Small Sources of NOx, Cement Kilns, Large IC Engines
(Chapter 129 Sections 129.201-129.205)
(Chapter 145 Sections 145.111- 145.113, 145.141 – 145.144)

COMPLIANCE ASSESSMENT SUMMARY

(1) Boiler and turbine units that are subject to Chapter 145, Subchapter A, Sections 145.1-145.90 are not subject to these rules.

(2) On May 1, 2005, the owner / operator of an affected unit must begin tracking NOx emissions occurring from May 1 through September 30 and demonstrate compliance on an average basis over that period each year.

(3) Every year by Oct.31 each facility operator must calculate the difference between allowable and actual emissions that occurred from operation of affected sources during the period from May 1 through September 30.

(4) By November 1 of each year if a facility emitted 0.5 tons or more above its allowable, the owner/operator must surrender one NOx allowance for each ton of NOx emitted in excess of the allowable. If allowances are surrendered, the regulation requires the owner/operator of the facility to notify the Department, and provide the calculations and allowance serial numbers.

> It is expected that the owners/operators of most facilities will use averaging with other units to avoid the need to retire allowances. The owners/operators will likely comply by controlling more frequently used units. Inter-facility averaging is also allowed, provided the facilities are under common ownership with other units located statewide for Chapter 145 Subchapter B or C units (large IC engines and cement kilns), but limited to the 5-county Philadelphia area for Chapter 129 units.

(5) Owners/operators of IC engine units in the 5-county Philadelphia area that are subject to Sections 145.111-145.113 must comply with Chapter 145 and are allowed to average with other Chapter 145 units located outside the 5 county Philadelphia area, but are not allowed to average with any of their Chapter 129 covered units, even if the units are located within the same facility (the Chapter 129 regulation is required to achieve a certain level of emission reductions from covered sources within the 5 county area). Therefore, owners/operators of Chapter 129-covered units located in the 5-county area may only average with other of the owner/operator's Chapter 129 units in the 5 county area; however under Chapter 129 there is a special provision that allows them to average-in Chapter 129 affected engines that are replaced with electric motor powered compressors. Be aware that a unit may meet the horsepower ratings in Chapter 145, but may be subject only to Chapter 129 if it has not emitted over 153 tons in any ozone season since 1995.

(6) Allowances are identified by an official serial number and the inspector should log onto EPA's Clean Air Markets web site at http://www.epa.gov/airmarkets/index.html to verify that the allowances have been surrendered to Pennsylvania's retirement account for each excess ton of NOx emissions. The inspector should also check the history of each transaction to make sure it was executed properly for each of the inspector's facilities.

(7) If the owner/operator of a facility used "below-allowable emission credit" from another facility, including one that is be located in another region, it will be necessary to cross check that the

compliance calculations in the facilities in another region did not also take credit for the below allowable emissions in the other facility/region compliance calculations. (We do not expect a lot of inter-facility averaging except by the pipeline industry.) In addition, if an owner/operator desires to use renewable certificate credit as allowed under Section 129.205, the credit must be in the form of an REC (renewable energy credit) that was specifically created and certified by an approved accrediting body which attests that the credit meets the requirements of Section 129. The accrediting body must be first be approved by the Department. . We can expect that some electric power production used to create RECs to meet the Pennsylvania's new RPS law, ACT 213, Advanced Energy Portfolio Standards, could also be used to create a separate set of RECs that meet 129.205 requirements. Any other credits are not permissible for use.

(8) If the owner/operator of a facility does not meet the November 1st deadline to surrender allowances, then the facility will be required to surrender 3 allowances of current or later year vintage for each NOx allowances that was required.

(9) Other penalties and enforcement provisions do apply.

(10) Each excess ton of NOx emission is a separate violation.

(11) Each day of the ozone season may constitute a separate day in violation, unless the owner or operator demonstrates that a lesser number of days apply.

(12) The sources and the requirements of Chapters 145 and 129, regarding the NOx Budget and Small Source NOx regulations, are contained in the conditions of the facility permit. Thus, the permit penalty policy can be used to calculate any additional penalty required as a result of the facility's non-compliance. *(I would recommend using the permit penalty policy since it would provide the broadest range of options available to address the various types of violations encompassed by this regulation)*

(13) Under Chapter 145, internal combustion engines (ICE) owners/operators of units that emitted more than 153 tons of NOx in any ozone season from 1995 through 2004 are affected units beginning in 2005 and must comply with Subchapter B beginning in 2005. This includes calculating the difference between allowable and actual emissions by October 31, 2005 and making the necessary surrender and notification. ICE s that never emitted 153 tons of NOx in any ozone season since 1995, but have done so in any ozone season after 2004, shall comply with Subchapter B by May 1 of the year following the year within which they exceed 153 tons. For example, if a unit exceeds 153 tons for the first time in the 2007 ozone season, they need to begin complying with Chapter 145, Subchapter B, in perpetuity beginning with the following year, 2008. They are not accountable for compliance in 2007 even though they exceeded 153 tons.

Summary of Small Source NOx Requirements

Units located in Bucks, Chester, Delaware, Montgomery, and Philadelphia, counties are subject to the following requirements in Chapter 129.

§ 129.201 Boilers rated at 250 mmBtu / hour or less but greater than 100 mmBtu/hour.

Boilers must comply by May 1, 2005

Firing Natural Gas

Applicable Emission Rate = 0.10 lbs of NOx per mmBtu of heat input.

Firing Solid or Liquid fuel

Applicable Emission Rate = 0.20 lbs of NOx per mmBtu of heat input

Boilers with a rated nameplate capacity greater than 250 mmBtu/hr. and not regulated under Chapter 145
Applicable Emission Rate = 0.17 lbs of NOx per mmbtu of heat input

Deadlines Starting in 2005

By October 31 of each year: Calculate emissions difference between allowable and actual for the Control Period May 1 through September 30 (Ozone Season)

In accordance with 25 Pa. Code Section 129.204, from May 4 to October 31, if the combine allowable emissions of affected units exceed the combined actual emissions from units the owner or operator may deduct the difference, or any remaining portion, from its affected units at its other facilities.

By November 1 of each year if needed NOx allowances must be surrendered to balance the accounts. By December 31, if NOx allowances are not surrendered by November 1, the owner or operator will be required to surrender 3 allowances for each allowance not surrendered.

§ 129.202 Stationary Combustion Turbines with a nameplate rated capacity of greater than 100 mmbtu /hour.

Turbines must comply by May 1, 2005

Turbines with a nameplate capacity of 250mmbtu per hour or less but greater than 100 mmbtu /hr

Combined cycle or regenerative cycle firing natural gas or non-commercial gaseous fuel
Applicable Emission Rate (heat input) = 0.17 lbs of NOx per mmbtu of heat input or;
Applicable Emission Rate (output) = 1.3 lbs of NOx per MWH.

Combined cycle or regenerative cycle oil fired
Applicable Emission Rate (heat input) = 0.26 lbs of NOx per mmbtu of heat input or;
Applicable Emission Rate (output) = 2.0 lbs of NOx per MWH.

Simple cycle natural gas or non-commercial gaseous fuel
Applicable Emission Rate (heat input) = 0.20 lbs of NOx per mmbtu of heat input or;
Applicable Emission Rate (output) = 2.2 lbs of NOx per MWH.

Simple cycle Oil Fired
Applicable Emission Rate (heat input) = 0.30 lbs of NOx per mmbtu of heat input or;
Applicable Emission Rate (output) = 3.0 lbs of NOx per MWH.

Turbines with a rated nameplate capacity greater than 250 and not regulated under Chapter 145
Applicable Emission Rate = 0.17 lbs of NOx per mmbtu of heat input

Deadlines Staring in 2005
By October 31 of each year: Calculate emissions difference between allowable and actual for Control Period May 1 through September 30 (Ozone Season)

§ 129.203 Stationary Internal Combustion Engines rated at greater than 1000 horsepower.

Engines must comply by May 1, 2005
In each case below the allowable emissions are multiplied by the cumulative hours of operations for the unit for the period by the horsepower rating and by the appropriate emission rate.

Spark Initiated Stationary Internal Combustion Engines regulated under Chapter 145, Sub-Chapter B
Applicable Emission Rate = 3.0 Grams NOx per brake horsepower -hour

Compression Initiated Stationary Internal Combustion Engines regulated

Applicable Emission Rate = 2.3 grams of NOx per brake horsepower-hour.

Deadlines Staring in 2005

By October 31 of each year: Calculate emissions difference between allowable and actual for Control Period May 1 through September 30 (Ozone Season)

Emissions from a Stationary Internal Combustion Engine that has been replaced by an electric motor may be counted as allowable emissions for purposes of this section.

Replaced Spark Ignited Engine

May Count 3.0 Grams of NOx per Brake Horsepower-Hour of the replacement motor, less 1.5 pounds of NOx per Megawatt-hour of electricity consumed by replacement motor.

Replaced Compression Ignited Stationary Engine Diesel, Combination Diesel & Natural Gas

May Count 2.3 Grams of NOx per Brake Horsepower-Hour of the replacement motor, less 1.5 pounds of NOx per Megawatt-hour of electricity consumed.

§ 129.204 Emissions Accountability for all source under § 129.201 to § 129.203

Determine actual emissions.

Must use current CEMS System, if one is installed. Invalid data – use potential emissions or alternative approved by Department.

If no CEMS System is required:

1-Year average emission rate – calculated from most recent permit limit compliance demonstration test.

Maximum hourly allowable NOx rate in the permit or the higher of the following:

Highest emissions factor for the unit class in the most up to Date AP-42
Highest emissions factor for the unit class in the most up to date version of the Factor Information Retrieval System ("FIRE") data system

If Owner decides to install and/or monitor using a CEMS system, invalid data – use potential emissions rate as defined in Chapter 121 or alternative approved by Department.
Alternate calculation and record keeping procedure based upon emission testing and correlations with operating parameters and as approved by the Department.

Emissions from Small NOx Sources

The owner or Operator shall surrender 1 current year vintage NOx allowance for each ton of NOx emissions exceeding the allowable for the ozone season. (Note that 0.5 tons is rounded to 1.0 tons).
If the allowable emissions for the ozone season are greater than the actual emissions, the difference is available for use at other facilities owned by the operator.

November 1 deadline

If the use of allowances is necessary, the owner/operator must surrender to the Department's designated NOx allowance tracking system account by November 1 of each year information including:

The serial number of each NOx allowance;
The calculations used to determine the quantity of NOx allowances needed.

If a facility exceeds its ozone season NOx allowable the owner /operator must use current year vintages allowances.

If the owner/operator of a facility, after NOx deductions, has emissions remaining, the owner/operator of the facility may use those emissions at another of the owner/operator's facilities.

December 31 deadline

If the owner/operator of a facility fails to surrender the required allowances by November 1st, then by December 31st, the owner/operator shall surrender 3 NOx allowances for each allowance that was not surrendered on November 1st. Surrender of allowances at 3 to 1 does not affect the liability of the owner/operator for other penalties or enforcement. Each day of the ozone season is a separate violation, unless the owner or operator demonstrates that a lesser number of days apply. Also each ton is a separate violation.

***§ 129.205* Zero Emissions Renewable Energy Production Credit**

Calculating Actual Emissions. The owner/operator of a facility may deduct 1.5 pounds of NOx per MWH of electricity or thermal power equivalent for each megawatt of zero emission renewable energy produced provided the following conditions are met:

The credit must be in the form of an REC (renewable energy credit) that was specifically created and certified

by an approved accrediting body which attests that the electric power was actually produced and that it meets the requirements of Section 129, e.g. the zero emission energy used must be 100% renewable energy; the renewable energy power source was brought on line after December 11, 2004, and that the renewable energy power source is located in the 5-county Philadelphia area. The accrediting body must also be approved by the Department. We can expect that some electric power production used to create RECs to meet the Pennsylvania's new RPS law, ACT 213, Advanced Energy Portfolio Standards, could also be used to create a separate set of RECs that meet 129.205 requirements.

The owner/operator surrenders the certificate to the Department;

The owner/operator certifies that the conditions of this section have been satisfied.

§ 145.42 NOx allowance allocations

For each ton of NOx deducted under a zero emission renewable energy production credit, the Department will retire one NOx allowance from the new source set-aside for the subsequent control period. This will be done by central office after each compliance period.

***§ 145.111* Emissions of NOx From Stationary Internal Combustion Engines**

Compliance Dates

For units that emitted 153 tons of NOx in any ozone season from 1995 to 2004, the units shall comply with this subsection by May 1, 2005 and each year thereafter.

For units that emitted 153 tons of NOx in any ozone season after 2004, the units shall comply by May 1st of the following year.

The following engines are affected:

Rich Burn or Lean Burn Engines rated at or greater than 2,400 brake horsepower.

Diesel Stationary Internal Combustion Engine rated at or greater than 3000 brake horsepower.

***§ 145.113* Standard Requirements**

Emissions calculation Deadline

Stationary Internal Combustion Engines ("ICE") shall calculate the difference in actual and allowable emissions for the ozone season by October 31, 2005 and each year thereafter, or by October 31st of the following calendar year if the unit is a newly affected engine.

Allowable Emissions calculation:

= [Cumulative Hours of Operation] X [Horse Power Rating] X [Allowable Emission Rate],

where the allowable emission rates for the stationery engines are:

1.5 grams/ break horsepower-hour for ICE rich burn engine rated at or greater than 2,400 brake horsepower.

3.0 grams/ break horsepower-hour for ICE lean burn engine rated at or greater than 2,400 brake horsepower .

2.3 grams/ break horsepower-hour for ICE diesel engine rated at or greater than 3,000 brake horsepower or a dual fired rating of 4400 brake horsepower or greater.

Actual Emissions determined by:

CEMS data; or

Emissions testing and correlations to operating conditions; or

Emission rate calculated from test data conducted during ozone season

Tests conducted every 735 hours of operation;

At least one test is required during the ozone season;

ICE Excess Emissions

If actual emissions exceed allowable emissions, the owner or operator must surrender one current year vintage NOx allowance for each ton of NOx the unit was short, by November 1 of each year.

If the allowable emissions total exceeds the actual emissions total, the remaining allowable emissions may be used by the owner's other facilities. If this occurs across regional boundaries, it will be necessary to check with the other region to ensure the credit amount is correct and was not already used.

When surrendering NOx allowances, the owner or operator shall provide:

The serial number of each NOx allowance surrendered.

The calculations used to determine the number of allowances required to be surrendered.

If the owner or operator fails to surrender enough allowable emissions to cover its actual emissions by November 1st, then the facility will be required to surrender current year or later year allowances at a 3:1 rate by December 31st. Other enforcement and penalties may also apply. Each ton of excess emissions is a separate

violation. Each day of the ozone season represents a separate violation, unless the owner or operator demonstrates that a lesser number of days apply.

§ 145.141 Applicability

Beginning May 1, 2005, an owner or operator of a Portland cement kiln shall comply with Subchapter C.

§ 145.143 Standards Requirements

Deadlines Staring in 2005 for Cement Kilns

By October 31 of each year: The Owner or Operator of a Portland Cement Kiln shall calculate emissions difference between allowable and actual NOx emissions *for the* Period from May 1 through September 30 (Ozone Season).

Allowable Emissions of NOx From Cement Manufacturing

Allowable emissions are determined by multiplying the tons of clinker produced by the Portland cement kiln for the period by 6 pounds per ton of clinker.

Monitoring / Actual Emissions Determination

The facility must install and monitor a CEMS system for each Portland cement kiln. Invalidated data will be replaced with data calculated using the potential emission rate or alternative approved by the Department.

Deadlines

By November 1st, the owner and operator of a Portland cement kiln shall surrender 1 current year vintage NOx allowance for each excess ton of emissions.

If a facility fails to surrender the required allowances by November 1st, then by December 31st, the owner or operator shall surrender 3 NOx allowances for each allowance that was not surrendered on November 1st.

Surrender of allowances at 3 to 1 does not affect the liability of the owner or operator for other penalties or enforcement. Each day of the ozone season is a separate violation, unless the owner or operator demonstrates that a lesser number of days apply. Also each ton is a separate violation.

If the allowable emissions total exceed the actual emissions total, the remaining emissions may be used by the owner's other facilities.

When surrendering NOx Allowances, owner or operator shall provide:

The serial number of each NOx allowance surrendered.

The calculations used to determine the number of allowances required to be surrendered.

Surplus Allowances

If the allowable emissions total exceed the actual emissions total, the remaining emissions may be used by the owner's other facilities.

Draft

An Example of Small Source NOx Requirements

ABC Company.
Norristown Facility

Chapter 129 Standards for Sources Additional NOx Requirements
Applicability: Boilers > 100 MMBtu/hr, but <= 250 MMBtu/hr in Montgomery County during Ozone Season
Ozone Season: 3672 hrs

ASSUMPTIONS: The boilers operate 90% on NG and 10% on fuel oil during the Ozone season
B16 Egen permit limit is 312 hrs/year, B33 egen permit limit is 800 hrs/year, B29-2 egen permit limit is 400 hrs/year

Btu Content Oil 140 MMBtu/1000 gallon
Btu Content NG 1030 MMBtu/MMCF

Allowable

Unit	Regulation NG NO_x Limit (lb/MMBtu)	Unit Capacity (MMBtu/hr or gr/bhp_hr)	NG Fuel Usage (MMCF) or Hours of Operation	NG Heat Input Values (MMBtu)	Regulation FO NO_x Limit (lb/MMBtu or g/bhp_hr)	FO Fuel Usage (100 gallons) or Hours of Operation	FO Heat Input Values (MMBtu)	Tons / O_3 seasons
Boiler A	0.1	112	0.00521	5.3663	0.2	0	0	0.0
Boiler B	0.1	122.4	15.65	16119.5	0.2	0	0	0.8
Boiler C	0.1	206	0.12	123.6	0.2	0	0	0.0
Boiler D	0.1	168.2	161.56	166406.8	0.2	0	0	8.3
Boiler E	0.1	249	58.4	60152	0.2	0	0	3.0
Gen 1	NA	1609	NA	NA	2.3	22	NA	0.1
Gen 2	NA	3834	NA	NA	2.3	34	800	0.3
Gen 3	1.5	2346	38	NA	2.3	NA	NA	0.1
Gen 4	1.5	1005	18	NA	2.3	NA	NA	0.0
Gen 5	NA	1609	NA	NA	2.3	2	400	0.0
							TOTAL	12.7

Actual

Unit	Permit/Stack Test/CEMS NG NO_x Limit (lb/MMBtu)	Permit Stack Test or CEMS Value	NG Fuel Usage (MMCF) or Hours of Operation	NG Heat Input Values (MMBtu) or Bhp_hr rating	FO Fuel Usage (100 gallons) or Hours of Operation	FO Heat Input Values (MMBtu)	Permit/Stack Test/CEMS FO NO_x Limit (lb/MMBtu or g/bhp_hr)	Tons / O_3 seasons
Boiler A	0.085	Stack Test	0.00521	5.3663	0	0	0.2	0.0
Boiler B	0.032	CEMS	15.65	16119.5	0	0	0.2	0.3
Boiler C	0.11	CEMS	0.12	123.6	0	0	0.2	0.0
Boiler D	0.047	CEMS	161.56	166406.8	0	0	0.2	3.9
Boiler E	0.012	Permit	58.4	60152	0	0	0.2	0.4
Gen 1	NA	Stack Test	NA	1609	22	NA	11.2	0.4
Gen 2	NA	Stack Test	NA	3834	34	NA	5.8	0.8
Gen 3	1.1	Permit	38	2346	NA	NA	NA	0.1
Gen 4	0.8	Permit	18	1005	NA	NA	NA	0.0
Gen 5	NA	Stack Test	NA	1609	2	NA	12.6	0.0
						TOTAL		6.0

Since actual emissions are below allowable, no allowances are required and the facility is in compliance with Chapter 129 Standards for Sources Additional NOx Requirements

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