40 CFR 60 Subpart F—Standards of Performance for Portland Cement Plants

§ 60.60 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities in portland cement plants: Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems.

(b) Any facility under paragraph (a) of this section that commences construction or modification after August 17, 1971, is subject to the requirements of this subpart.

[42 FR 37936, July 25, 1977]

§ 60.61 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

(a) *Portland cement plant* means any facility manufacturing portland cement by either the wet or dry process.

(b) *Bypass* means any system that prevents all or a portion of the kiln or clinker cooler exhaust gases from entering the main control device and ducts the gases through a separate control device. This does not include emergency systems designed to duct exhaust gases directly to the atmosphere in the event of a malfunction of any control device controlling kiln or clinker cooler emissions.

(c) *Bypass stack* means the stack that vents exhaust gases to the atmosphere from the bypass control device.

(d) *Monovent* means an exhaust configuration of a building or emission control device (e.g., positive-pressure fabric filter) that extends the length of the structure and has a width very small in relation to its length (i.e., length to width ratio is typically greater than 5:1). The exhaust may be an open vent with or without a roof, louvered vents, or a combination of such features.

[36 FR 24877, Dec. 23, 1971, as amended at 39 FR 20793, June 13, 1974; 53 FR 50363, Dec. 14, 1988]

§ 60.62 Standards.

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, you may not discharge into the atmosphere from any kiln any gases which:

(1) Contain particulate matter (PM) in excess of:

(i) 0.30 pound per ton of feed (dry basis) to the kiln if construction, reconstruction, or modification of the kiln commences after August 17, 1971 but on or before June 16, 2008.

(ii) 0.01 pound per ton of clinker on a 30-operating day rolling average if construction, reconstruction, or modification of the kiln commenced after June 16, 2008. An operating day includes all valid data obtained in any daily 24-hour period during which the kiln operates and excludes any measurements made during the daily 24-hour period when the kiln was not operating.

(2) Exhibit greater than 20 percent opacity, except that this opacity limit does not apply to any kiln subject to a PM limit in paragraph (a)(1) of this section that uses a PM continuous emissions monitoring system (CEMS).

(3) Exceed 1.50 pounds of nitrogen oxide (NO_X) per ton of clinker on a 30-operating day rolling average if construction, reconstruction, or modification of the kiln commences after June 16, 2008, except this limit does not apply to any alkali bypass installed on the kiln. An operating day includes all valid data obtained in any daily 24-hour period during which the kiln operates and excludes any measurements made during the daily 24-hour period when the kiln was not operating.

(4) Exceed 0.4 pounds of sulfur dioxide (SO_2) per ton of clinker on a 30-operating day rolling average if construction, reconstruction, or modification commences after June 16, 2008, unless you are demonstrating a 90 percent SO_2emissions reduction measured across the SO_2control device. An operating day includes all valid data obtained in any daily 24-hour period during which the kiln operates, and excludes any measurements made during the daily 24-hour period when the kiln was not operating.

(b) On and after the date on which the performance test required to be conducted by §60.8 is completed, you may not discharge into the atmosphere from any clinker cooler any gases which:

(1) Contain PM in excess of:

(i) 0.10 pound per ton of feed (dry basis) to the kiln if construction, reconstruction, or modification of the clinker cooler commenced after August 17, 1971 but on or before June 16, 2008.

(ii) 0.01 pound per ton of clinker on a 30-operating day rolling average if construction, reconstruction, or modification of the clinker cooler commences after June 16, 2008. An operating day includes all valid data obtained in any daily 24-hour period during which the kiln operates, and excludes any measurements made during the daily 24-hour period when the kiln was not operating.

(2) Exhibit 10 percent opacity, or greater, except that this opacity limit does not apply to any clinker cooler subject to a PM limit in paragraph (b)(1) of this section that uses a PM CEMS.

(3) If the kiln and clinker cooler exhaust are combined for energy efficiency purposes and sent to a single control device, the appropriate kiln PM limit may be adjusted using the procedures in §63.1343(b) of this chapter.

(4) If the kiln has a separate alkali bypass stack, you must combine the PM emissions from the bypass stack with the PM emissions from the main kiln exhaust to determine total PM emissions.

(c) On and after the date on which the performance test required to be conducted by §60.8 is completed, you may not discharge into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit 10 percent opacity, or greater.

(d) If you have an affected source subject to this subpart with a different emission limit or requirement for the same pollutant under another regulation in title 40 of this chapter, you must comply with the most stringent emission limit or requirement and are not subject to the less stringent requirement.

[75 FR 55034, Sept. 9, 2010]

§ 60.63 Monitoring of operations.

(a) [Reserved]

(b) *Clinker production monitoring requirements.* For any kiln subject to an emissions limitation on PM, NO_X, or SO_2emissions (lb/ton of clinker), you must:

(1) Determine hourly clinker production by one of two methods:

(i) Install, calibrate, maintain, and operate a permanent weigh scale system to measure and record weight rates of the amount of clinker produced in tons of mass per hour. The system of measuring hourly clinker production must be maintained within ±5 percent accuracy.

(ii) Install, calibrate, maintain, and operate a permanent weigh scale system to measure and record weight rates of the amount of feed to the kiln in tons of mass per hour. The system of measuring feed must be maintained within ±5 percent accuracy. Calculate your hourly clinker production rate using a kiln specific feed-to-clinker ratio based on reconciled clinker production determined for accounting purposes and recorded feed rates. This ratio should be updated monthly. Note that if this ratio changes at clinker reconciliation, you must use the new ratio going forward, but you do not have to retroactively change clinker production rates previously estimated;

(2) Determine, record, and maintain a record of the accuracy of the system of measuring hourly clinker or feed production before initial use (for new sources) or within 30 days of the effective date of this rule (for existing sources). During each quarter of source operation, you must determine, record, and maintain a record of the ongoing accuracy of the system of measuring hourly clinker or feed production.

(3) Record the daily clinker production rates and kiln feed rates; and

(4) Develop an emissions monitoring plan in accordance with paragraphs (i)(1) through (i)(4) of this section.

(c) You must monitor PM emissions of a kiln or clinker cooler subject to a PM emissions limit in §60.62(a)(1)(ii) or (b)(1)(ii) according to the applicable requirements below:

(1) Install and operate a PM CEMS in accordance with Performance Specification 11 of appendix B and Procedure 2 of appendix F to part 60 of this chapter. The performance test method and the correlation test method for Performance Specification 11 shall be Method 5 or Method 5i of appendix A to this part. The owner or operator must also develop an emissions monitoring plan in accordance with paragraphs (i)(1) through (i)(4) of this section.

(2) Perform Relative Response Audits annually and Response Correlation Audits every 3 years.

(3) Collect readings at least every 15 minutes in order to calculate the 30-operating day rolling average to determine PM emissions. Calculate the 30-operating day rolling average using equation 1 of this section:

$$\text{30-operating day rolling average} = \frac{1}{n}\sum_{i=1}^{n} PM_{15\,\text{minutes}} \qquad \text{(Eq. 1)}$$

Where:

$PM_{15\ minutes}$= PM emissions from a 15-minute period.

n = number of 15 minute periods with valid data over the preceding 30 operating days.

(d) You must install, operate, calibrate, and maintain an instrument for continuously monitoring and recording the concentration by volume of NO_Xemissions into the atmosphere for any kiln subject to the NO_Xemissions limit in §60.62(a)(3). If the kiln has an alkali bypass, NO_Xemissions from the alkali bypass do not need to be monitored, and NO_Xemission monitoring of the kiln exhaust may be done upstream of any comingled alkali bypass gases.

(e) You must install, operate, calibrate, and maintain an instrument for continuously monitoring and recording the concentration by volume of SO_2emissions into the atmosphere for any kiln subject to the SO_2emissions limit in

§60.62(a)(4). If you are complying with the alternative 90 percent SO_2emissions reduction emission limit, you must also continuously monitor and record the concentration by volume of SO_2present at the wet scrubber inlet.

(f) You must install, operate, and maintain according to Performance Specification 2 (40 CFR part 60, appendix B) and the requirements in paragraphs (f)(1) through (5) of this section each CEMS required under paragraphs (c), (d) and (e) of this section.

(1) The span value of each NO_Xmonitor must be set at 125 percent of the maximum estimated hourly potential NO_Xemission concentration that translates to the applicable emission limit at full clinker production capacity.

(2) You must conduct performance evaluations of each NO_Xmonitor according to the requirements in §60.13(c) and Performance Specification 2 of Appendix B to part 60. The owner or operator must use Methods 7, 7A, 7C, 7D, or 7E of appendix A–4 to part 60 for conducting the relative accuracy evaluations. The method ASME PTC 19.10–1981, "Flue and Exhaust Gas Analyses," (incorporated by reference—see §60.17) is an acceptable alternative to EPA Method 7 or 7C of Appendix A–4 to part 60.

(3) The span value for the SO_2monitor must be set at 125 percent of the maximum estimated hourly potential SO_2emission concentration that translates to the applicable emission limit at full clinker production capacity.

(4) You must conduct performance evaluations of each SO_2monitor according to the requirements in §60.13(c) and Performance Specification 2 of Appendix B to part 60. You must use Methods 6, 6A, or 6C of Appendix A–4 to part 60 for conducting the relative accuracy evaluations. The method ASME PTC 19.10–1981, "Flue and Exhaust Gas Analyses," (incorporated by reference—see §60.17) is an acceptable alternative to EPA Method 6 or 6A of Appendix A–4 to part 60.

(5) You must comply with the quality assurance requirements in Procedure 1 of Appendix F to part 60 for each monitor, including quarterly accuracy determinations for monitors, and daily calibration drift tests.

(g) For each CEMS required under paragraphs (c) through (e) of this section:

(1) You must operate the monitoring system and collect data at all required intervals at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, calibration checks and required zero and span adjustments).

(2) You may not use data recorded during the monitoring system malfunctions, repairs associated with monitoring system malfunctions, or required monitoring system quality assurance or control activities in calculations used to report emissions or operating levels. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. An owner or operator must use all the data collected during all other periods in assessing the operation of the control device and associated control system.

(3) You must meet the requirements of §60.13(h) when determining the 1-hour averages of emissions data.

(h) You must install, operate, calibrate, and maintain instruments for continuously measuring and recording the pollutant per mass flow rate to the atmosphere for each kiln subject to the PM emissions limits in §60.62(a)(1)(i) and (ii), the NO_Xemissions limit in §60.62(a)(3), or the SO_2emissions limit in §60.62(a)(4) according to the requirements in paragraphs (h)(1) through (10) of this section.

(1) The owner or operator must install each sensor of the flow rate monitoring system in a location that provides representative measurement of the exhaust gas flow rate at the sampling location of the NO_X, SO_2or PM CEMS,

taking into account the manufacturer's recommendations. The flow rate sensor is that portion of the system that senses the volumetric flow rate and generates an output proportional to that flow rate.

(2) The flow rate monitoring system must be designed to measure the exhaust gas flow rate over a range that extends from a value of at least 20 percent less than the lowest expected exhaust flow rate to a value of at least 20 percent greater than the highest expected exhaust gas flow rate.

(3) The flow rate monitoring system must have a minimum accuracy of 5 percent of the flow rate.

(4) The flow rate monitoring system must be equipped with a data acquisition and recording system that is capable of recording values over the entire range specified in paragraph (h)(2) of this section.

(5) The signal conditioner, wiring, power supply, and data acquisition and recording system for the flow rate monitoring system must be compatible with the output signal of the flow rate sensors used in the monitoring system.

(6) The flow rate monitoring system must be designed to complete a minimum of one cycle of operation for each successive 15-minute period.

(7) The flow rate sensor must have provisions to determine the daily zero and upscale calibration drift (CD) (*see* sections 3.1 and 8.3 of Performance Specification 2 in Appendix B to part 60 of this chapter for a discussion of CD).

(i) Conduct the CD tests at two reference signal levels, zero (e.g., 0 to 20 percent of span) and upscale (e.g., 50 to 70 percent of span).

(ii) The absolute value of the difference between the flow monitor response and the reference signal must be equal to or less than 3 percent of the flow monitor span.

(8) You must perform an initial relative accuracy test of the flow rate monitoring system according to section 8.2 of Performance Specification 6 of Appendix B to part 60 of the chapter, with the exceptions noted in paragraphs (h)(8)(i) and (ii).

(i) The relative accuracy test is to evaluate the flow rate monitoring system alone rather than a continuous emission rate monitoring system.

(ii) The relative accuracy of the flow rate monitoring system shall be no greater than 10 percent of the mean value of the reference method data.

(9) You must verify the accuracy of the flow rate monitoring system at least once per year by repeating the relative accuracy test specified in paragraph (h)(8).

(10) You must operate the flow rate monitoring system and record data during all periods of operation of the affected facility including periods of startup, shutdown, and malfunction, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, calibration checks and required zero and span adjustments.

(i) *Development and Submittal (Upon Request) of Monitoring Plans.* If you demonstrate compliance with any applicable emission limit through performance stack testing or other emissions monitoring, you must develop a site-specific monitoring plan according to the requirements in paragraphs (i)(1) through (4) of this section. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under paragraph (h) of this section and §63.8(f). If you use a BLDS, you must also meet the requirements specified in paragraph §63.1350(m)(10) of this chapter.

(1) For each continuous monitoring system (CMS) required in this section, you must develop, and submit to the permitting authority for approval upon request, a site-specific monitoring plan that addresses paragraphs (i)(1)(i) through (iii) of this section. You must submit this site-specific monitoring plan, if requested, at least 60 days before the initial performance evaluation of your CMS.

(i) Installation of the CEMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device);

(ii) Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction systems; and

(iii) Performance evaluation procedures and acceptance criteria (e.g., calibrations).

(2) In your site-specific monitoring plan, you must also address paragraphs (i)(2)(i) through (iii) of this section.

(i) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (c)(3), and (c)(4)(ii);

(ii) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d); and

(iii) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §63.10(c), (e)(1), and (e)(2)(i).

(3) You must conduct a performance evaluation of each CMS in accordance with your site-specific monitoring plan.

(4) You must operate and maintain the CMS in continuous operation according to the site-specific monitoring plan.

[75 FR 55035, Sept. 9, 2010]

§ 60.64 Test methods and procedures

(a) In conducting the performance tests required in §60.8, you must use reference methods and procedures and the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

(b) Compliance with the PM standards in §60.62 is determined using the procedures specified in §60.63.

(1) The PM emission rate is calculated using Equation 2 of this section:

$$E = (C_s Q_s)/(PK) \qquad \text{(Eq. 2)}$$

Where:

E = emission rate of particulate matter, lb/ton of kiln feed;

C_s= concentration of particulate matter, gr/scf;

Q_s= volumetric flow rate of effluent gas, where $C_s$and $Q_s$are on the same basis (either wet or dry), dscf/hr;

P = total kiln feed (dry basis) rate, ton/hr. For kilns constructed, modified or reconstructed on or after June 16, 2008,

p = total kiln clinker production rate; and

K = conversion factor, 7000 gr/lb.

(2) Suitable methods shall be used to determine the kiln feed rate (P), except fuels.

(3) Method 9 and the procedures in §60.11 must be used to determine opacity.

(4) Any sources other than kilns (including associated alkali bypass and cooler) subject to the 10 percent opacity limit must follow the appropriate monitoring procedures in §63.1350(f), (m)(1) through (4), (m)(10) through (11), (o), and (p) of this chapter.

(5) If your kiln is not equipped with a PM CEMS meeting the requirements of Performance Specification 11 of Appendix B to part 60, and the kiln (including any associated alkali bypass and clinker cooler) was constructed, modified or reconstructed on or after June 16, 2008, you must conduct a performance test every 5 years following the initial performance test. Kilns (including any associated alkali bypass and clinker cooler) constructed, reconstructed, or modified after August 17, 1971 but on or before June 16, 2008 must conduct a performance test every 5 years if not equipped with a PM CEMS meeting the requirements of Performance Specification 11 of Appendix B to part 60.

(c) You must calculate and record the 30-operating day rolling emission rate of $NO_X$and SO_2as the total of all hourly emissions data for a cement kiln in the preceding 30 days, divided by the total tons of clinker produced in that kiln during the same 30-operating day period using Equation 3 of this section:

$$E = (C_s Q_s)/(PK) \qquad \text{Eq. 3}$$

Where:

E = emission rate of NO_Xor SO_2, lb/ton of clinker production;

C_s= concentration of NO_Xor SO_2, gr/scf;

Q_s= volumetric flow rate of effluent gas, where $C_s$and $Q_s$are on the same basis (either wet or dry), scf/hr;

P = total kiln clinker production rate, ton/hr; and

K = conversion factor, 7000 gr/lb.

(d) As of December 31, 2011 and within 60 days after the date of completing each performance evaluation or test, as defined in §63.2, conducted to demonstrate compliance with this subpart, you must submit the relative accuracy test audit data and performance test data, except opacity data, to EPA by successfully submitting the data electronically to EPA's Central Data Exchange (CDX) by using the Electronic Reporting Tool (ERT) (*see http://www.epa.gov/ttn/chief/ert/ert_tool.html/*).

[54 FR 6666, Feb. 14, 1989, as amended at 65 FR 61753, Oct. 17, 2000; 75 FR 55037, Sept. 9, 2010]

§ 60.65 Recordkeeping and reporting requirements.

(a) Each owner or operator required to install a continuous opacity monitoring system under §60.63(b) shall submit reports of excess emissions as defined in §60.63(d). The content of these reports must comply with the requirements in §60.7(c). Notwithstanding the provisions of §60.7(c), such reports shall be submitted semiannually.

(b) Each owner or operator monitoring visible emissions under §60.63(c) shall submit semiannual reports of observed excess emissions as defined in §60.63(d).

(c) Each owner or operator of facilities subject to the provisions of §60.63(c) shall submit semiannual reports of the malfunction information required to be recorded by §60.7(b). These reports shall include the frequency, duration, and cause of any incident resulting in deenergization of any device controlling kiln emissions or in the venting of emissions directly to the atmosphere.

(d) The requirements of this section remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Clean Air Act, 42 U.S.C. 7411, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected sources within the State will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the State.

[53 FR 50364, Dec. 14, 1988]

§ 60.66 Delegation of authority.

(a) This subpart can be implemented and enforced by the U.S. EPA or a delegated authority such as a State, local, or Tribal agency. You should contact your U.S. EPA Regional Office to find out if this subpart is delegated to a State, local, or Tribal agency within your State.

(b) In delegating implementation and enforcement authority to a State, local, or Tribal agency, the approval authorities contained paragraphs (b)(1) through (4) of this section are retained by the Administrator of the U.S EPA and are not transferred to the State, local, or Tribal agency.

(1) Approval of an alternative to any non-opacity emissions standard.

(2) Approval of a major change to test methods under §60.8(b). A “major change to test method” is defined in 40 CFR 63.90.

(3) Approval of a major change to monitoring under §60.13(i). A “major change to monitoring” is defined in 40 CFR 63.90.

(4) Approval of a major change to recordkeeping/reporting under §60.7(b) through (f). A “major change to recordkeeping/reporting” is defined in 40 CFR 63.90.

[75 FR 55037, Sept. 9, 2010]