Portland Cement NESHAP Implementation Strategy Roadmap

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Presented by:

Trinity Consultants

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Overview

- Focus is for existing cement kilns.
  - Compliance date is September 9, 2013
- Provides a holistic view to complying with the MACT as finalized.
- Offers some strategic organization for the vast array of compliance aspects facing cement kiln operators.

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A Perspective

- Compliance projects often fail to gain priority until after time becomes of the essence.
- Every great challenge provides great opportunity.
- Complex projects require well-thought out and studied solutions to maximize the opportunity.
- Therefore, procrastination may lead to squandering the potential opportunities provided by the new MACT rule.

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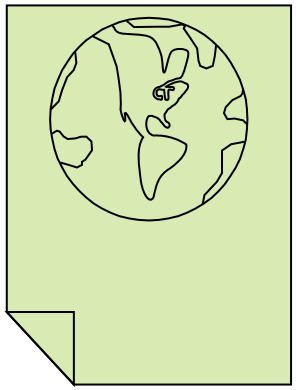
A Roadmap…



1. Determine Future PC MACT Limits
2. Determine Baseline Pollutant Emissions
3. Assess Non-NESHAP Interactions
4. Evaluate Compliance Alternatives
5. Develop Implementation Plan
6. Evaluate Permitting Requirements

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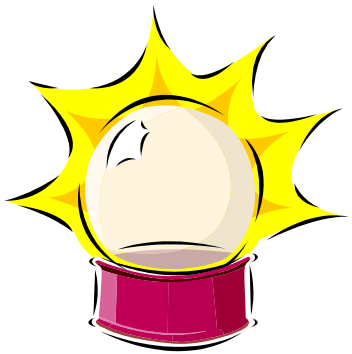
1. Determine Future PC MACT Emission Limits by Pollutant

- Determine applicable limits for major or area source
  - Normal operations
    - Take into account kiln stack configuration for PM
  - Startup/Shutdown
    - Previously exempt, now have specific limits



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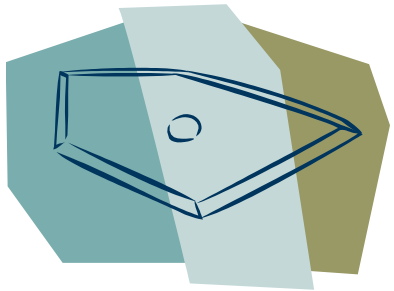
2. Determine Baseline Pollutant Emissions

- Assess available data versus limits
  - Test data
  - CEMS data
  - Fuel/Raw Material Analyses
- Identify data gaps and collect data
  - Any Startup/Shutdown (S/S) data?
  - Need OHAP data?
- Assess variability
  - Raw materials (quarry/fuels)
  - Operational (kiln under different scenarios)



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3. Non-NESHAP Considerations (1/2)

- Will any AFRs become a solid waste?
  - Could put you into CISWI MACT.
- Any projects that might trigger NSPS Subpart F on the horizon?
  - Could accelerate PM limit compliance date.
  - Could impose more restrictive NO_x/SO_2 limits.
- GHG Regulations?
  - Will MACT solutions compromise energy intensity or efficiency?

3. Non-NESHAP Considerations (2/2)
Potential Tasks

- Assess CISWI/DSW final rulemaking
  - Is CISWI compliance an opportunity or threat?
- Assess combing MACT with NSPS Subpart F compliance strategy
  - Planned Modifications / Reconstruction

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4. Evaluate Compliance Alternatives (1/2)

- Develop pollutant-by-pollutant approach to attaining compliance
  - Control equipment
  - Fuel / Raw Material Changes
  - Various during S/S v. normal
  - Consider pollutant/control interactions

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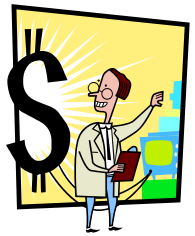
4. Evaluate Compliance Alternatives (2/2)



- Assess Monitoring Needs
  - Emission Monitors
  - Process Monitors (Clinker/Feed/Temp)
  - Alternative Monitoring Requests
- Monitors - Data Handling Considerations
  - Operating Day, 7-Day Average, etc.
- Need to assess clinker storage

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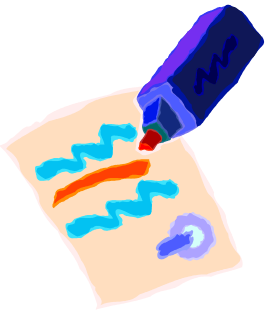
5. Develop Implementation Plan (1/2)

- A compliance plan is warranted to define:
  - Control approaches
  - Monitoring approaches
  - Risks/Opportunities
  - Capital & Operating cost implications
- Plan needs to be comprehensive and flexible
- Is this an opportunity to modernize or modify your kiln?



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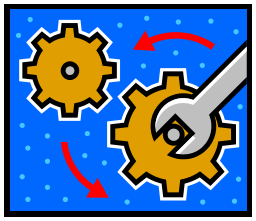
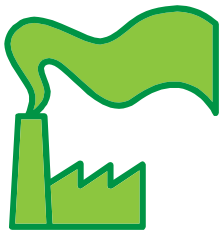
5. Develop Implementation Plan (2/2)
Potential Tasks



- Define Capital Needs for Controls
- Define Monitoring Equipment and Infrastructure
- Estimate Direct Cost Implications
- Determine Regulatory Strategies and Alternatives
- Develop Detailed Implementation Schedule
- Develop Market Assessment/Life Cycle Analyses
- Assess Future Capital Plans

6. Evaluate Permitting Requirements (1/2)

- New Source Review
  - Minor source / PSD Permitting
    - There is no Pollution Control Project exclusion from federal NSR regulations.
  - NAAQS modeling resulting from changes in stack parameters?
    - Impact of new SO_2/NO_x NAAQS on stack height and location
    - Impact of end of $PM_{2.5}$ surrogacy policy



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6. Evaluate Permitting Requirements (2/2)

- Title V
- Non-Air Requirements
  - Water appropriations
  - CKD/Scrubber solids disposal
  - Activated carbon disposal
- Other Infrastructure Needs/Permits

A Hypothetical Situation

- THC compliance for existing kiln.
  1. An existing major. Major status not relevant to THC (only HCl).
  2. All existing kilns will have THC (or OHAP) limit.
  3. Assume that 30-days of CEMS data from 2007 during normal operation is available.
     - Need to collect S/S data?
     - Should you collect OHAP data?
  4. THC is not affected by CISWI or NSPS (but control approaches might trigger NSPS).
  5. Data indicates that you need to achieve 20% reduction in THC
     - Evaluate ACI, selective raw materials, and RTO
     - Determine that ACI is desired option.
  6. Develop Project, Assess Costs, & Alternatives
  7. Obtain necessary air permits, assess ACI disposal options, etc.

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