

45CSR40

TITLE 45

LEGISLATIVE RULE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

AIR QUALITY

SERIES 40

CONTROL OF OZONE SEASON NITROGEN OXIDES EMISSIONS

§45-40-1. General.

1.1. Scope. -- This rule establishes:

I.l.a. Ozone season NO_x emission limitation, monitoring, recordkeeping, reporting, excess emissions, and NO_x budget demonstration requirements for large industrial boilers and combustion turbines

that have a maximum design heat input greater than 250 rnrnBTU/hr, in accordance with 40 CFR §51.121;

I.l.b Ozone season NO_x reduction, compliance plan, monitoring, recordkeeping and reporting requirements affected stationary internal combustion engines; and

I.l.c. Ozone season NO_x control standards, NO_x compliance plan, reporting, monitoring and recordkeeping requirements for applicable cement manufacturing kilns.

1.2. Authority.-- W.Va. Code §22-5-4.

1.3. Filing Date.-- June 16, 2016.

1.4. Effective Date.-- July 1, 2016.

1.5. Former Rules. -- This legislative rule amends 45CSR40 - "Control of Ozone Season Nitrogen Oxide Emissions" which was filed April 14, 2008, and which became effective May 1, 2008.

§45-40-2. Definitions.

2.1. "Administrator" means the Administrator of the United States Environmental Protection Agency (U.S. EPA) or the Administrator's duly authorized representative.

2.2. "Boiler" means an enclosed fossil or other fuel-fired combustion device used to produce heat and to transfer heat to recirculating water, steam, or other medium.

2.3. "Clean Air Act" or "CAA" means the Clean Air Act, 42 U.S.C. 7401, et seq.

2.4. "Clinker" means the product of a Portland cement kiln from which finished cement is manufactured by milling and grinding.

2.5. "Combustion turbine" means:

2.5.a. An enclosed device comprising a compressor, a combustor, and a turbine and in which the flue gas resulting from the combustion of fuel in the combustor passes through the turbine, rotating the turbine; and

2.5.b. If the enclosed device under subdivision 2.5.a is combined cycle, any associated duct burner, heat recovery steam generator, and steam turbine.

2.6. "Continuous emission monitoring system" or "CEMS" means the equipment required under 40 CFR Part 75, Subpart H to sample, analyze, measure, and provide, by means of readings recorded at least

once every 15 minutes (using an automated data acquisition and handling system (DAHS)), a permanent record of nitrogen oxides emissions, expressed in tons per hour for nitrogen oxides, stack gas volumetric flow rate, stack gas moisture content, and oxygen or carbon dioxide concentration (as applicable), in a manner consistent with 40 CFR Part 75. The following systems are the principal types of continuous emission monitoring systems:

2.6.a. A flow monitoring system, consisting of a stack flow rate monitor and an automated data acquisition and handling system and providing a permanent, continuous record of stack gas volumetric flow rate, in standard cubic feet per hour (scfh);

2.6.b. A nitrogen oxides concentration monitoring system, consisting of a NO_x pollutant concentration monitor and an automated data acquisition and handling system and providing a permanent, continuous record of NO_x emissions, in parts per million (ppm);

2.6.c. A nitrogen oxides emission rate (or NO_x-diluent) monitoring system, consisting of a NO_x pollutant concentration monitor, a diluent gas (CO₂ or O₂) monitor, and an automated data acquisition and handling system and providing a permanent, continuous record of NO_x concentration, in parts per million (ppm), diluent gas concentration, in percent CO₂ or O₂; and NO_x emission rate, in pounds per million British

thermal units (lb/mmBtu);

2.6.d. A moisture monitoring system, as defined in 40 CFR §75.11(b)(2) and providing a permanent, continuous record of the stack gas moisture content, in percent H₂O;

2.6.e. A carbon dioxide monitoring system, consisting of a CO₂ pollutant concentration monitor (or an oxygen monitor plus suitable mathematical equations from which the CO₂ concentration is derived) and

an automated data acquisition and handling system and providing a permanent, continuous record of CO₂

emissions, in percent CO₂; and

2.6.f. An oxygen monitoring system, consisting of an O₂ concentration monitor and an automated data acquisition and handling system and providing a permanent, continuous record of O₂, in percent O₂.

2.7. "Excess emissions" means nitrogen oxides emitted by an applicable unit under subsection 4.1 during an ozone season that exceeds the ozone season NO_x emissions limitation for the unit set forth in section 5.

2.8. "Fossil fuel" means natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material.

2.9. "Fossil fuel-fired" means, with regard to a unit, and solely for purposes of applying the applicability provisions in subsection 4.1:

2.9.a. The combustion of fossil fuel, alone or in combination with any other fuel, where fossil fuel actually combusted comprises more than 50 percent of the annual heat input on a Btu basis during any year;

or

2.9.b. The combustion of fossil fuel, alone or in combination with any other fuel, where fossil fuel is projected to comprise more than 50 percent of the annual heat input on a Btu basis during any year; provided

that the unit shall be "fossil fuel-fired" as of the date, during such year, on which the unit begins combusting

fossil fuel.

2.10. "Large NO_x SIP call engine" means a stationary internal combustion engine identified and designated as "large" in the NO_x SIP Call Engine Inventory as emitting more than one ton of NO_x per

average ozone season day in 1995.

2.11. "Long dry kiln" means a kiln 14 feet or larger in diameter, 400 feet or greater in length, which employs no preheating of the feed. The inlet feed to the kiln is dry.

2.12. "Long wet kiln" means a kiln 14 feet or larger in diameter, 400 feet or greater in length, which employs no preheating of the feed. The inlet feed to the kiln is a slurry.

2.13. "Low-NOx burners" means combustion equipment designed to reduce flame turbulence, delay fuel/air mixing and establish fuel-rich zones for initial combustion.

2.14. "Mid-kiln firing" means the secondary firing in kilns by injecting solid fuel at an intermediate point in the kiln using a specially designed feed injection mechanism for the purpose of decreasing NOx emissions through:

2.14.a. Burning part of the fuel at a lower temperature; and

2.14.b. Reducing conditions at the solid waste injection point that may destroy some of the NOx formed upstream in the kiln burning zone.

2.15. "Monitoring system" means a continuous emissions monitoring system, an alternative monitoring system, or an excepted monitoring system under 40 CFR Part 75.

2.16. "NOx SIP Call Engine Inventory" means the inventory of internal combustion engines compiled by U.S. EPA as part of the NOx SIP Call Rule, including the Technical Amendments, announced in the March 2, 2000 FR 11222, and the adjustment of the 2007 Budget NOx Control Efficiency to 82 percent for large gas-fired engines, announced in the April 21, 2004 Federal Register notice for the Phase II NOx SIP Call Rule.

2.17. "Ozone season" means the period beginning May 1 of a calendar year, and ending on September 30 of the same year, inclusive.

2.18. "Portland cement" means a hydraulic cement produced by pulverizing clinker consisting essentially of hydraulic calcium silicates, usually containing one or more of the forms of calcium sulfate as an interground addition.

2.19. "Portland cement kiln" means a system, including any solid, gaseous or liquid fuel combustion equipment, used to calcine and fuse raw materials, including limestone and clay, to produce Portland

cement clinker

2.20. "Precalciner kiln" means a kiln where the feed to the kiln system is preheated in cyclone chambers and utilizes a second burner to calcine material in a separate vessel attached to the preheater prior to the final fusion in a kiln which forms clinker.

2.21. "Preheater kiln" means a kiln where the feed to the kiln system is preheated in cyclone chambers prior to the final fusion in a kiln which forms clinker.

2.22. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§22-1-6 or 22-1-8.

2.23. "Source" means all buildings, structures, or installations located in one or more contiguous or adjacent properties under common control of the same person or persons.

2.24. "Stationary internal combustion engine" or "engine" means any internal combustion engine of the reciprocating type that is either attached to a foundation at a facility or is designed to be capable of being carried or moved from one location to another and remains at a single site at a building, structure, facility, or installation for more than 12 consecutive months. Any engine (or engines) that replaces an engine at a site that is intended to perform the same or similar function as the engine replaced is included

in calculating the consecutive time period.

2.25. "Ton" means 2,000 pounds.

2.26. "Unit" means a stationary, fossil fuel-fired boiler, combustion turbine, or combined cycle system.

2.27. Other words and phrases used in this rule, unless otherwise indicated, will have the meaning ascribed to them in W.Va. Code §22-5-1 et seq. and 40 CFR §72.2.

§45-40-3. Measurements, Abbreviations and Acronyms.

Measurements, abbreviations and acronyms used in this rule are defined as follows:

Btu-- British thermal unit.

CO, -- carbon dioxide.

NOx --nitrogen oxides.

hr --hour.

mMBtu --million Btu.

TPH -- tons per hour.

yr --year.

§45-40-4. Applicability.

4.1. The owner or operator of a unit that has a maximum design heat input greater than 250 mmBtu/hr, except for any unit subject to the federal Cross-State Air Pollution Rule NOx Ozone Season Trading Program established under 40 CFR Part 97, Subpart BBBBB, or an equivalent trading program established

under regulations approved as a state implementation plan revision pursuant to 40 CFR §52.38(b)(5), shall

comply with the ozone season NOx emission limitation, and monitoring, recordkeeping and reporting requirements for ozone season emissions of NOx set forth in sections 5 and 6.

4.2. Effective May 1, 2009, the owner or operator of a large NOx SIP Call engine shall comply with the ozone season NOx reduction, compliance plan, monitoring, recordkeeping and reporting requirements

set forth in section 9.

4.3. Effective May 1, 2009, the owner or operator of a kiln that meets the following applicability requirements shall comply with the ozone season NOx control standards, NOx compliance plan, reporting,

monitoring and recordkeeping requirements set forth in section 10:

4.3.a. Long dry kilns > 12 TPH process rate;

4.3.b. Long wet kilns > 10 TPH process rate;

4.3.c. Preheater kilns > 16 TPH process rate; and

4.3.d. Precalciner and preheater/precalciner kilns > 22 TPH process rate.

§45-40-5. Ozone Season NOx Emission Limitation.

5.1. Ozone season NOx limitation. --Beginning May 1, 2016, the owner or operator of a unit that meets the applicability requirements set forth in subsection 4.1 shall limit emissions of NOx during an ozone season pursuant to a NOx emission rate for each unit contained in a permit issued under 45CSR13, 45CSR14, 45CSR19 or via consent order issued by the Secretary in accordance with W.Va. Code §22-5-4(a)(5). Such ozone season NOx limitation may also include a limitation on operating time for a unit during the ozone season.

§45-40-6. Monitoring, Recordkeeping and Reporting Requirements.

6.1. The owner or operator of an applicable unit under subsection 4.1 shall operate certified continuous emission monitor systems necessary to attribute ozone season NOx mass emissions to each unit, in accordance with 40 CFR Part 75, Subpart H. NOx mass emissions measurements recorded and reported in accordance with 40 CFR Part 75, Subpart H shall be used to determine a unit's compliance with the ozone season NOx emission limitation set forth in section 5.

§45-40-7. Violation.

7.1. The owner or operator of an applicable unit under subsection 4.1 shall be subject to enforcement pursuant to W.Va. Code §22-5-1 et seq. or the CAA for excess emissions of NOx during an ozone season if the unit emitted nitrogen oxides in excess of its ozone season NOx emission limitation set forth in section 5.

§45-40-8. Ozone Season NOx Budget Demonstration.

8.1. Ozone season NOx budget.-- The ozone season NOx budget for all units that meet the applicability requirements set forth in subsection 4.1 is 2184 tons.

8.2. Ozone season NOx budget demonstration. -- Through the imposition of ozone season NOx limitations under section 5, and assumption of maximum operating capacity or use of a limitation on operating time for a unit during the ozone season, the Secretary shall demonstrate to the Administrator that

the ozone season NOx emissions from all applicable units under subsection 4.1 meets the ozone season NOx budget for these units set forth in subsection 8.1.

8.3. New units. -- The Secretary shall revise the ozone season NOx budget demonstration under subsection 8.2 to accommodate the ozone season NOx emissions of any new unit that meets the applicability requirements set forth in subsection 4.1. The ozone season NOx emissions from any such new unit shall not cause the ozone season NOx budget set forth in subsection 8.1 to be exceeded.

§45-40-9. Ozone Season NOx Reduction Requirements for Stationary Internal Combustion Engines.

9.1. Ozone season NOx reduction. -- Effective May 1, 2009, the following owners or operators must reduce ozone season NOx emissions by an amount equal to or greater than the applicable ozone season NOx reduction listed below. The applicable ozone season NOx reduction is binding on the listed owners

or operators, their successors and assigns:

Company Ozone Season NOx Reduction

Dominion 668 tons

Columbia Gas Transmission 235 tons

Total 903 tons

9.2. Compliance plan. -- Effective May 1, 2009, an owner or operator of a large stationary internal combustion engine under subsection 4.2 must not operate such engine in the period May 1 through September 30 of 2009 and any subsequent year unless the owner or operator demonstrates the applicable

ozone season NOx reduction under subsection 9.1 through the requirements of an approved compliance

plan. The compliance plan must meet the following provisions:

9.2.a. Reserved;

9.2.b. Reserved;

9.2.c. The compliance plan must demonstrate quantifiable and enforceable NOx emissions reductions equal to or greater than the applicable ozone season NOx reduction set forth in subsection 9.1,

taking into account any creditable reduction in NOx emissions under subdivisions 9.2.e, 9.2.f, 9.2.g, 9.2.h or 9.2.i;

9.2.d. The compliance plan may include and affect some or all stationary internal combustion engines or other significant NOx emitting equipment at an individual facility, at several facilities, or at all facilities in West Virginia that are controlled by the same owner or operator;

9.2.e. The compliance plan may include credit for reductions in NOx emissions due to the installation and operation of NOx control equipment on large stationary internal combustion engines under

subsection 9.1. The owner or operator will demonstrate to the satisfaction of the Secretary any creditable

reductions in NOx emissions from the installation and operation of such NOx control equipment. The credit for reductions in NOx emissions must be quantified based on the difference between uncontrolled

and controlled NOx emission rates, and ozone season operating hours;

9.2.f. The compliance plan may include credit for reductions in NO_x emissions due to the installation and operation of NO_x control equipment on uncontrolled stationary internal combustion engines not under subsection 4.2. The owner or operator will demonstrate to the satisfaction of the Secretary any creditable reductions in NO_x emissions from the installation and operation of such NO_x control equipment.

Creditable reductions must be limited to reductions achieved after 1995 and from controls that were not part of the NO_x SIP Call engine inventory. The credit for reductions in NO_x emissions must be quantified based on the difference between uncontrolled and controlled NO_x emission rates, and ozone season operating hours;

9.2.g. The compliance plan may include credit for reductions in NO_x emissions due to replacement of any stationary internal combustion engines or other significant NO_x-emitting equipment. The owner or operator will demonstrate to the satisfaction of the Secretary that the historic ozone season load capacity of

any stationary internal combustion engine or other significant NO_x-emitting equipment no longer in operation has been or would be replaced by one or more new stationary internal combustion engines, electric motors or turbines during each ozone season. The credit for reductions in NO_x emissions must be

quantified based on the replaced engine's or other significant NO_x-emitting equipment's ozone season NO_x

emission rate and ozone season operating hours, and the projected emission rate and ozone season operating

hours of any new replacement stationary internal combustion engines, electric motors or turbines;

9.2.h. The compliance plan may include credit for reductions in NO_x emissions due to reductions from shifting historic load capacity from an uncontrolled engine to a controlled engine, electric motor or turbine. The owner or operator will demonstrate to the satisfaction of the Secretary that a quantifiable net

reduction in NO_x emissions has occurred or will occur due to a direct shift of ozone season load capacity from an uncontrolled engine to a controlled engine, electric motor or turbine. The credit for reductions in

NOx emissions must be quantified based on the uncontrolled engine's historic ozone season load capacity,

NOx emission rate (in g/bhp-hr), ozone season operating hours (in hr/ozone season), and the shifted ozone

season load capacity, NOx emission rate (in g/bhp-hr) and ozone season operating hours (in hr/ozone season) of the controlled stationary internal combustion engine, electric motor or turbine;

9.2.i. The compliance plan may include credit for reductions in NOx emissions due to the installation and operation of NOx controls on significant NOx emitting equipment other than stationary internal combustion engines. The owner or operator will demonstrate to the satisfaction of the Secretary

any creditable reductions in NOx emissions from such NOx emitting equipment. Creditable reductions must be limited to reductions achieved after 1995 and from controls that were not part of the NOx SIP Call

inventory. The credit for reductions in NOx emissions must be quantified based on the difference between

NOx emission rates prior to installation of controls and controlled NOx emission rates, and ozone season operating hours;

9.2.j. The compliance plan must include the following:

9.2.j.1. A list of affected engines or affected NOx emitting equipment subject to the plan, including the manufacturer, model number, facility location and facility identification number;

9.2.j.2. The projected ozone season hours of operation for each affected engine or affected NOx emitting equipment and supporting documentation;

9.2.j.3. A description of the NOx emission controls installed, or to be installed, on each affected engine or affected NOx emitting equipment, date or proposed date of installation, and documentation to

support the controlled NOx emission rates;

9.2.j.4. The uncontrolled and controlled NOx emission rates in lb/hr and tons per ozone season for each affected engine or affected NOx emitting equipment, as applicable;

9.2.j.5. A numerical demonstration that the sum of creditable NOx emission reductions (in tons) obtained from all affected engines or affected NOx emitting equipment included under a compliance plan

will be equivalent to or greater than the owner or operator's applicable ozone season NO_x reduction under

subsection 9.1, taking into account any creditable reductions in NO_x emissions under subdivisions 9.2.e, 9.2.f, 9.2.g, 9.2.h or 9.2.i; and

9.2.j.6. Performance test protocol and provisions for periodic monitoring, reporting and recordkeeping for each affected engine or affected NO_x emitting equipment.

9.2.k. Any creditable reductions in NO_x emissions under subdivisions 9.2.e, 9.2.f, 9.2.g, 9.2.h or

9.2.i must be quantifiable and enforceable through limitations included in a federally enforceable permit or

compliance order; and

9.2.1. Any owner or operator with an approved compliance plan under subsection 9.2 may amend the plan with the written approval of the Secretary. Any NO_x emission rate or limitation included in such an amendment must be reflected in a federally enforceable permit or compliance order. The Secretary will

either approve by order or disapprove by certified mail the amended compliance plan within 90 days of submission, and notify the Administrator of the compliance plan amendment approval upon issuance of order.

9.3. Monitoring requirements. --Any owner or operator of an affected engine or affected NO_x emitting equipment subject to a compliance plan under subsection 9.2 must comply with the following monitoring

requirements for each affected engine or affected NO_x emitting equipment:

9.3.a. The owner or operator must complete an initial performance test consistent with the requirements of 40 CFR Part 60, Appendix A, following installation of NO_x emission controls required to achieve the NO_x emission rate limit specified in subdivision 9.2.k; and

9.3.b. For the ozone season beginning in 2009, and each ozone season thereafter, the owner or operator will perform periodic monitoring sufficient to yield reliable data which demonstrate compliance

with the limitations specified in subdivision 9.2.k. Such periodic monitoring must include:

9.3.b.i. A continuous emission monitoring system that complies with 40 CFR Part 75 or 40 CFR Part 60 and the quality assurance procedures specified in 40 CFR Part 60, Appendix F; or

9.3.b.2. Performance tests consistent with the requirements of 40 CFR Part 60, Appendix A, or portable monitors using ASTM D6522-00; and

9.3.b.2.A. A parametric monitoring program that specifies operating parameters, and their ranges, that will provide reasonable assurance that each affected engine or affected NOx emitting equipment's emissions are consistent with the requirements of a compliance plan under subsection 9.2. Any such parametric monitoring program must be approved by the Secretary; or

9.3.b.2.B. A predictive emissions measurement system that relies on automated data collection from instruments. Any such predictive emissions measurement system must be approved by the Secretary.

9.4. Recordkeeping requirements. -- Any owner or operator of an affected engine or affected NOx emitting equipment subject to a compliance plan under subsection 9.2 must comply with the following recordkeeping requirements:

9.4.a. Maintain all records necessary to demonstrate compliance with the requirements of the compliance plan and subsection 9.4 for a period of five calendar years at the facility where an affected engine or affected NOx emitting equipment is located. Such records will be made available to the Secretary or Administrator upon request; and

9.4.b. For each affected engine or affected NOx emitting equipment subject to a compliance plan under subsection 9.2, the owner or operator will maintain records of:

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9.4.b.1. Identification and location of each affected engine or affected NOx emitting equipment;

9.4.b.2. Calendar date of record;

9.4.b.3. The number of hours the affected engine or affected NOx emitting equipment is operated during each ozone season compared to projected operating hours;

9.4.b.4. Type and quantity of fuel combusted; and

9.4.b.5. The results of all compliance tests.

9.5. Reporting requirements.-- Any owner or operator of an affected engine or affected NOx emitting equipment subject to a compliance plan under subsection 9.2 must:

9.5.a. Notify the Secretary of any performance test under paragraph 9.3.b.2 at least 15 days in advance of such test;

9.5.b. Submit results of all performance tests to the Secretary within 30 days of completion of such tests; and

9.5.c. Submit a report which documents the total ozone season NO_x emissions and certifies compliance with the compliance plan for each affected engine or affected NO_x emitting equipment to the

Secretary by October 31 of each year, beginning in 2009. The report must demonstrate and certify compliance with the applicable ozone season NO_x reduction set forth in subsection 9.1.

§45-40-10. Ozone Season NO_x Reduction Requirements for Emissions of NO_x from Cement

Manufacturing Kilns.

10.1. Standard requirements. --Effective May 1, 2009, an owner or operator of any Portland cement kiln subject to this section must not operate the kiln during May 1 through September 30 unless the kiln has installed and operates during May 1 to September 30 with low-NO_x burners, mid-kiln firing or alternative control techniques, subject to approval by the Administrator, that achieve at least the same emissions decreases as low-NO_x burners or mid-kiln firing.

10.2. NO_x compliance plan.-- Any owner or operator of a source subject to the standard requirements of subsection 10.1 may elect to use NO_x reductions from any non-affected kiln at a source with a Portland cement kiln under subsection 4.3. If the owner or operator so elects, he or she must submit for approval to the Administrator by May 1, 2009 a NO_x compliance plan which demonstrates the method(s) by which the operator will achieve NO_x reductions from non-affected kilns which achieve at least the same emissions decreases set forth in the standard requirements of subsection 10.1.

10.3. Reporting requirements. -- Any owner or operator subject to the standard requirements of subsection 10.1 must comply with the following reporting requirements:

10.3.a. By May 1, 2009, submit to the Secretary and Administrator the identification number and type of each kiln subject to this section, the name and address of the plant where the kiln is located and the name and telephone number of the person responsible for demonstrating compliance with this section; and

10.3.b. Submit a report documenting for that kiln the total NO_x emissions from May 1 through

September 30 of each year to the Secretary and Administrator by October 31 of each year, beginning in 2009.

10.4. Monitoring requirements.

1 0.4.a. Any owner or operator of a kiln subject to this section must complete an initial performance test and subsequent annual testing consistent with the requirements of 40 CFR Part 60, Appendix A, Method

7, 7 A, 7C, 7D or 7E; and

10.4.b. The operator may use the results of continuous emission monitoring system (CEMS) to replace the annual testing requirements set forth in subdivision 10.4.a. Such equipment must be installed

and operated consistent with 40 CFR Part 75.

10.5. Recordkeeping requirements. -- Any owner or operator of a kiln subject to this section must produce and maintain records which include, but are not limited to:

10.5.a. The emissions, in pounds ofNO_x per ton of clinker produced from each affected Portland cement kiln;

1 0.5.b. The type of control used for each affected Portland cement kiln;

1 0.5.c. The date, time and duration of any startup, shutdown or malfunction in the operation of any of the cement kilns or the emissions monitoring equipment;

1 0.5.d. The results of any performance testing;

1 0.5.e. Daily cement kiln production records; and

1 0.5.f. All records required to be produced or maintained will be retained on site for a minimum of 5 years and be made available to the Secretary or Administrator upon request.

§45-40-11. Inconsistency Between Rules.

11.1. In the event of any inconsistency between this rule and any other rule of the West Virginia Department of Environmental Protection, the inconsistency will be resolved by the determination of the Secretary and the determination will be based upon the application of the more stringent provision, term, condition, method or rule.