

# Title 26 DEPARTMENT OF THE ENVIRONMENT

## Subtitle 11 AIR QUALITY

### Chapter 01 General Administrative Provisions

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103, Annotated Code of Maryland

#### **.10 Continuous Opacity Monitoring Requirements.**

A. Applicability and Exceptions.

(1) – (4) (text unchanged)

(5) *The owner or operator of a cement manufacturing installation may discontinue use of a COM when a PM CPMS is installed and operated in accordance with the requirements of COMAR 26.11.30.*

B. – E. (text unchanged)

F. Fuel burning equipment subject to the COM requirements in COMAR 26.11.09.05 *and cement kilns subject to the COM requirements in COMAR 26.11.30* are subject to the COM requirements contained in COMAR 26.11.31.

# Title 26 DEPARTMENT OF THE ENVIRONMENT

## Subtitle 11 AIR QUALITY

### Chapter 09 Control of Fuel-Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103, Annotated Code of Maryland

#### **.08 Control of NO<sub>x</sub> Emissions for Major Stationary Sources.**

A.—G. (text unchanged)

H. Requirements for [Cement Manufacturing Facilities,] Municipal Waste Combustors, and Hospital, Medical, and Infectious Waste Incinerators.

(1) A person who owns or operates a [cement manufacturing facility or a] municipal waste combustor shall install, operate, and maintain a CEM for NO<sub>x</sub> emissions.

[(2) NO<sub>x</sub> emissions from cement manufacturing kilns may not exceed the following total hourly NO<sub>x</sub> emissions as determined on a 30-day rolling average of the daily average:

(a) 1,000 pounds for a facility with a total kiln capacity of 600,000 tons per year or less; and

(b) 1,800 pounds for a facility with a total kiln capacity greater than 600,000 tons per year.]

[(3)] (2) NO<sub>x</sub> emissions from municipal waste combustors may not exceed the NO<sub>x</sub> emissions standards in *COMAR 26.11.08.07 and COMAR 26.11.08.08* [(205 ppm 24-hour average)] or applicable Prevention of Significant Deterioration limits, whichever is more restrictive.

[(4)] (3) NO<sub>x</sub> emissions from hospital, medical, and infectious waste incinerators as defined in *COMAR 26.11.08.01B(18)* may not exceed the NO<sub>x</sub> emission standards in *COMAR 26.11.08.08-1A(2)* (250 ppm 24-hour average) as applicable.

I. Requirements for Glass Melting Furnaces [and Internal Combustion Engines at Natural Gas Pipeline Stations].

(1)—(2) (text unchanged)

[(3)] A person who owns or operates an internal combustion engine at a natural gas pipeline station with a capacity factor over 15 percent shall perform either parametric optimization or engine rebuild to meet the following emission standards:

(a) Facilities with five or less engines shall meet a combined maximum hourly emission rate of 300 pounds per hour; and

(b) Facilities with more than five engines shall meet a combined maximum hourly emissions rate of 566 pounds per hour.

(4) Records demonstrating performance of parametric optimization shall be maintained on site for at least 2 years and made available to the Department upon request.]

J.—K. (text unchanged)

# Title 26 DEPARTMENT OF THE ENVIRONMENT

## Subtitle 11 AIR QUALITY

### Chapter 30 Control of Portland Cement Manufacturing Plants

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103, Annotated Code of Maryland

#### ALL NEW MATTER

**.01 Scope.** *This chapter contains all of the general requirements that apply to Portland cement manufacturing plants. New or modified cement plants may be subject to more restrictive requirements that are included in a permit issued by the Department. Portland cement manufacturing plants subject to this chapter may also be subject to federal New Source Performance Standards under 40CFR Part 60 Subpart F and National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry under 40CFR Part 63 Subpart LLL.*

**.02 Applicability.**

A. *The requirements of this chapter apply to cement kilns and other installations located at Portland cement manufacturing plants.*

B. *Any source which is subject to the provisions of this chapter is also subject to the provisions of any other chapter. However, when this chapter establishes an emission standard for a specific installation which differs from the general emission standards in COMAR 26.11.06.01--09, this chapter takes precedence.*

**.03 Definitions.**

A. *Definitions. In this chapter, the following terms have the meanings indicated.*

B. *Terms defined.*

(1) *"Cement kiln" means an installation, including any associated pre-heater or pre-calciner devices, that produces clinker by heating limestone and other materials to produce Portland cement.*

(2) *"Cement manufacturing installation" means process equipment used for subsequent production of Portland cement.*

(3) *"Clinker cooler" means an installation into which clinker product leaving the kiln is placed to be cooled by air supplied by a forced air draft or natural draft supply system.*

(4) *"Long dry kiln" means a cement kiln that does not have a pre-calciner and in which dry starting raw materials are fed into the kiln.*

(5) *"PM continuous parametric monitoring system" (CPMS) means a continuous emission monitoring system used to establish a parameter range for the purposes of demonstrating compliance.*

(6) *"Pre-calciner kiln" means a cement kiln that contains a pre-calciner at the bottom of the pre-heater tower before the materials enter the kiln.*

(7) *"30-day rolling average" means the arithmetic average of all valid hourly NOx emission rates of the previous 720 valid hours on a rolling basis.*

(8) *"30 process operating day" means:*

(a) *The first day after the compliance date following completion of the field testing and data collection that demonstrates that the CPMS or CEMS has satisfied the relevant CPMS performance evaluation or CEMS performance specification acceptance criteria.*

(b) *For purposes of this chapter, the performance test period is complete at the end of the 30th consecutive operating day.*

**.04 Particulate Matter.**

A. *The owner or operator of a cement manufacturing installation may not cause or permit the discharge of emissions of particulate matter to exceed the limits in §B of this regulation:*

B. *Emission Limits.*

(1) *Areas I, II, V, and VI. In Areas I, II, V, and VI, a person may not cause or permit particulate matter to be discharged from any installation in excess of 0.05 grains per standard cubic foot dry.*

(2) *Areas III and IV. In Areas III and IV, a person may not cause or permit particulate matter to be discharged from any installation in excess of 0.03 grains per standard cubic foot dry.*

(3) *Compliance with the particulate matter standards of §.04B(1) and (2) shall be demonstrated by a 3-run stack test using Method 5 or Method 5I of 40 CFR part 60.*

C. *Particulate matter monitoring requirements for cement kilns and clinker coolers. On or after September 1, 2016, the owner or operator of a cement kiln or clinker cooler at a Portland cement manufacturing plant shall:*

(1) *Use a PM continuous parametric monitoring system (CPMS) to establish a site-specific operating parameter limit corresponding to the results of the performance test as required in §.04B(3) demonstrating compliance with the PM limits in §.04B(1) and (2);*

(2) *Conduct the performance test as required in §.04B(3) using Method 5 or Method 5I of 40 CFR part 60;*

(3) *Use the PM CPMS to demonstrate continuous compliance with the site-specific operating parameter limit established in §.04C(1);*

(4) Repeat the performance test as required in §.04B(3) annually and reassess and adjust the site-specific operating parameter limit of §.04C(1) in accordance with the results of the performance test using the procedures in 40 CFR 63 - § 63.1349(b)(1) (i) through (ix); and

(5) For any exceedance of the established operating parameter limit of §.04C(1) on a 30 process operating day basis, the operator of a Portland cement manufacturing plant shall follow the procedures in 40 CFR 63 - § 63.1350(b)(iii) and (iv).

#### **.05 Visible Emission Standards.**

A. The owner or operator of a cement manufacturing installation may not cause or permit the discharge of emissions which exceed the visibility standards in §B of this regulation:

##### **B. Visibility Standards.**

(1) In Areas I, II, V, and VI a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is greater than 20 percent opacity.

(2) In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers.

(3) Compliance with the visibility standards of §.05B(1) and (2) shall be demonstrated by a visible emission observation using Method 9 of 40 CFR part 60.

C. Visible Emission monitoring requirements for cement kilns. The owner or operator of a cement kiln at a Portland cement manufacturing plant shall either:

(1) Use a COM in accordance with the requirements of COMAR 26.11.01.10; or

(2) Use a PM continuous parametric monitoring system (CPMS) to establish a site-specific operating parameter limit for continuous visible emission compliance determinations in accordance with §.04C(1) —(5) .

D. Visible Emission monitoring requirements for clinker coolers. On or after September 1, 2016, the owner or operator of a clinker cooler at a Portland cement manufacturing plant shall either:

(1) Use a COM in accordance with the requirements of COMAR 26.11.01.10; or

(2) Use a PM continuous parametric monitoring system (CPMS) to establish a site-specific operating parameter limit for continuous visible emission compliance determinations in accordance with §.04C(1) —(5) .

#### **.06 Sulfur Compounds.**

##### **A. Sulfur Dioxide (SO<sub>2</sub>):**

(1) Areas I, II, V, and VI. In Areas I, II, V, and VI, an owner or operator of a cement manufacturing installation may not cause emissions into the atmosphere with an SO<sub>2</sub> concentration greater than 2,000 ppm for sources constructed before January 17, 1972 or 500 ppm for sources constructed on or after January 17, 1972.

(2) Areas III and IV. In Areas III and IV, an owner or operator of a cement manufacturing installation may not cause emissions into the atmosphere with an SO<sub>2</sub> concentration greater than 2,000 ppm for sources constructed before February 21, 1971 or 500 ppm for sources constructed on or after February 21, 1971.

##### **B. Sulfuric Acid and Sulfur Trioxide.**

(1) Areas I, II, V, and VI. In Areas I, II, V, and VI, an owner or operator of a cement manufacturing installation may not cause emissions of sulfuric acid, sulfur trioxide, or any combination of them, in excess of 70 milligrams per cubic meter reported as sulfuric acid, for any source constructed before January 17, 1972 or 35 milligrams per cubic meter reported as sulfuric acid, for any source constructed on or after January 17, 1972.

(2) Areas III and IV. In Areas III and IV, an owner or operator of a cement manufacturing installation may not cause emissions of sulfuric acid, sulfur trioxide, or any combination of them, in excess of 70 milligrams per cubic meter reported as sulfuric acid for any source constructed before February 21, 1971 or 35 milligrams per cubic meter reported as sulfuric acid for any source constructed on or after February 21, 1971.

C. All calculations of emissions for §§A and B of this regulation shall be adjusted to standard conditions and 7 percent oxygen.

#### **.07 Nitrogen Oxides (NO<sub>x</sub>).**

A. A person who owns or operates a cement kiln at a Portland cement manufacturing plant shall meet the applicable NO<sub>x</sub> emission standards:

(1) For long dry kilns, maximum emissions of 5.1 pounds of NO<sub>x</sub> per ton of clinker produced; and

(2) For pre-calciner kilns, maximum emissions of 2.8 pounds of NO<sub>x</sub> per ton of clinker produced.

B. On and after April 1, 2017, the requirements in §A of this regulation no longer apply and cement kilns shall meet the applicable NO<sub>x</sub> emission standards in §C of this regulation.

C. On and after April 1, 2017 a person who owns or operates a cement kiln at a Portland cement manufacturing plant shall meet the applicable NO<sub>x</sub> emission standards:

(1) For long dry kilns, maximum emissions of 3.4 pounds of NO<sub>x</sub> per ton of clinker produced; and

(2) For pre-calciner kilns, maximum emissions of 2.4 pounds of NO<sub>x</sub> per ton of clinker produced.

D. Compliance with the emission standards in §§A and C of this regulation shall be demonstrated as a 30-day rolling average.

#### **.08 NO<sub>x</sub> Continuous Emission Monitoring Requirements.**

A. The owner or operator of a Portland cement manufacturing plant shall:

- (1) Continuously monitor NOx emissions with a continuous emissions monitor (CEM) system in accordance with COMAR 26.11.01.11B(1) and (4) and C;
- (2) Collect NOx emissions data that was obtained pursuant to §A(1) of this regulation; and
- (3) Submit emissions data collected pursuant to §A(2) of this regulation to the Department as specified under COMAR 26.11.01.11E(2).
- B. The NOx emissions data collected pursuant to §A(2) of this regulation shall be used to demonstrate compliance with the applicable NOx emission rate in Regulation .07 of this chapter.

**END ALL NEW MATTER**



# ***Facts About...***

## **COMAR 26.11.30 Control of Emissions from Portland Cement Manufacturing Plants**

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12/02/14

### **Purpose of New Chapter**

The primary purpose of this action is to:

1. Combine all of the existing requirements in COMAR 26.11.01, .06, and .29 regarding NO<sub>x</sub>, SO<sub>x</sub> and particulate matter that apply to Portland cement manufacturing plants into one chapter;
2. Repeal NO<sub>x</sub> RACT requirements in COMAR 26.11.09.08 which apply to Portland cement manufacturing plants and establish new NO<sub>x</sub> RACT emission standards based upon recommended control measures for cement kilns from the 2007 Ozone Transport Commission (OTC) Technical Support Document on Identification and Evaluation of Candidate Control Measures; and
3. Establish alternative Visible Emission monitoring requirements for cement kilns and new requirements for clinker coolers at Portland cement manufacturing plants. Continuous Opacity Monitoring (COM) requirements for Portland cement plants are established under COMAR 26.11.01.10. New particulate and monitoring procedures as specified in EPA's 2013 National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants replace the need for COMs and affected sources plan to install new monitoring equipment as required by NESHAP. Affected sources have the option to either operate COMs or PM CPMS for visible emission monitoring. This action also requires that cement kilns subject to COM requirements are subject to the Quality Assurance Requirements for COMs in COMAR 26.11.31.

### **Background**

Although Portland cement plants burn fuel in the cement kiln, the kilns are not considered fuel burning equipment as defined in COMAR 26.11.01 and are therefore subject to different NO<sub>x</sub> and SO<sub>x</sub> emission standards. The existing COMAR 26.11.06.05 establishes a concentration standard for SO<sub>x</sub> depending on the location of the plant and the date the plant was constructed. The existing COMAR 26.11.29 contains NO<sub>x</sub> emission standards and monitoring requirements for Portland cement plants. These requirements for SO<sub>x</sub> and NO<sub>x</sub> are being moved into this new chapter.

When EPA revised the ozone standard in 2008 the change triggered a requirement to recertify RACT requirements as sufficient in light of a more stringent standard. The Department implemented an interim RACT standard for cement kilns in 2011 in response to implementation of the 0.08 ppm ozone standard. The Department has developed these RACT limits based on the 2008 ozone standard of 0.075 ppm.



Effective April 1, 2016, Portland cement plants will be subject to new NO<sub>x</sub> RACT emission standards based upon recommended controls measures for cement kilns from the 2007 Ozone Transport Commission (OTC) Technical Support Document on Identification and Evaluation of Candidate Control Measures. Cement kilns in Maryland are required to measure opacity using COMs as a surrogate standard for particulate matter. Cement kilns have operated COMs since the early 1990's and have not had difficulties complying with opacity standards.

New particulate monitoring procedures specified in EPA's 2013 National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants offer alternatives to COMs for tracking particulate and visible emissions. The Department proposes to provide alternative COM requirements under this action and affected sources will have the option to either operate COMs or PM CPMS for visible emission monitoring. The NESHAP procedure uses stack test data to calibrate a PM Continuous Parametric Monitoring System (CPMS) monitor. The PM CPMS monitor is then used as a parametric control for particulate and visible emission control operation at the plant. The NESHAP procedures have been integrated into the Visible Emissions and Particulate Matter requirements of the new Chapter. As part of the SIP submittal, the Department will demonstrate the equivalency of the two methods in limiting particulate emissions. The new chapter will also include specific particulate matter requirements that are already in place for confined sources in COMAR 26.11.06.03.

### **Sources Affected and Location**

There are two existing Portland cement manufacturing plants in Maryland. The larger plant has a pre-calciner kiln and is located in Carroll County. The smaller plant has a long-dry kiln and has applied for and received a Permit to Construct to modify the plant to a pre-calciner kiln. The smaller plant is located in Washington County.

### **Requirements**

The main purpose of this action is to:

1. Combine existing requirements for cement plants into a single chapter;
2. Repeal NO<sub>x</sub> RACT requirements in COMAR 26.11.09.08 which apply to Portland cement manufacturing plants and establish new NO<sub>x</sub> RACT emission standards based upon recommended control measures for cement kilns from the 2007 Ozone Transport Commission (OTC) Technical Support Document on Identification and Evaluation of Candidate Control Measures; and
3. Establish alternative Visible Emission monitoring requirements for cement kilns and new requirements for clinker coolers at Portland cement manufacturing plants. New particulate and monitoring procedures as specified in EPA's 2013 National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants provide an alternative to COMs and affected sources have already installed new monitoring equipment or plan to install new monitoring equipment as required by NESHAP. This action also requires that cement kilns subject to COM requirements are subject to the Quality Assurance Requirements for COMs in COMAR 26.11.31.

## **Expected Emissions Reductions**

On and after April 1, 2017, Portland cement plants will need to meet a NO<sub>x</sub> RACT rate based upon recommended control measures for cement kilns from the 2007 Ozone Transport Commission (OTC) Technical Support Document on Identification and Evaluation of Candidate Control Measures. The proposed NO<sub>x</sub> RACT emission rate for long dry kilns is a maximum emissions of 3.4 pounds of NO<sub>x</sub> per ton of clinker produced and for pre-calciner kilns, a maximum emissions of 2.4 pounds of NO<sub>x</sub> per ton of clinker produced.

As a result of this action, the Portland cement plant in Carroll County will reduce annual NO<sub>x</sub> emissions by 400 tons. NO<sub>x</sub> emissions at the Portland cement plant in Washington County will be reduced by 510 tons annually.

## **Economic Impact on Affected Sources, the Department, other State Agencies, Local Government, other Industries or Trade Groups, the Public**

Affected sources will need to increase the amount of ammonia reagent used in existing pollution control equipment to meet the proposed NO<sub>x</sub> RACT requirements.

The Portland cement plant in Carroll County is injecting 600-730 liters/hr of ammonia into their Selective non-catalytic reduction (SNCR) control technology to keep their NO<sub>x</sub> emissions below 2.5 lbs/ton of clinker to ensure compliance with the current 2.8 pounds of NO<sub>x</sub> per ton of clinker produced limit. Operating the SNCR costs approximately \$1 million per year. Using a linear equation, the plant would need to inject 760 liters/hr of ammonia to keep their NO<sub>x</sub> emissions enough below 2.4 lbs/ton clinker to ensure compliance. To meet the NO<sub>x</sub> emission rate of 2.4 lbs/ton clinker produced would cost an additional approximate \$143,000 per year, or a total annual SNCR operating cost of approximately \$1.143 million per year.

The Portland cement plant in Washington County is injecting 6-7 gallons/minute of ammonia into their SNCR to comply with the existing 5.1 lbs/ton of clinker NO<sub>x</sub> RACT limit. Using a linear equation, the plant would need to inject between 8.5 to 9.5 gallon/minute of ammonia to ensure their NO<sub>x</sub> emissions meet the proposed 3.4 lbs/ton clinker NO<sub>x</sub> emission limit for long-dry kilns. On July 11, 2013, EPA announced a Clean Air Act settlement with this plant as a result of violations of the Act. As a result, this plant will be investing approximately 90 million dollars to upgrade the plant. The plant will be upgrading to a pre-heater/pre-calciner kiln by September 6, 2016 and must meet a year round NO<sub>x</sub> limit of 1.8 lbs NO<sub>x</sub>/ton of clinker on a 30-day rolling average. This rate for the new kiln will be well below the proposed NO<sub>x</sub> RACT requirement.

Replacement of the COMs with PM CPMS as a parametric operations control shifts monitoring costs from one instrument to another.

There is no economic impact on the Department, other government agencies, trade groups or the public.

## **Economic Impact on Small Businesses**

There is no economic impact on small businesses.

## **Submission to EPA as Revision to Maryland's SIP (or 111(d) Plan, or Title V Program)**

This chapter will be submitted to the EPA as a revision to the approved SIP.

### **Is there an Equivalent Federal Standard to this Proposed Regulatory Action?**

There is an equivalent federal standard for the use of CEMS to demonstrate NO<sub>x</sub> compliance by cement plants. It is found in 40 CFR 60 Appendix F. New particulate and monitoring procedures as specified in EPA's 2013 National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants replace the need for COMs.