's School Air Toxics Monitoring Initiative. The EPA provided the instruments and initial laboratory analysis, and the District installed and is operating the monitoring equipment (and

now is paying for the analysis). The monitoring commenced on July 30, 2009, and will continue for at least one year. As of May 26, 2010, there were 56 daily samples taken at this site on a once every 6<sup>th</sup> day sampling schedule. The hexavalent chromium concentration was below the method detection limit in about 40 percent of these samples, and very small amounts were detected in the other samples. The average hexavalent chromium air concentration (using the convention that non-detects equal one-half the method detection limit) was 0.000014  $\mu\text{g}/\text{m}^3$ . This is 0.007 percent of the 0.2  $\mu\text{g}/\text{m}^3$  chronic REL adopted by OEHHA for non-cancer health effects (a short-term acute REL has not been adopted for hexavalent chromium). Based on the OEHHA cancer potency factor and age-sensitivity factors, the lifetime cancer risk resulting from exposure to this level of hexavalent chromium is approximately 4 in-a-million. Although hexavalent chromium ambient air monitoring is no longer routinely done at other Bay Area sites, based on comparisons with historical monitoring data, air concentrations observed at the Stevens Creek Elementary School are considered to be typical of background levels present in urban areas.

- On October 28, 2008, the District began operating an ambient air monitor in the vicinity of the Lehigh facility adjacent to Stevens Creek Boulevard (near the intersection of Prado Vista Drive) to determine if truck traffic and dust associated with the facility were having an adverse impact on PM levels in the nearby community. This monitor continuously records particulate matter of 10 microns or less (PM<sub>10</sub>) in the air. The maximum daily and average daily PM<sub>10</sub> concentrations recorded at this site (from Oct. 29, 2008 through June 30, 2010) were 55.5  $\mu\text{g}/\text{m}^3$  and 16.2  $\mu\text{g}/\text{m}^3$ , respectively. A comparison of the PM<sub>10</sub> concentrations at this Cupertino site with PM<sub>10</sub> concentrations at the District's San Jose monitoring site (located about 10 miles east of the Cupertino site) is presented in the following table for common sampling days. The relevant PM<sub>10</sub> National Ambient Air Quality Standards (NAAQS), and California Ambient Air Quality Standards (CAAQS), are also listed.

**Comparison of PM<sub>10</sub>Air Concentrations at Cupertino and San Jose Monitoring Sites, and PM<sub>10</sub>Ambient Air Quality Standards (Oct. 29, 2008 to Jun. 30, 2010)**

	Cupertino ( $\mu\text{g}/\text{m}^3$ )	San Jose ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	CAAQS ( $\mu\text{g}/\text{m}^3$ )
Average Daily	16.5	19.9	n/a	20
Maximum Daily	51.9	46.8	150	50

Table Notes:

- Figures are for common sampling days at the Cupertino and San Jose sites (the San Jose site is a filter-based PM<sub>10</sub> site that operates once every 6<sup>th</sup> day, and the Cupertino site is a Beta Attenuation Monitor that operates continuously). The overall maximum daily concentration at the Cupertino site (i.e., 55.5  $\mu\text{g}/\text{m}^3$ ) occurred on a day on which the San Jose sampler was not operating.
- The Average Daily CAAQS is an annual arithmetic mean.

The PM<sub>10</sub> concentrations at the Cupertino site were, on average, 17 percent lower than the San Jose site. The maximum daily PM<sub>10</sub> concentration at the Cupertino site was, however, about 11 percent higher than at the San Jose site. It should be noted that these comparisons are for common sampling days only, and the San Jose monitoring site has historically seen maximum daily PM<sub>10</sub> levels higher than the maximum levels seen at the Cupertino site (e.g., the maximum daily PM<sub>10</sub> levels at the San Jose site were 73.2 µg/m<sup>3</sup>, 69.1 µg/m<sup>3</sup>, and 57.3 µg/m<sup>3</sup> for the years 2006, 2007, and 2008, respectively).

The Cupertino site had PM<sub>10</sub> concentrations that were below the annual arithmetic mean CAAQS, and the daily maximum NAAQS. The site had a total of 3 days (approximately 0.5 percent of all monitoring days) during which the daily PM<sub>10</sub> concentrations were slightly over the stringent daily maximum CAAQS. Each of these days also had elevated particulate matter (PM) measurements in San Jose, and occurred in the wintertime PM season when wood burning has been identified as the most significant source of PM air concentrations in the Bay Area. Occasional PM<sub>10</sub> air concentrations over the daily maximum PM<sub>10</sub> CAAQS are common at monitoring sites throughout the Bay Area in the winter season.

The District is working on establishing a comprehensive air monitoring site located about three quarters of a mile from the Lehigh facility at Monta Vista Park near the intersection of South Foothill Boulevard and Voss Avenue in Cupertino. The City of Cupertino approved a lease for this site on May 18, 2010, and District staff expects to have the monitoring equipment operational by the end of July 2010. The site will operate for a period of at least one year and will measure a broad array of criteria air pollutants (e.g., PM<sub>2.5</sub>, PM<sub>10</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, and ozone), TACs (e.g., a variety of metals including mercury, and a variety of organic gases including benzene), and meteorological conditions (e.g., wind speed, wind direction, and temperature). (Benzene and mercury have been identified by the District as being the primary contributors to health risk resulting from TAC emissions from the Lehigh facility). District staff participated in a community meeting to discuss the new monitoring site held at the Monta Vista Community Center on April 28, 2010.

#### E. Other Activities

- District staff participated in a Study Session held by the Cupertino City Council to discuss issues associated with the Lehigh facility. Staff has also been invited to provide an update to the City Council at a follow-up Study Session scheduled for July 20, 2010.
- Santa Clara County has indicated that the overall Lehigh Quarry Reclamation Plan Amendment requires additional geologic studies. Preparation of an Environmental Impact Report (EIR) for the project has been put on hold pending completion of these studies. A revised Reclamation Plan Amendment application was submitted by

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Lehigh to the County on May 28, 2010, and the County has initiated a 60-day review period to determine its completeness. The revised application includes a new South Quarry Pit, which is located due south of the existing quarry pit approximately the same distance from the nearby residential areas to the east as the existing North Quarry Pit.

- In response to a Notice of Violation to the mine operator issued by Santa Clara County, Lehigh has submitted a separate Reclamation Plan Amendment to address stockpiling of material from the quarry in an unauthorized location, the East Materials Storage Area. This separate amendment is being processed by the County, and the process of preparing an EIR for the project has begun. A Public Scoping Session to solicit comments for the Notice of Preparation for this EIR was held on April 28, 2010.
- District staff has begun rule development on Stationary Source Measure 9: Cement Kilns, from the District's 2010 Clean Air Plan (CAP), which was issued in draft form on March 11, 2010. This rule development project is evaluating more stringent standards for NO<sub>x</sub> (and potentially SO<sub>2</sub>) emissions for the Lehigh cement kiln. The draft CAP control measure states that NO<sub>x</sub> reductions of 90 percent are potentially feasible. Staff is also tracking the EPA rulemaking on the NESHAP amendments for cement plants, and will harmonize the proposed District rule with the EPA rule. Staff expects that a draft District rule and workshop notice will be issued by the 3<sup>rd</sup> quarter of 2010, and that a proposed rule can be considered for adoption by the District's Board of Directors by the winter of 2010/2011.