

**REGULATION 9  
INORGANIC GASEOUS POLLUTANTS  
RULE 13  
NITROGEN OXIDES, PARTICULATE MATTER, AND TOXIC AIR  
CONTAMINANTS FROM PORTLAND CEMENT MANUFACTURING**

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**9-13-100 GENERAL**

**9-13-101 Description:** This rule limits the emissions of nitrogen oxides, particulate matter, and toxic air contaminants from the manufacture of Portland cement.

**9-13-200 DEFINITIONS**

**9-13-201 24-Hour Rolling Average:** The arithmetic mean of the emissions as prescribed in section 9-13-301 of the most recent 24 hours of operation of the kiln. Each hour initiates a new rolling average period.

**9-13-202 30-Operating Day Rolling Average:** The arithmetic mean of the emissions as prescribed in sections 9-13-301 of the most recent 30 operating days. Each calendar day initiates a new rolling average period.

**9-13-203 Clinker:** The product of feedstock sintered in a kiln which is then ground and mixed with additives to make cement.

**9-13-204 Clinker Cooler:** Equipment into which clinker leaving the kiln is placed to be cooled by air supplied by a forced draft or natural draft supply system.

**9-13-205 Dioxins and Furans (D/F):** Tetra-, penta-, hexa-, hepta-, and octa-chlorinated dibenzodioxins and furans.

**9-13-206 Kiln:** Any device including associated preheater and precalciner devices that produce clinker by heating limestone and other raw materials for subsequent production of Portland cement.

**9-13-207 Miscellaneous Operations:** Any activity performed at the facility that could generate emissions of fugitive dust. Examples of miscellaneous operations include: material conveyance and transporting, vehicular traffic, shoveling and sweeping, and material storage.

**9-13-208 Nitrogen Oxide Emissions:** The sum of nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>), collectively expressed as nitrogen dioxide.

**9-13-209 Operating Day:** A calendar day during which Portland cement is manufactured by 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 or was in startup or shutdown.

**9-13-210 Particulate Matter:** Any material that is emitted as liquid or solid particles or gaseous material which becomes liquid or solid particles at the testing temperatures specified in the referenced test method.

**9-13-211 Portland Cement Manufacturing Facility:** Any facility that produces Portland cement or associated products, as defined in the Standard Industrial Classification Manual as Industry Number 3241, Portland Cement Manufacturing.

- 9-13-212 Shutdown:** The period of time between when kiln raw material feed and fuel to the kiln begin to be decreased to reduce the kiln operating temperature until both feed and fuel are no longer fed into the kiln and it has ceased operation. A shutdown period shall not last more than 24 hours.
- 9-13-213 Startup:** The period of time between when fuel is first introduced into the kiln to heat it and when the kiln operating temperature reaches normal operating limits and raw material feed begins. A startup period shall not last longer than 36 hours.
- 9-13-214 TEQ:** The international method of expressing toxicity equivalents for dioxins and furans as defined in U.S. EPA, Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 Update, March 1989.
- 9-13-215 Total Hydrocarbon (THC):** For the purposes of this rule, total hydrocarbon emissions, measured as propane, that also serves as a surrogate for the emissions of organic HAP compounds.
- 9-13-216 Total Organic HAP:** For the purposes of this rule, the sum of the concentrations of compounds of formaldehyde, benzene, toluene, styrene, m-xylene, p-xylene, o-xylene, acetaldehyde, and naphthalene as measured in accordance with section 9-13-606.
- 9-13-300 STANDARDS**
- 9-13-301 Emission Limits:** Effective September 9, 2013, no person shall operate a Portland cement manufacturing facility unless the following emission limits are met:
- 301.1** Nitrogen oxide (NO<sub>x</sub>) emissions from the kiln shall not exceed 2.3 pounds per ton of clinker produced, as calculated on a 30-operating day rolling average;
  - 301.2** Particulate matter (PM) emissions from the kiln shall not exceed 0.04 pounds per ton of clinker produced, as calculated on a 30-operating day rolling average;
  - 301.3** PM emissions from the clinker cooler shall not exceed 0.04 pounds per ton of clinker produced, as calculated on a 30-operating day rolling average;
  - 301.4** Ammonia (NH<sub>3</sub>) emissions from the kiln shall not exceed baseline emission levels by more than 10 ppmv, dry at 7 percent oxygen, based on a 24-hour rolling average;
  - 301.5** Dioxins and Furans (D/F) emissions from the kiln shall not exceed 0.2 ng/dscm (TEQ) at 7 percent oxygen, based on a 24-hour rolling average;
  - 301.6** Mercury emissions from the kiln shall not exceed 55 pounds per million tons of clinker produced as calculated on a 30-operating day rolling average;
  - 301.7** Total Organic HAP emissions from the kiln shall not exceed 9 ppmv, dry at 7 percent oxygen, based on a 30-operating day rolling average;
  - 301.8** Hydrogen chloride (HCl) emissions from the kiln shall not exceed 3 ppmv, dry at 7 percent oxygen, based on a 30-operating day rolling average.
- 9-13-302 Opacity:** Effective September 9, 2013, no person shall operate a Portland cement manufacturing facility with emissions to atmosphere from any miscellaneous operation or emission point other than from the kiln or clinker cooler that are equal to or greater than ten percent opacity for more than three minutes aggregated in any one-hour period, determined in accordance with Section 9-13-609, or half as dark in shade as that designated as Number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.
- 9-13-303 Stack Requirements:** Effective September 9, 2013, no person shall operate a Portland cement manufacturing facility unless emissions from the kiln are monitored

as per Section 9-13-501 and enter the atmosphere from an emission point not less than 300 feet above grade.

**9-13-304 Compliance with District-Approved Plans:** Failure to implement and maintain any processes, procedures or measures contained in the Fugitive Dust Control Plan submitted and approved by the District is a violation of this Rule.

**9-13-400 ADMINISTRATIVE REQUIREMENTS**

**9-13-401 Initial and Annual Demonstration of Compliance:** Within 30 operating days of September 9, 2013, any person manufacturing Portland cement shall conduct an initial demonstration of compliance with section 9-13-301 by conducting a source test according to the methods referenced in Sections 9-11-601 through 608. An annual demonstration of compliance shall be conducted at least once each calendar year following the initial test, and not less than 6 months after the most recently conducted annual demonstration of compliance.

**9-13-402 Baseline Ammonia Emission Level Determination:** Within 90 operating days of rule adoption, any person manufacturing Portland cement shall begin monitoring ammonia emissions from the kiln for the purpose of establishing a baseline emission level for kiln operations prior to the installation and subsequent operation of NOx control equipment. Monitoring shall be conducted according to section 9-13-501, and determination of the baseline ammonia emission level shall be calculated as specified in regulation 9-13-610.

**9-13-403 Total Organic HAP Emissions Test:** Within 30 operating days of September 9, 2013, any person manufacturing Portland cement shall conduct a performance test to determine emissions of total organic HAP according to the methods referenced in Section 9-11-607. Each performance test must consist of three separate runs conducted for at least 1 hour. Concurrent with the performance test, THC emissions must be determined by operating the parametric monitor specified in Section 9-13-501.2. The duration of the performance test must be 3 hours and the average THC concentration during the 3-hour test must be calculated. A correlation between Total Organic HAP and THC concentrations shall be determined based on these results.

**9-13-404 Fugitive Dust Control Plan:** Any person that operates a Portland cement manufacturing facility shall submit and maintain an approved Fugitive Dust Control Plan (FDCP) that details the actions to be taken to minimize fugitive dust emissions and promote compliance with the opacity limits set forth in Section 9-13-302. The FDCP shall at a minimum include the following:

**404.1** A list of the facility's potential emission sources of fugitive dust;

**404.2** Mitigation measures, including equipment and procedures currently in use to reduce or prevent emissions of fugitive dust;

**404.3** Personnel Training Procedures; and

**404.4** Operation and Maintenance Procedures undertaken to prevent emissions of fugitive dust.

**9-13-405 Compliance Schedule for the Fugitive Dust Control Plan:** The owner or operator of any Portland cement manufacturing facility required to submit and maintain an approved FDCP pursuant to the requirements set forth in Section 9-13-404 shall comply with the following schedules:

**405.1 Submission of Proposed FDCP:** Submit FDCP for the affected facility to the District for approval no later than {three months after Rule adoption}. The FDCP shall be certified and signed by a Responsible Manager. Upon submission of the required plans, the APCO may require a consultation regarding the completeness and appropriateness of the plan to ensure that the requirements of Sections 9-13-302 are met.

**405.2 Modification of Permits / Authority to Construct:** Within 90 days following District approval of the required plan, an application for any permit modification necessary to implement the District-approved plan shall be submitted to the District for approval.

**9-13-406 Review and Approval of Fugitive Dust Control Plan:** The procedure for determining whether each FDCP meets the applicable requirements of this regulation is as follows:

**406.1 Completeness Determination:** Within 30 days of receipt of the FDCP, the APCO will deem the plan complete if the APCO determines that it includes the information required by Section 9-13-404. If the APCO determines that the proposed FDCP is not complete, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination and the required corrective action.

**406.2 Corrective Action:** Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the proposed FDCP within 30 days. If the APCO determines that the owner or operator failed to correct any deficiency identified in the notification, the APCO will disapprove the FDCP.

**406.3 Public Comment:** The initial complete FDCP (with exception of facility-designated confidential information) will be made available to the public for 30 days to consider any written comments received during this period prior to approving or disapproving the FDCP.

**406.4 Final Action:** Within 30 days of the close of the public comment period, the APCO will approve the FDCP if the APCO determines that the plan meets the requirements of Section 9-13-404, and shall provide written notification to the owner or operator. This period may be extended if necessary to comply with state or federal law. If the APCO determines that the FDCP does not meet the requirements of Section 9-13-404, the APCO will notify the owner or operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the owner or operator shall correct the identified deficiencies and resubmit the FDCP within 30 days. If the APCO determines that the owner or operator failed to correct any deficiency identified in the notification, the APCO will disapprove the FDCP. If the owner or operator submitted a complete FDCP in accordance with Section 9-13-404, and the APCO has not disapproved the FDCP under this section, the FDCP shall be considered an approved FDCP.

**9-13-407 Review and Modification of Fugitive Dust Control Plan:** If the APCO determines, based on either a recent history of exceedence of the opacity standard in 9-13-302 or on physical alterations or changes in throughput that requires modification of the Permit to Operate, that changes to the FDCP are appropriate to better promote compliance with 9-13-302, then the APCO shall provide the owner or operator with written Notice of FDCP Deficiency. To the extent practicable, the Notice of FDCP Deficiency shall describe the deficiencies in the current FDCP and the appropriate corrective action. Within 90 days of receipt of a Notice of FDCP Deficiency, the owner or operator shall submit to the APCO a revised FDCP responsive to the notice. Review of the revised FDCP shall follow the procedures set forth in 9-13-405, except that that no public comment period will be provided and the APCO shall take final action on the revised FDCP within 30 days of deeming the revised plan complete.

#### **9-13-500 MONITORING AND RECORDS**

**9-13-501 Emissions Monitoring:** Any person who operates a Portland cement manufacturing facility subject to Section 9-11-301 shall provide, properly install, maintain in good working order, and operate the following emission monitoring equipment:

**501.1 Continuous Emissions Monitoring:** A continuous emission monitoring system (CEMS) for each emission point from the kiln, to demonstrate compliance with the provisions of this rule by measuring nitrogen oxides (NO<sub>x</sub>), oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>). The CEMS must meet the requirements of the District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures. Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive fifteen (15) minute period.

**501.2 Parametric Monitoring:** Suitable instruments to monitor continuously for each emission point from the kiln, to demonstrate compliance with the provisions of this rule by measuring particulate matter (PM), ammonia (NH<sub>3</sub>), dioxins and furans (D/F), mercury (Hg), total hydrocarbon (THC), hydrochloric acid (HCl), and for each emission point from the clinker cooler, to demonstrate compliance with the provisions of the rule by measuring PM. The parametric monitors must meet the requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.

**9-13-502 Production Monitoring:** Any person who operates a Portland cement manufacturing facility subject to Section 9-11-301 shall determine hourly clinker production by one of the following two methods:

**502.1** Provide, properly install, maintain in good working order, and operate 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% accuracy, and the accuracy of the system shall be verified and recorded on a weekly basis. Hourly clinker production rates will be totaled every 24 hours to provide a daily production rate.

**502.2** Provide, properly install, maintain in good working order, and operate permanent weigh scale system to measure and record weight rates of the amount of feed into the kiln in tons of mass per hour. The system of measuring hourly feed into the kiln must be maintained within 5% accuracy, and the accuracy of the system shall be verified and recorded on a weekly basis. Calculate the hourly clinker production rate using feed to clinker ratio based on reconciled clinker production determined for accounting purposes and recorded feed rates. This ratio will be updated monthly. If the ratio is changed at monthly reconciliation, the new ratio will be used to determine clinker production rates going forward but will not change previously estimated production rates retroactively. Hourly clinker production rates will be totaled every 24 hours to provide a daily production rate.

**9-13-503 Records:** Any person subject to the requirements of this rule shall keep records of the following:

**503.1** The results of any source testing conducted to determine compliance with Section 9-13-301 as specified in Section 9-13-401.

**503.2** The continuous emission monitoring system (CEMS) measurements for NO<sub>x</sub>, and diluents O<sub>2</sub> or carbon dioxide in ppmv; and hourly (lb/hour) and daily (lb/day) NO<sub>x</sub>, Hg, and PM emissions from the Kiln.

**503.3** The parametric monitoring measurements for PM, NH<sub>3</sub>, D/F, Hg, HCl, and THC in ppmv; and hourly (lb/hour) and daily (lb/day) PM, NH<sub>3</sub>, D/F, Hg, HCl, and THC emissions from the Kiln.

**503.4** The parametric monitoring measurements for PM in ppmv; and hourly (lb/hour) and daily (lb/day) PM emissions from the clinker cooler.

**503.5** The clinker production rate in tons per day for each day of operation of the Kiln.

**503.6** The calculated NO<sub>x</sub>, PM, and Hg emission rates from the kiln in pounds per ton of clinker produced for each day of operation of the kiln.

**503.7** The calculated PM emission rate from the clinker cooler in pounds per ton of clinker produced for each day of operation of the kiln.

- 503.8** The daily average NH<sub>3</sub>, HCl, and THC concentration emitted in ppmv for each day of operation of the kiln.
- 503.9** The calculated Total Organic HAP concentration emitted in ppmv for each day of operation of the kiln.
- 503.10** The daily average D/F concentration emitted in ng/dscm (TEQ) for each day of operation of the kiln
- 503.11** The date, time, and duration of any startup, shutdown or malfunction in the operation of any unit, emissions control equipment or emission monitoring equipment.
- 503.12** The results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of all CEMS and parametric monitors required by this rule.

Such records shall be retained for a minimum of 24 months from date of entry and be made available to District staff upon request.

**9-13-504 Reporting Requirements:** A person subject to the requirements of Sections 9-13-301, shall meet the following reporting requirements:

- 505.1** Report to the APCO any violation of Section 9-13-301 in accordance with the requirements of Regulation 1-522 for continuous emission monitoring systems (CEMS), and Regulation 1-523 for parametric monitors.
- 505.2** Submit a written report for each calendar month to the APCO. The report shall be due on the 30th day following the end of the calendar month and shall include:
  - 2.1** A summary of the data obtained from the CEMS or equivalent parametric monitoring system; and
  - 2.2** The date, time, duration, and magnitude of emissions in excess of the appropriate standards; the nature and cause of the excess (if known); the corrective actions taken; and the preventive measure adopted.

#### **9-13-600 MANUAL OF PROCEDURES**

**9-13-601 Determination of Nitrogen Oxides:** Compliance with the emission limit of Section 9-13-301.1 shall be determined by the source tests specified in Section 9-11-401 using ST-13A (nitrogen oxides), ST-14 (oxygen), and ST-5 (carbon dioxide), and by the continuous emission monitors that have been installed pursuant to Section 501 and meet the requirements of Volume V of the District Manual of Procedures and the federal requirements specified in the most recent revision of the Code of Federal Regulations, Title 40 (40 CRF), Part 60 and Appendices.

**9-13-602 Determination of Particulate Matter:** Compliance with the limits set forth in Section 9-13-301.2, and 301.3 shall be determined by the source tests specified in Section 9-11-401 using United States Environmental Protection Agency (EPA), Method 5 – Determination of Particulate Matter from Stationary Sources and by the parametric monitors that have been installed pursuant to Section 501 and meet the requirements of EPA performance specification 11 for PM CEMS, and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.

**9-13-603 Determination of Ammonia:** Compliance with the ammonia emission limit of Section 9-13-301.4 shall be determined by the source tests specified in Section 9-11-401 using the methods set forth in District Manual of Procedures, Volume IV, ST-1B and EPA Method 350.3, and by the parametric monitors that have been installed pursuant to Section 501 and meet the requirements of EPA Performance Specification 12A for Mercury CEMS, and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.

**9-13-604 Determination of Dioxins and Furans:** Compliance with the D/F emission limit of Section 9-13-301.5 shall be determined by the source tests specified in Section 9-11-

401 using the methods set forth in EPA Method 23 and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.

- 9-13-605 Determination of Mercury:** Compliance with the mercury emission limit of Section 9-13-301.6 shall be determined by the source tests specified in Section 9-11-401 using the methods set forth in District Manual of Procedures, Volume IV, ST-10, and by the parametric monitors that have been installed pursuant to Section 501 and meet the requirements EPA Performance Specifications 12A, or 12b and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.
- 9-13-606 Determination of Total Hydrocarbon:** The THC parametric monitors that have been installed pursuant to Section 501.2 shall meet the requirements of EPA Specification 8A and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.
- 9-13-607 Determination of Total Organic HAP:** Compliance with the Total Organic HAP emission limits of Section 9-13-301.7 shall be determined by the source tests specified in Section 9-11-403 using the methods set forth in EPA method 320 or ASTM D6348-03 and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.
- 9-13-608 Determination of Hydrochloric Acid:** Compliance with the hydrochloric acid emission limit of Section 9-13-301.8 shall be determined by the source tests specified in Section 9-11-401 using the methods set forth in EPA Method 320, 321 and by the parametric monitors that have been installed pursuant to Section 501 and meet the requirements of EPA Performance Specification 15 and the federal requirements specified in the most recent revision to 40 CFR, Part 60 and Appendices.
- 9-13-609 Determination of Visible Emissions** Ringelmann standard shall be determined by Manual of Procedures-Volume 1 – Enforcement Procedures, Evaluation of Visible Emissions.
- 9-13-610 Baseline Ammonia Emission Level Calculation:** The following methodology shall be used to calculate baseline ammonia emissions.
- 610.1** The baseline period consists of the 12 months immediately preceding the initial operation of control equipment installed to comply with section 9-13-301.1. The owner or operator of the Portland cement manufacturing facility must have sufficient records of the kiln's operation to substantiate the emission rate during the baseline period.
- 610.2** Baseline emission level, expressed in ppmv, dry at 7 percent oxygen, is the median of the 12 monthly average values of the ammonia (NH<sub>3</sub>) emissions from the kiln.