



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

LEHIGH SOUTHWEST CEMENT COMPANY
(#A0017)
24001 Stevens Creek Boulevard
Cupertino, CA 94014

Summary of Health Risk Assessment & Air Toxic Hot Spot Status

November 8, 2011

District Staff and OEHHA have completed review of the revised Health Risk Assessment (HRA) submitted by Lehigh Southwest Cement Company (Cupertino) for the Air Toxics Hot Spots (ATHS) Program. The District staff has concluded that the HRA report is complete and was prepared in accordance with the state-wide ATHS HRA guidelines; therefore the District approves this HRA report. Based on current operating conditions and newly installed abatement systems, risk levels are below ATHS Program action levels for public notification and mandatory risk reduction. Lehigh has committed to further risk reduction by installing additional abatement equipment and a new exhaust stack within two year, in order to meet pending federal requirements of the Portland Cement National Emission Standards for Hazardous Air Pollutants (NESHAP).

By submittal of this approved health risk assessment, Lehigh is in compliance with the ATHS program. They are currently listed as a tracking facility and will be required to periodically update their toxic emission inventory. Changes in operation and/or increases in emission rates may subject the facility to update the HRA in the future.

Background:

The Lehigh Southwest Cement Company is located in unincorporated Santa Clara County, west of Cupertino at the end of Stevens Creek Boulevard. Mining on 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 a large 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 cement. The majority of the toxic emissions (e.g., benzene, mercury) from the plant are exhausted from a baghouse filtration system that reduces particulate matter from the kiln.

The District reviewed Lehigh's ATHS status in 2008 after becoming aware of other cement plants in the state (Monterey County and Riverside County) that had caused significant exposure of hexavalent chromium. It is believed that those elevated hexavalent chromium levels were the result of the use of steel slag as a raw material and/or the use of uncovered clinker storage piles. The Lehigh facility in the Bay Area 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.

Lehigh Southwest Cement Company - Health Risk Assessment

Nevertheless, because of apparent data gaps in the facility's emission inventory, the District requested and Lehigh conducted an extensive toxic emissions testing program, including hexavalent chromium (as well as mercury, other metallic TACs, and crystalline silica) in fugitive dust, and other sources at the facility in addition to the kiln (where a relatively large rate of benzene is emitted). This comprehensive TAC emissions inventory update was submitted to the District on March 30, 2009. After review of these data, the District required Lehigh to revised mercury emission estimates from the kiln by using a more conservative material balance approach (the prior approach for estimating mercury emissions had been based on stack testing that was not consistent with material sampling data). Based on the new emissions estimates, the District updated the prioritization status of the facility to High Priority.

As a High Priority Facility, Lehigh was required to prepare a comprehensive health risk assessment, which they submitted in September, 2010. The District note several discrepancies and/or errors and requested revision of the HRA; Lehigh submitted a revised HRA in March, 2011. The emission of toxic air contaminants are summarized in tables within the HRA report. Lehigh included multiple emission scenarios in their risk analysis, including a "2011 Production" scenario that considers additions of sorbent (lime and activated carbon) injection to the kiln abatement system that that have already been implemented (Summer 2010 and Spring 2011), as well as a projected future (2013) scenario that represents additional risk reduction modifications (a new baghouse filtration unit with single exhaust stack) necessary to comply with the pending NESHAP limits for mercury emissions. Emissions of mercury will be verified by a Continuous Emissions Monitor.

The HRA indicates that, based on the emissions represented by the 2011 Production scenario, risk levels are below the thresholds requiring public notification. Review by District staff indicates that the HRA was prepared according to the Air Toxics Hot Spots Health Risk Assessment Guidelines and represents toxic emissions and risk appropriately. In addition OEHHA staff reviewed the document and provided comments; they did not note any substantial issues. The District and OEHHA noted several minor errors; they are listed in the errata section of this memo.

Ambient Air Monitoring:

Because of concerns about elevated hexavalent chromium found near other cement plants in California, 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 monitoring commenced on July 30, 2009, and continued for one year. No hexavalent chromium was detected in about 40 percent of the samples, and very small amounts were detected in the others. The average hexavalent chromium air concentration (using the convention that non-detects equal one-half the method detection limit) was 14 picograms/m³. This is 0.007 percent of the 0.2 µg/m³ 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, the lifetime cancer risk resulting from exposure to this level of hexavalent chromium is about 3.6 in-a-million. 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 and much lower than the sites of interest near the other cement plants in Monterey and Riverside counties.

Lehigh Southwest Cement Company - Health Risk Assessment

The District also established a comprehensive toxic air monitoring site located about three quarters of a mile east of the Lehigh facility at Monta Vista Park near the intersection of South Foothill Boulevard and Voss Avenue in Cupertino. Concentrations were generally less than concentrations at the nearest regular air monitoring station in San Jose and do not indicate excessive exposure from Lehigh. A summary of the air monitoring data is expected to be available in December 2011.

ERRATA LIST:

The HRA report has several minor errors that do not affect the analysis or results of the report but may contribute to confusion of a reader:

- Page 23 of 194, 1st paragraph: Maximum facility production should be 1,600,000 tons of clinker or 1.6 million tons of clinker not “1,600,000 million tons of clinker”.
- Tables 4A, 4B, 4C, 4D, 19A, 19B 19C, 24A, 24B, & 24C (pages 80-85, 144-148, & 158-161): “Concentrations reported in pounds per year (lb/yr)” should actually be “Annual average emission rates reported in pounds per year (lb/yr)”.
- Tables 5A, 5B, 5C, 25A, 25B & 25C (pages 86-89 & 162-165): “Concentrations reported in pounds per year (lb/hr)” should actually be “Maximum hourly emission rates reported in pounds per hour (lb/hr)”.

Air Toxics Hot Spots Program:

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly, 1987) established a formal regulatory program for site-specific air toxics emissions inventory and health risk quantification that is managed by California air districts. Under this program, a wide variety of industrial, commercial, and public facilities are required to report the types and quantities of toxic substances their facilities routinely release into the air. The goals of the Air Toxics Hot Spots Program are to collect emissions data, to identify facilities with potential for localized health impacts, to ascertain health risks, to notify nearby residents of risks that are determined to warrant such notification, and to reduce significant risks.

There are five steps to implementing the ATHS program. Guidelines have been developed for all five steps to establish a consistent, science-based, methodology for implementing the program. The five steps are briefly described as follows:

- **Air Toxics Emissions Inventory:** Subject facilities are required to prepare and submit a comprehensive emissions inventory plan followed by a toxics emissions inventory report. Each facility's emissions inventory must be updated on a regular basis (in order to reflect changes in equipment, materials, and production levels at the facility).
- **Prioritization:** Each facility is prioritized for potentially significant health impacts based on the quantity and toxicity of emissions, and the proximity of nearby residents and workers.
- **Health Risk Assessment:** Facilities that are determined to be "high priority" are required to prepare a comprehensive HRA. The air district and Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) review the HRA.
- **Public Notification:** If the health risks resulting from the facility's emissions exceed action levels established by the air district, the facility is required to perform notification to all exposed persons regarding the results of the HRA. The BAAQMD has established a cancer risk of 10 in a million and a noncancer Hazard Index of one as ATHS public notification levels.
- **Risk Reduction:** If the health risks resulting from the facility's emissions exceed significance levels established by the air district, the facility is required to conduct an airborne toxic risk reduction audit and develop a plan to implement measures that will reduce emissions from the facility to a level below the significance level within five years. The BAAQMD has established a cancer risk of 100 in a million and a noncancer Hazard Index of ten as ATHS mandatory risk reduction levels.

District policy allows facilities to implement voluntary risk reduction measures in order to change their ATHS status. These risk reductions must be real and be made enforceable through permit conditions.