



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

AGENDA: 4

Lehigh Southwest Cement **Compliance Status**

Regulation 9, Rule 13: Nitrogen Oxides, Particulate Matter, and Toxic Air Contaminants from Portland Cement Manufacturing

Jeff McKay
Deputy Air Pollution Control Officer

Stationary Source Committee Meeting
April 20, 2015

- Facility Description
- Sources and Emissions Description
- Rule 9-13 Requirements
- Compliance Status
- Health Risk Assessment (HRA)
- Future Changes to HRA Risk Basis

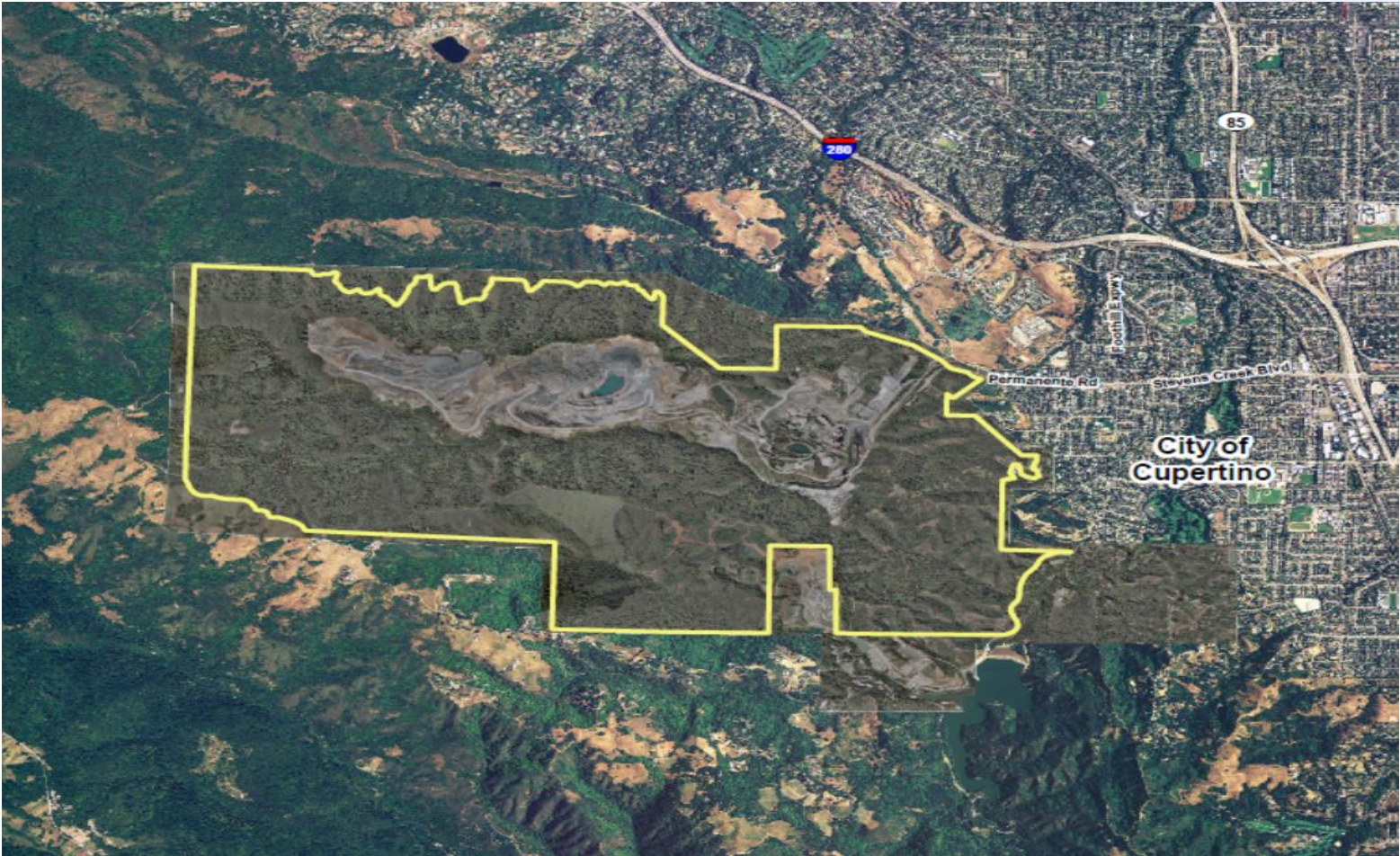


Background

- Lehigh Southwest Cement Plant is located in unincorporated Cupertino at the end of Stevens Creek Boulevard
- Regulation 9, Rule 13 effective September 9, 2013
- The Rule sets emission limits for NO_x, PM and Toxic Air Contaminants (TACs)



Facility Location

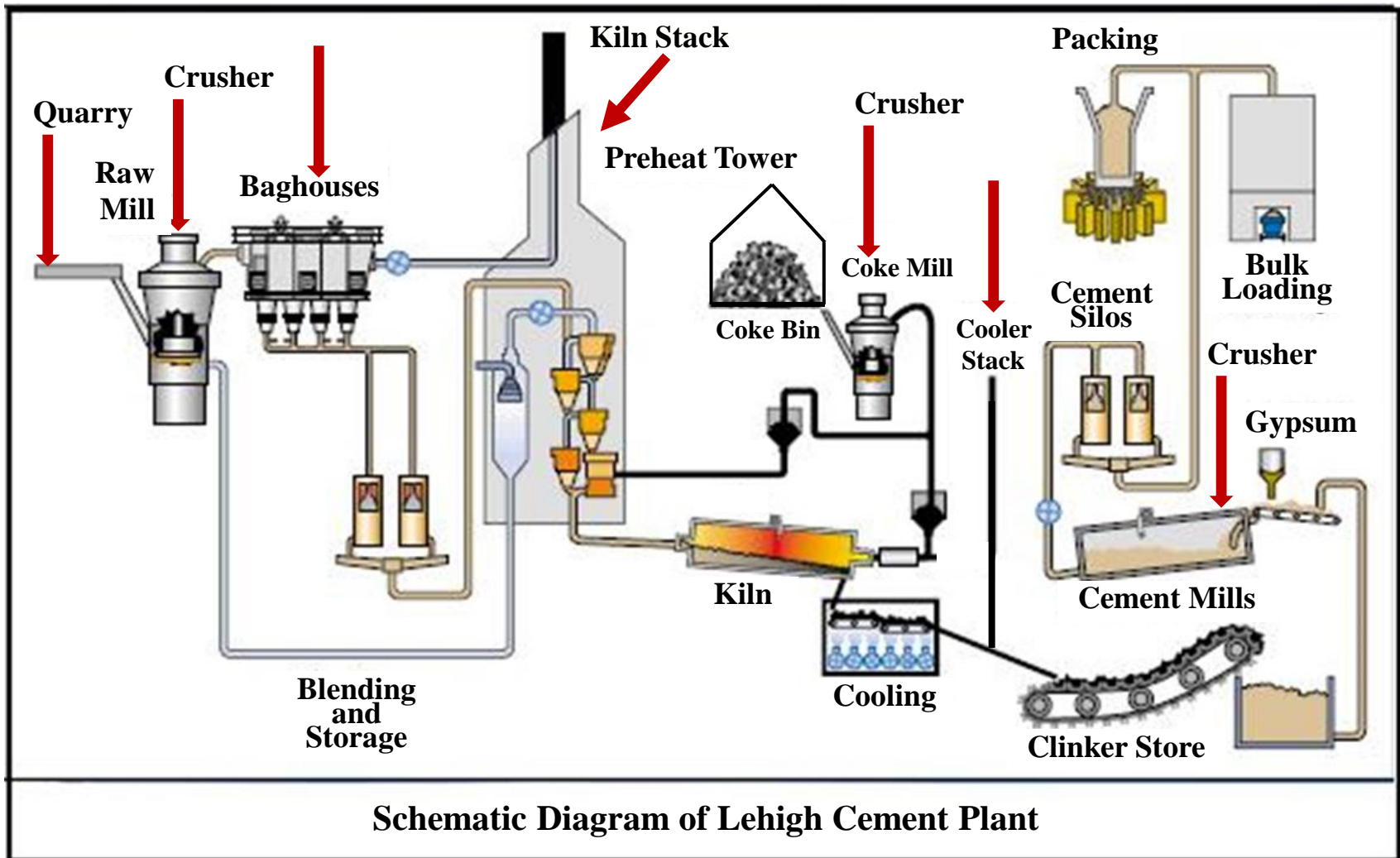


Lehigh Southwest Cement Plant

- Limestone is quarried, crushed, and combined with other raw materials in a high temperature kiln system to produce “clinker”
- Clinker is cooled, ground, and mixed with gypsum to produce Portland cement
- Facility also produces and sells aggregates



Manufacturing Process





Emission Points

- Quarry – Particulate Matter
- Crushers – Particulate Matter
- Kiln Stack – Particulate Matter (PM)
 - Nitrogen Oxides (NO_x)
 - Sulfur Dioxides (SO₂)
 - Precursor Organics (POC)
 - Hydrochloric Acid (HCl)
 - Mercury (Hg)
 - Hexavalent Chromium (Cr⁶⁺)
- Cooler Stack – Particulate Matter (Cr⁶⁺)
- Material Storage – Particulate Matter (Cr⁶⁺)



Elements of Rule 9-13

➤ Emissions Standards

- Toxic Air Contaminants (mercury, hydrochloric acid, others)
- NO_x standard of 2.3 pounds per ton of clinker
- PM standard of 0.04 pounds per ton of clinker
- Ammonia standard of 10 ppmv above baseline

➤ Stack Requirements

- Configuration ensures health protections as demonstrated by Health Risk Assessment (HRA)
- Continuous monitoring

➤ Fugitive dust mitigation control measures

Regulation 9-13

Emissions Limits/Monitoring

Source	Pollutant	Emission Limit	Monitor
Kiln & Clinker Cooler	Particulate Matter (PM)	0.04 lb/ton clinker, 3-run test avg.	PCEM/ Source Test
Kiln	Nitrogen Oxides (NOx)	2.3 lb/ton clinker, 30-day rolling avg.	CEM
Kiln	Ammonia (NH ₃)	10 ppmv @ 7% O ₂ above the baseline emission levels	CEM
Kiln	Dioxins/Furans (D/F)	0.2 ng-TEQ/dscm @ 7% O ₂ , 24-hr rolling avg.	PCEM/ Temperature
Kiln	Mercury (Hg)	55 lb/million ton clinker, 30-day rolling avg.	CEM
Kiln	Total Hydrocarbon (THC)	24 ppmv THC <u>or</u> 12 ppmv HAP @ 7% O ₂ , 30-day rolling avg.	CEM
Kiln	Hydrogen Chloride (HCl)	3 ppmv @ 7% O ₂ , 30-dayrolling avg.	CEM



Emissions Control

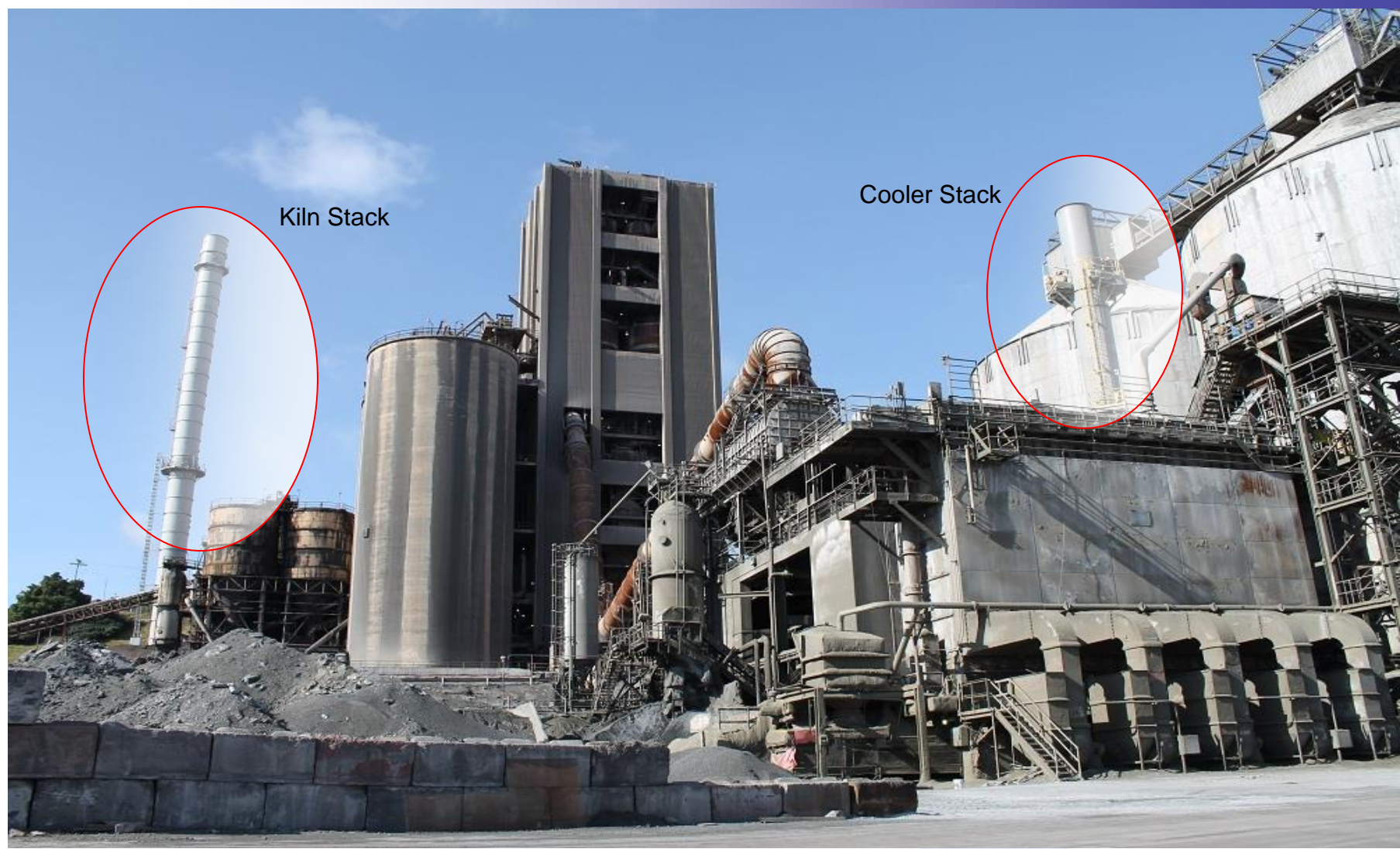
Reg. 9-13 Requirements Compared to 2010 Emission Levels

<u>Pollutant</u>	<u>% Reduction</u>
➤ Nitrogen Oxides (NO _x)	~ 42%
➤ Particulate Matter (PM)	~ 10%
➤ Precursor Organics (POC)	~ 90%
➤ Hydrochloric Acid (HCl)	~ 70%
➤ Mercury (Hg)	~ 93 %
➤ Benzene	~ 90%

Source: July 2012 Staff Report for BAAQMD Regulation 9-13



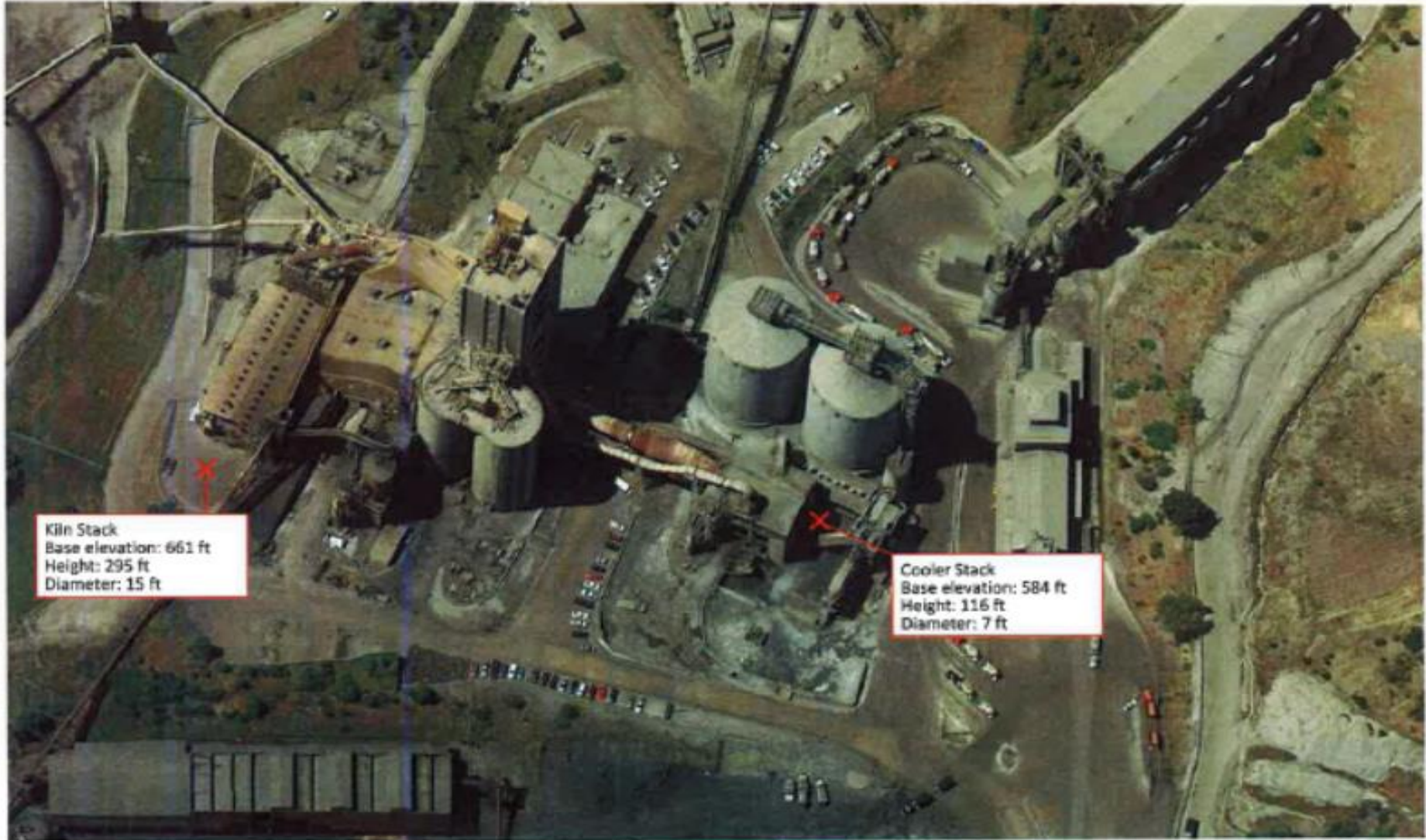
New Kiln and Cooler Stacks



Kiln Stack

Cooler Stack

New Kiln & Cooler Stack Locations





Control Technologies Utilized

- New Kiln and Clinker Cooler Stacks to comply with Rule 9-13's Stack and HRA requirements
- Dry lime injection system (HCl, SO₂)
- SNCR enhancement (NO_x)
- Activated carbon injection system (Hg, HAPs)
- Baghouse improvements (PM)



Kiln Stack Monitoring

➤ Continuous Emission Monitors installed

- Nitrogen Oxides (NO_x)
- Sulfur Dioxide (SO₂)
- Total Hydrocarbon (THC)
- Hydrogen Chloride (HCl)
- Ammonia (NH₃)
- Mercury (Hg)
- Particulate Matter (PM)



Clinker Cooler Stack Monitoring

➤ Monitors installed

- Particulate Matter (PM)
- Flow
- Temperature
- 10 filter bag leak detectors



Compliance Status

Pollutant	Standard	Compliance	Comments
Total Hydrocarbon, or Hazardous Air Pollutants (HAP)	24 ppm, or 12 ppm for HAP	YES	Source tests demonstrate compliance with HAP standard
Particulate Matter	0.04 lbs/ton clinker	YES	Source tests demonstrate compliance
Dioxins and Furans	0.2 ng/dscm	YES	Source tests demonstrate compliance
Nitrogen Oxides	2.3 lbs/ton clinker	YES	CEMS demonstrate compliance
Ammonia	Baseline concentration + 10 ppm	YES	CEMS demonstrate compliance

Compliance Status (continued)

Pollutant	Standard	Compliance	Comment
Hydrogen Chloride	3 ppm	YES	Source tests demonstrate compliance EPA is working on CEMS certification
Mercury	55 lbs/million tons of clinker	YES (since Dec. 2013)	CEMS demonstrate compliance

Compliance and Enforcement Activities

- Notices of violation between 9/9/2013 and Present
 - 3 for visible emissions – opacity limit violated by fugitive dust
 - 1 for mercury emissions – exceeded rolling 30 day limit
 - Failed to follow Dust Collector Dye Testing Schedule
 - All violations were corrected expeditiously



HRA Update

- BAAQMD completed the HRA review and posted it online
- Modeling shows that stack modifications significantly reduce health risk from the cement kiln
- The findings of the HRA show that the facility can operate up to its maximum production capacity of 1,600,000 tons per year of cement clinker without exceeding notification thresholds



Impacts of New OEHHA Risk Factors

- Increase Risk Estimate:
 - Breathing rates
 - Multi-pathway exposure factors
 - Age sensitivity Factor

- Decrease Risk Estimate:
 - Exposure durations

- Overall cancer risk may increase by 2 to 3 times for the same emissions

- Preemptively discussing possible actions with Lehigh



Summary

- New controls installed at Lehigh Cement
- Monitoring and verification of new controls will continue
- Committee will be informed of further progress