Department of the Environment

COMAR 26.11.30 Control of Emissions from Portland Cement Manufacturing Plants

Air Quality Control Advisory Council
May 19, 2014
Topics Covered

• Background

• Purpose

• Revised requirements
  – Opacity
  – NO\textsubscript{x} Reasonably Available Control Technology (RACT)
• Complexity of regulations has increased
  – As requirements change, working to better organize reg
  – Major sources with complex requirements in many chapters reorganized into single chapter

• SIP requirements have no expiration but sometimes the programs under which the requirements were adopted change
  – No backsliding
Earlier draft proposal

- In 2011 and 2012, proposed incorporating earlier SIP requirements for cement manufacturing into a new chapter

- Draft regulation presented to AQCAC on January 31, 2011.
  - Approved by Council

- Proposed regulations withdrawn August 23, 2013 due to unresolved comments from the September 12, 2012 public hearing
  - EPA requested amendments to Cement Plant regulation re: single exception
  - New federal NESHAP regulations created competing requirements
    - Required Particulate Matter Continuous Emission Monitors (PM CEMs) in addition to existing requirements for Continuous Opacity Monitors (COMs)
Purpose

• Combine existing requirements in COMAR 26.11.01, .06, and .29 regarding nitrogen oxides (NO\textsubscript{x}), sulfur oxides (SO\textsubscript{x}), particulate matter (PM) and opacity that apply to Portland cement plants into one chapter

• Replace existing Continuous Opacity Monitoring (COM) requirements
  – Demonstrate 2013 NESHAP PM Continuous Process Monitoring System (CPMS) is equivalent to SIP opacity requirements

• Revise NO\textsubscript{x} Reasonably Available Control Technology (RACT) requirements
  – Establish new NO\textsubscript{x} Reasonably Available Control Technology (RACT) standards based upon Ozone Transport Commission (OTC) Cement Plant Technical Support Document (TSD)
• COMAR 26.11.01.10 and 26.11.06.02 contain opacity limits and monitoring requirements for cement kilns

• COMAR 26.11.06.03 contains specific particulate matter requirements for confined sources

• COMAR 26.11.06.05 establishes a concentration standard for $SO_x$ depending on the location of the plant and the date the plant was constructed

• COMAR 26.11.09.08 and 26.11.29 contain $NO_x$ emission limits
• EPA defines RACT as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility
  – The Clean Air Act requires the State to establish RACT for major stationary sources in ozone nonattainment areas

• Each time EPA revises the ozone standard, the state must re-evaluate RACT in light of compliance with the new standard
  – Revise
  – Re-certify
• Revisions to the RACT SIP for the 2008 0.075 ppm ozone standard are due in 2014
  – RACT re-certifications
  – Establish new RACT requirements
    • Commitment
    • Regulation

• EPA preliminary guidance sets May 2017 as the deadline for implementation of new RACT requirements

• Draft regulation proposes new RACT limits take effect April 1, 2017
• Repeal NO\textsubscript{x} RACT requirements in COMAR 26.11.09.08H established prior to 1990 for Portland cement manufacturing plants
  – Current NO\textsubscript{x} RACT rates in COMAR 26.11.29.03 are more stringent

• Establish new NO\textsubscript{x} RACT emission standards based upon recommended control measures for cement kilns from the 2007 OTC Technical Support Document on Identification and Evaluation of Candidate Control Measures

<table>
<thead>
<tr>
<th>Kiln Type</th>
<th>Existing RACT</th>
<th>Proposed RACT</th>
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<tbody>
<tr>
<td>Long-dry</td>
<td>5.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Pre-calciner</td>
<td>2.8</td>
<td>2.4</td>
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Holcim Consent Order

- July 11, 2013 – EPA announced Clean Air Act settlement with Holcim cement as a result of violations of the Act
  - Holcim will invest ~ $20 million to upgrade plant

- Holcim installing a pre-heater/pre-calciner on kiln
  - Must be in operation by September 6, 2016
  - Must meet a year round NOx limit of 1.8 lbs NO_x/ton of clinker on a 30-day rolling average

- Holcim will be required to operate the new kiln well below the proposed NO_x RACT limit
Particulate Matter Requirements

• Particulate matter emission limits remain the same
  – Compliance measured through stack tests

• Opacity standards remain the same
  – Compliance measured through continuous monitoring (COMs), Method 9 and Method 22

• Recent revisions for cement manufacturing under NESHAP offers alternatives to COMs for tracking particulate emissions
NESHAP Procedure

- NESHAP procedure uses stack test data to calibrate a PM CEMs monitor

- PM CEMs monitor is then used as a Continuous Parametric Monitoring System (CPMS) for operation of particulate matter controls at the plant
  - Compliance measured against maintenance of parameters within specified range
• MD cement kilns intend to utilize this new procedure

• Propose repeal of existing Continuous Opacity Monitoring (COM) requirements

• Continue to demonstrate compliance with opacity standards using Method 9 and Method 22

• Demonstrate equivalency of NESHAP method to current SIP method to EPA
Equivalency Determination

• Revising or eliminating SIP requirements is difficult
  – Demonstrate the revision provides equivalent or more stringent reductions called a 110 (I) demonstration

• Adopting more stringent limits or showing a control measure gets the same or more reductions is fairly straightforward

• Other cases, such as changing how a measurement is made, are more difficult and less straightforward
  – Modifying opacity requirements
  – Replacing COMs with PM CPMS
• 110 (l) demonstrations are easier to make for an attainment area

• Technically, areas of Maryland are still nonattainment for the annual fine particulate matter (PM$_{2.5}$) standard, but by 2009 all areas of Maryland complied with the PM$_{2.5}$ NAAQS
  – Annual: 15 µg/m$^3$

• MDE submitted redesignation requests and maintenance plans for each of these areas to EPA

• Additionally, in 2012, EPA revised the annual PM$_{2.5}$ standard to a more stringent level
  – Annual: 12 µg/m$^3$

• All of Maryland complies with the revised PM$_{2.5}$ NAAQS and has requested a designation of attainment for the 2012 PM$_{2.5}$ NAAQS

• Once the redesignation request is approved, the long term maintenance plan provides more assurance of extended compliance with the standard and substitutions are easier to approve
Continuous Emission Monitoring

- Cement plants are required to demonstrate compliance with NO\textsubscript{x} emission requirements using continuous emission monitoring (CEM) data as outlined in COMAR 26.11.01.11.
Maryland Department of the Environment

Air & Radiation Management Administration

Regulation Development Division