

**December 12, 2011  
Public Workshop**



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

**Robert Cave  
Senior Air Quality Specialist**

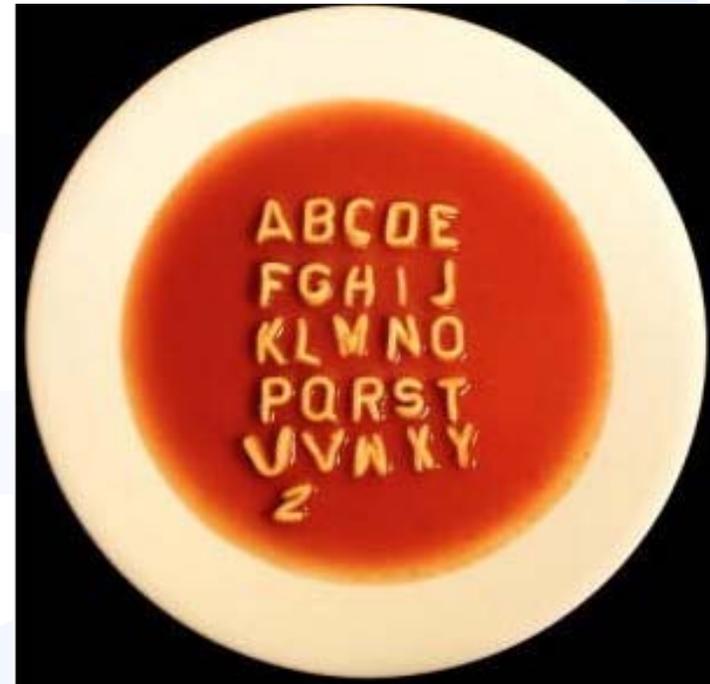
# Overview

---

- **Glossary of Terms**
- **Manufacturing Process**
- **Current Regulations**
- **Regulatory Goals**
- **Draft Proposal**
- **Emissions Reductions**
- **Costs**
- **Next Steps**



# Glossary of Terms



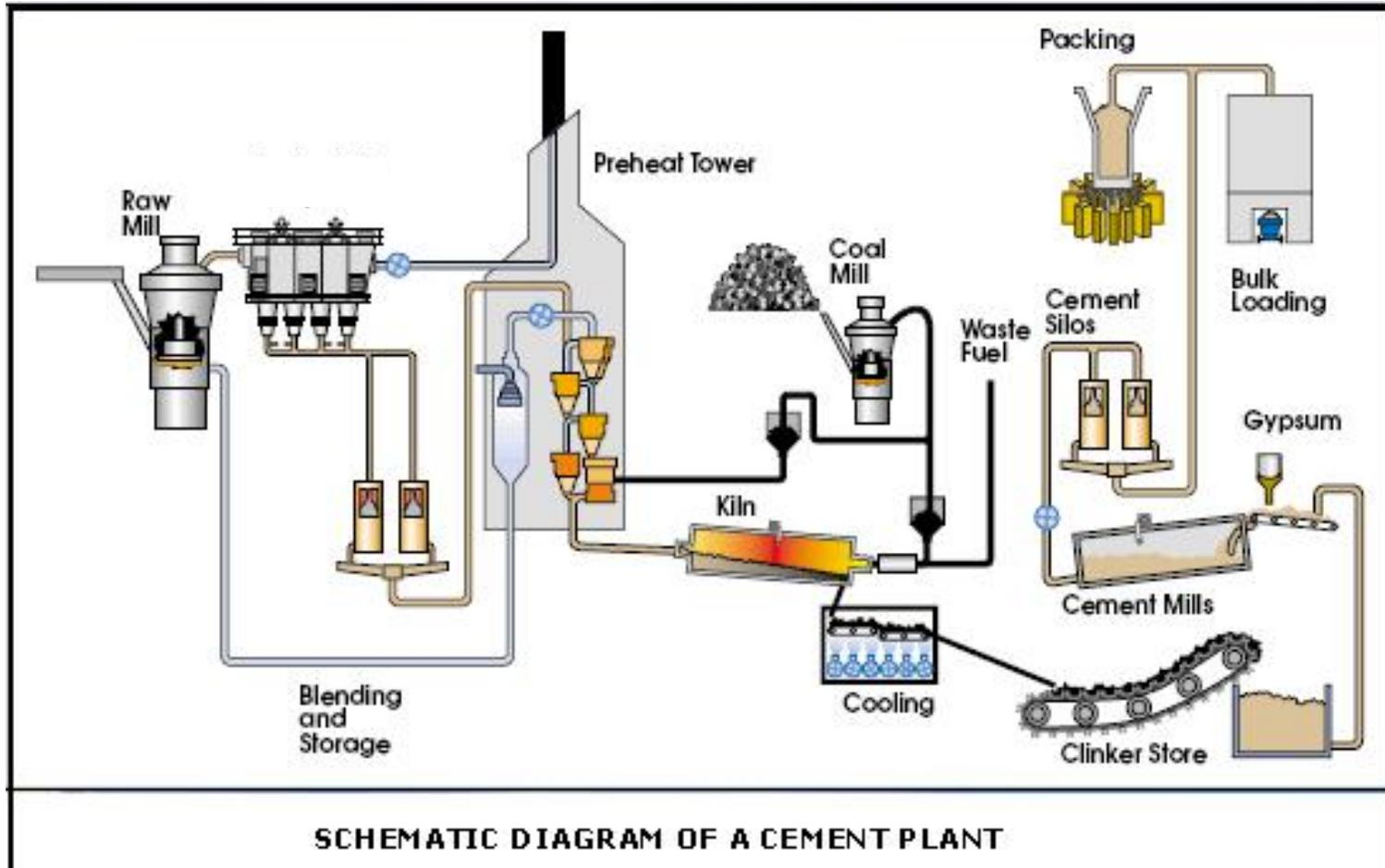
# Glossary of Terms

---

- **PM – Particulate Matter**
- **NO<sub>x</sub> – Oxides of Nitrogen**
- **O<sub>3</sub> – Ozone**
- **SO<sub>2</sub> – Sulfur Dioxide**
- **TACs – Toxic Air Contaminants**
- **NH<sub>3</sub> – Ammonia**
- **NESHAP – National Emissions Standard for Hazardous Air Pollutants**



# Manufacturing Process



---

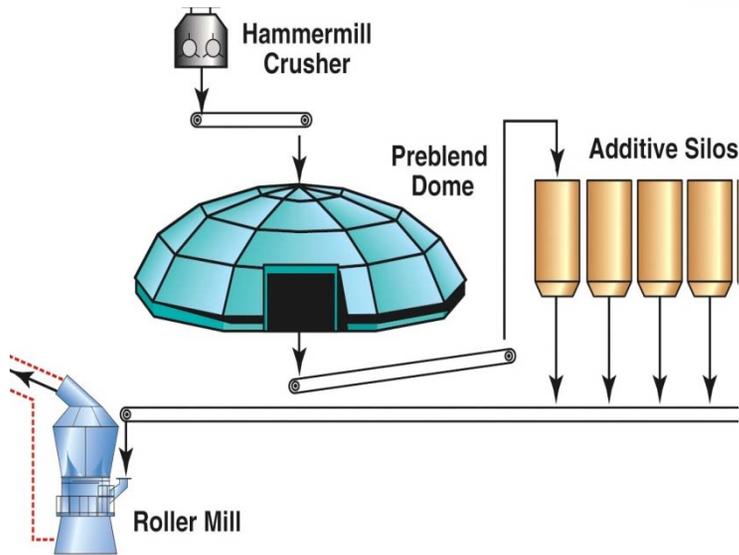
# Processing steps

## Raw Materials



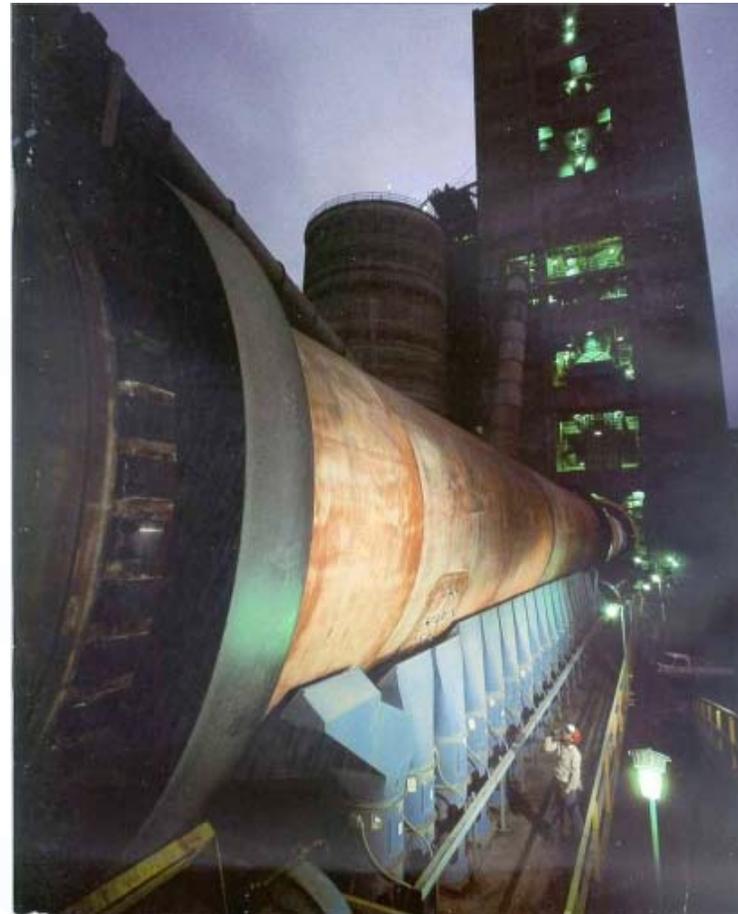
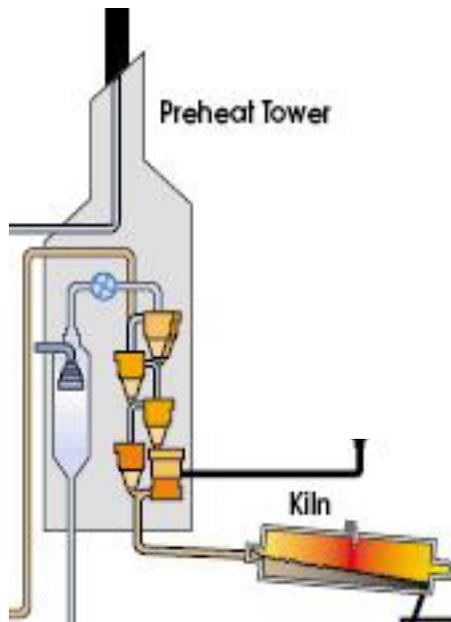
# Processing steps

## Blending and Homogenization



# Processing steps

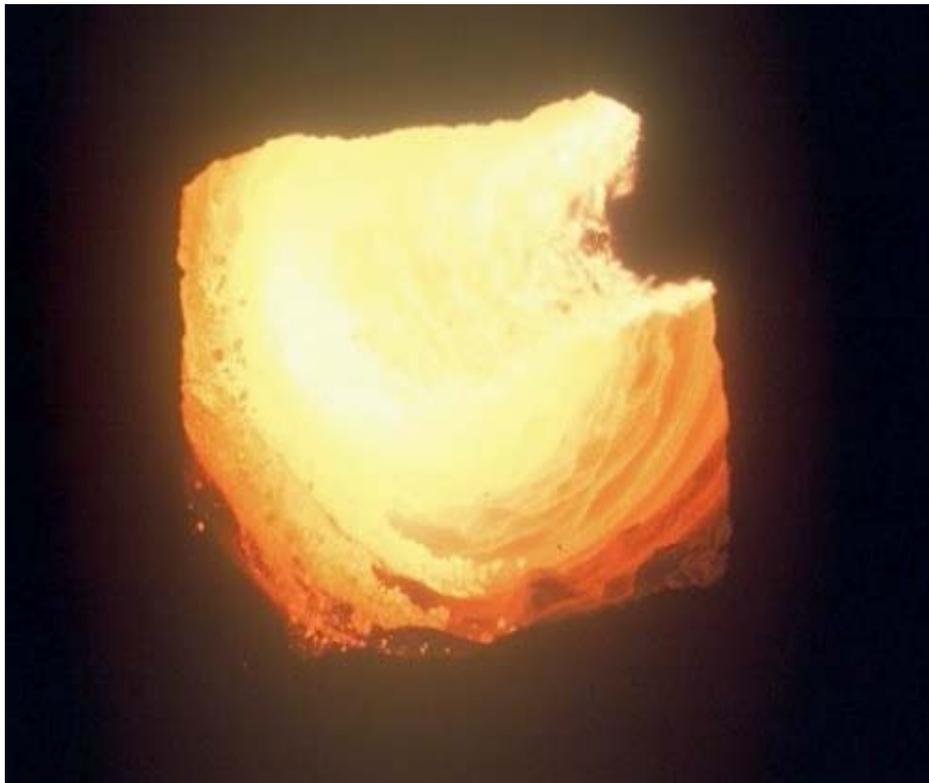
## Preheating/precalcining



# Processing steps

---

## Clinker production



# Processing steps

## Grinding / Finishing



# Applicable Regulations

- **Current District Regulations**
  - **Permitting and New Source Review (2-1, 2-2)**
  - **Toxics (2-5)**
  - **Individual Pollutants (6-1 for PM, 8-2 for VOCs, 9-1 for SO<sub>2</sub>, 11-1 for Lead)**
- **Federal Regulations**
  - **National Emissions Standard for Hazardous Air Pollutants (NESHAP)**
    - **Sets limits for toxic air contaminants**
    - **Applies to all Cement Kilns**
    - **Compliance dates beginning 2013**
  - **Title V Permit**
    - **Federal Program administered by the District**
    - **Two rounds of Public Comment and a Public Hearing completed**
    - **Submittal to EPA for 45-day review in January 2012**



# Regulatory Goals

---

- **Reduce emissions of NO<sub>x</sub>**
- **Reduce emissions of PM**
- **Ensure reduction in emissions of TACs**
- **Synergy with Federal Rules**



# Draft Proposal

- Emissions Standards**

Pollutant	Limit
NO <sub>x</sub>	2.3 pounds per ton of Clinker Produced
PM	0.04 pounds per ton of Clinker Produced
NH <sub>3</sub>	10 parts per million by volume over baseline emission levels
Dioxins and Furans	0.2 nanograms/dry standard cubic meter
Mercury	55 pounds per million tons of Clinker Produced
Total Organic HAPs	9 parts per million by volume
HCl	3 parts per million by volume



# Draft Proposal

---

- **Opacity Standard**
  - Visible emissions of 10% opacity for more than 3 minutes in any hour
  - Miscellaneous operations and emission points throughout the plant
- **Fugitive Dust Control Plan Provisions**
  - Plan elements including:
    - Potential sources
    - Mitigation measures
    - Training procedures
    - Operation and Maintenance Procedures
  - Plan submittal, review, public comment, and final approval requirements
- **Emission Point Requirement**
- **Emissions Monitoring, Recordkeeping, and Reporting Requirements**



# Potential Emissions Reductions

---

- **Emissions Reductions from Proposed Rule**
  - **NO<sub>x</sub> – 42% Reduction – 3,900 pounds/day**
  - **Mercury – 93% Reduction – 0.67 pounds/day**
  - **Hydrocarbons – 91% Reduction – 54 pounds/day**
  - **HCl – 70% Reduction – 125 pounds/day**
  - **PM – 10% Reduction – 3 pounds/day**



# Costs

- **TAC's - \$27 to \$32 million**
  - **Control Equipment**
    - Lime Slurry Injection
    - Activated Carbon Injection
  - **Continuous Emissions Monitoring**
- **NO<sub>x</sub> - \$2.3 million**
  - **Control Equipment**
    - Selective Non-Catalytic Reduction System
  - **Continuous Emissions Monitoring**
- **Emission Point - \$2.5 million**



# Rule Development Process To Date

---

- Control Technology Research
- Evaluation of Federal, State and Local Rules
- Consultation with EPA Staff
- Community Meetings
- Consultation with Industry Representatives
- Internal Workgroup Discussions



# Next Steps

---

- **Draft Rule and Workshop Report**
- **Public Comments Due January 3, 2012**
- **Socioeconomic and Environmental Analyses**
- **Final Proposal**
- **Public Hearing (First Quarter of 2012)**





# Contact Information

---

- **Robert Cave**  
**BAAQMD, 939 Ellis Street, CA 94109**  
[rcave@baaqmd.gov](mailto:rcave@baaqmd.gov)  
**(415) 749-5048**
- **Proposed Rule Documents:**  
<http://www.baaqmd.gov/Divisions/Planning-and-Research/Rule-Development/Rule-Workshops.aspx>
- **Lehigh's Title V Permit:**  
<http://www.baaqmd.gov/Divisions/Engineering/Title-V-Permit-Programs/Title-V-Permits/Santa-Clara/A0017/Lehigh-Southwest-Cement-Company.aspx>

