



PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PATRICIA W. AHO
COMMISSIONER

**PIONEER PLASTICS CORPORATION)
ANDROSCOGGIN COUNTY)
AUBURN, MAINE)
A-448-77-6-A)**

**DEPARTMENTAL
FINDING OF FACT AND ORDER
NEW SOURCE REVIEW
NSR # 6**

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Pioneer Plastics Corporation (Pioneer) operates a manufacturing plant in Auburn, Maine. The principal products are Pionite, a decorative laminate used for counter tops and furniture, and low pressure decorative laminates. Pioneer has requested an amendment to their air emissions license, A-448-70-A-A/I issued April 20, 2004. This amendment addresses CO emissions from the Thermal Oxidizer/Boiler #5 when the unit is operated as a control device.

FACILITY	PIONEER PLASTICS CORPORATION (PIONEER)
LICENSE NUMBER	A-448-77-6-A
LICENSE TYPE	Chapter 115 Minor Modification
NAICS CODES	325211, 322222, 326130
NATURE OF BUSINESS	Manufacturer of decorative laminate, melamine coated paper, and specialty resins
FACILITY LOCATION	Auburn, Maine

B. Application Classification

An emissions increase at a major source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Increase Levels" as defined in the Department's regulations. The emissions increase from the Thermal Oxidizer/Boiler #5 is as follows:

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
(207) 764-0477 FAX: (207) 760-3143

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Pollutant	Baseline 2010/2011 Avg. Actual (TPY)	Projected Future Actuals CO Emissions (TPY)	Net Change (TPY)	Sig. Level (TPY)
CO	230	< 329	99	100

Average actual emissions from 2010/2011 were based on average fuel use and AP-42 emissions factors from the unit operating as a boiler which was submitted to the Department through the Emissions Inventory data. Projected future actual emissions were based on 2010 and 2011 stack testing when operating as both a boiler and pollution control device. Based on the above table, this application is being processed as a non-major New Source Review (NSR) modification, under the requirements of Section 4 (B) of 06-096 CMR 115 of the Department's regulations. The application does not involve a relaxation or change in monitoring, testing, reporting or recordkeeping requirements. The modification also does not address any new processes or fuel burning equipment.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Amendment Description

Pioneer Plastics Corporation (Pioneer) has requested a minor modification to its air emissions license, A-448-70-A-A/I, to address CO emissions from the Thermal Oxidizer/Boiler #5. This permit modification and the associated conditions apply to this emission unit (Boiler # 5/Thermal Oxidizer) only when it is in operation as a control device, controlling emissions from the associated MACT sources that are attached to the HAP/VOC collection system. This permit modification does not apply

to this emission unit when it is in operation as a boiler. The limitations and conditions that exist in Part 70 emission license number A-448-70-A-A/I, specifically 18 (A) and New Source Review #5 will not change as a result of this license modification.

Background/History

Pioneer operates a VOC incinerator referred to at the facility as the Thermal Oxidizer. The Thermal Oxidizer is used primarily to destroy volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) from the manufacturing process. The Thermal Oxidizer is also referred to as "Boiler #5" because it has a separate heat recovery component which produces steam for the facility. When firing oil, recent stack testing has shown higher CO emissions from the unit when operating as both a boiler and control device.

Pioneer conducted a stack test to collect data mandated by EPA for the Commercial, Industrial Solid Waste Incinerators (CISWI) regulation. This testing was conducted under "Worst case" operating conditions. One of the pollutants required to be monitored during this test event was Carbon Monoxide (CO). When high levels of CO were detected, the DEP was contacted and informed of the issue and options were discussed. The facility's Part 70 air license, A-448-70-A-A/I, specifically Condition (18) was reviewed. Boiler #5/Thermal Oxidizer has a licensed emission limit for CO of 60 pounds/hour; however, Condition (18) indicates that these limits are for when the unit is "Operating as a Boiler" and does not reference specific emission limits when the unit is operating as both a boiler and a "control device" as it was being operated during the testing. The resulting CO emissions measured during the testing averaged over 200 pounds/hour when burning #6 fuel oil. It was agreed between the Department and the facility that Pioneer's air license would need to be updated/modified.

Following the receipt of the final test results and further discussions between the Department and the facility regarding the next steps to take, it was agreed that more field data should be collected to confirm that the levels seen during CISWI testing were "normal" and to try and determine where the CO emissions were coming from by operating the Thermal Oxidizer with various combinations of MACT sources contributing emissions. The additional CO stack testing, also conducted while burning #6 fuel oil, found that during normal seasonal operations the average CO emission was 135.3 lbs/hour (847 ppm).

The facility then adjusted the combustion temperature from the standard operating temperature of approximately 1400 °F to 1450 °F. This resulted in a decrease in CO from 135.3 lbs/hour (847 ppm) to 61.0 lbs/hour (382 ppm); however, this increase in operating temperature corresponds to an increased fuel usage of approximately 10%. There was also a 5.3% reduction in steam generation efficiency that would result in

additional fuel consumption to maintain current steam requirements, resulting in an increase in other combustion related emissions.

The facility made attempts to try other operating conditions to determine the source of the CO. The P4 treater was shut down and this change did not have a significant effect on the CO emissions. The CO levels dropped from 110.8 lbs/hr (694 ppm) to 94.9 lbs/hr (660 ppm). This was followed by the shutdown of the treating operation on the P5 treater which resulted in a decrease of over 80% of the estimated CO emissions to 15.7 pounds per hour (109 ppm) and further reduction when the P5 treater fan was shut down to 8.8 lbs/hr (69 ppm).

Based on the testing that was done, it is believed that the current levels of CO are a result of connecting additional MACT sources into the emissions control system over the years. This increase could be due to the combination of the additional lower volatile air from the various Resins MACT sources combined with the higher organic volatiles from Coating MACT sources. Since CO is not a parameter that has been included in the annual testing program or required by the recent MACT testing, neither the facility nor the Department was aware of the impact on CO from these changes.

A review of Pioneer's file has indicated the following changes to the facility.

- 1983 Boiler #5/Thermal Oxidizer installed
- 1993 Combustion of distillates approved
- 1993 Polyester reactors K4, K5, K6, K7, K8 connected while manufacturing resins
- 1993 Total Enclosures installed on P5, P4, C4, P1 and connected to oxidizer
- 2004 K1, K2 reactors, Weigh Tank and Fiberglass Tanks #1 and #2 connected per Amino-Phenolic MACT
- 2006 K4, K5, K6, K7, K8 and distillate weigh tank connected into the Amino MACT duct and fan system
- 2008 K3 blender and weigh tank connected to MACT system, subject to OLD MACT

Biannual VOC destruction testing and additional MACT required testing for the Amino Phenolic MACT, Coating MACT and Miscellaneous Organic NESHAP (MON) MACT have all indicated that the combustion efficiency of the unit has been well above all of the required regulatory limits based on the destruction of VOCs, typically better than 99.5% destruction. Annual particulate and NOx testing of the unit have also been within license limits.

As Pioneer and DEP continued their discussions of the CO emissions from the Thermal Oxidizer, it was agreed that the Department would require Pioneer to install a temporary CO monitor and collect additional data before this air license amendment could be finalized. A week-long CO test event was conducted in August 2012, with

the Thermal Oxidizer burning natural gas (which is now the regular fuel source for this emission unit). CO emissions were measured for several different emission unit combinations, with the highest tested emission rate of 78.4 lb/hr when operating Specialty Resins, Paper Coater C4, and phenolic impregnators P4 and P5.

CO Emission Limits

Pioneer has requested a minor modification to increase the CO pound per hour short-term emission limit and the CO tons per year emissions. These changes are related to new information concerning CO emissions when the Thermal Oxidizer/Boiler #5 operates as a pollution control device.

Based on this new information, the Thermal Oxidizer shall not exceed a CO emissions rate of 135.3 lb/hour when operating as both a boiler and pollution control device for the control of VOCs and HAPs. This license limit is based on the emission rates that were documented while the Thermal Oxidizer was burning #6 fuel oil because the facility continues to maintain the ability to swap fuel types from oil to natural gas. Based on the CO lb/hr increase, and to remain a minor modification with a CO increase of 99 tons per year, the following outlines the changes made to the facility's "Total Licensed Annual Emissions for the Facility":

Total Licensed Annual Emissions for the Facility
(used to calculate emission fee)

Equipment	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boiler #4	33.0	33.0	368.0	99.0	66.0	2.0
Boiler#5/Thermal Oxidizer	52.1	52.1	385.9	103.8	329.0	131.4
Boiler #6	27.7	27.7	135.3	86.6	98.3	6.9
Boiler #7 and #8	0.7	0.7	0.4	6.8	13.7	0.4
Fire Pump	0.3	0.3	0.7	9.9	2.2	0.8
Totals	113.8	113.8	890.3	306.1	509.2	141.5

Recordkeeping Requirements

The following describes how Pioneer will demonstrate ongoing compliance with the requested 99 ton per year minor modification CO increase for the Thermal Oxidizer/Boiler #5 when the unit is operating as both a boiler and pollution control device. The facility will use the following emission data determined from previous stack testing, however, if Pioneer conducts future stack tests then that new emissions data may be used for calculation purposes.

1. As a result of extensive testing in 2010, Pioneer found that the highest CO emissions from the Thermal Oxidizer are when the P5 treater is in operation.

Therefore, Pioneer will monitor P5 minutes of operation monthly, and calculate emissions on a monthly and 12-month rolling total using the test data of 135.3 lbs/hr CO when burning #6 fuel oil.

- P5 minutes of operation are documented through both paper log sheets that the machine operators complete each day, and in minute-by-minute data recorded in the Citect computer database system.

When burning #6 fuel oil and not operating the P5 treater, Pioneer will calculate emissions on a monthly and 12-month rolling total using the CO emission rate of 15.7 lb/hr.

2. When firing natural gas, Pioneer will calculate emissions on a monthly and 12 month rolling total using the following emission rates from each operating scenario:

Emission Unit combination:	Average CO emission rate (lb/hr) while burning natural gas:
Specialty Resins only	0.60
P5 only	13.3
Specialty Resins + P5	15.7
Specialty Resins + P4 + P5	32.9
Specialty Resins + C4 + P5	42.0
Specialty Resins + C4 + P4 + P5	78.4

P5 minutes of operation are documented through both paper log sheets that the machine operators complete each day, and in minute-by-minute data recorded in the Citect computer database system. P4 and C4 operations are recorded in paper log sheets that the machine operators complete each day and through minute-by-minute data in the facility's computer database system. K1 – K8 operations are recorded in paper batch logs that are written by the reactor operators, and the Specialty Resins Department's diverter damper position (vented to Thermal Oxidizer or vented to atmosphere) is recorded every 15 minutes in the Citect computer database system.

3. If emissions from the Thermal Oxidizer approach the 329 TPY limit, the facility will have two compliance methods available, including:
 - Increasing the Thermal Oxidizer operating temperature to 1450°F to decrease CO emissions while the P5 is in operation to 61.0 lbs/hr. Thermal Oxidizer temperature is recorded each minute in the Citect computer database system, and would continue to be documented (as it is now) for compliance (per Condition (18) C, Pioneer must maintain minimum incinerator combustion temperature to at least 1250°F in the T.O.

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combustion chamber). During the times that the P5 is not in operation, Pioneer would utilize the emission rates described above when burning #6 fuel oil and when burning natural gas, for the combination of emission units operating during the reporting period.

- Decreasing the hours of operation on the P5 treater. As discussed above, treater operations are documented by both the machine operators as well as in the facility's database.

III. AMBIENT AIR QUALITY ANALYSIS

According to the 06-096 CMR 115, the level of air quality analyses required for a minor modification shall be determined on a case-by case basis. Based on the information available in the file, and the similarity to existing sources, Maine Ambient Air Quality Standards (MAAQS) will not be violated by this source's minor modification.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards, or increment standards either alone or in conjunction with emissions from other sources.

The Department hereby grants this minor modification, A-448-77-6-A, subject to the conditions found in Air Emission License A-448-70-A-A/I and subsequent amendments, in addition to the following conditions:

Pioneer is subject to the following New Source Review conditions.

- (1) The Thermal Oxidizer shall not exceed the following emission limitations when operating as both a Boiler and Pollution Control Device for the Control of VOCs and HAPs:

POLLUTANT	LB/HR	ORIGIN/AUTHORITY	ENFORCEABILITY
CO	135.3	06-096 CMR 140, BACT	Enforceable by State-only

- (2) Pioneer shall limit total CO emissions from the Thermal Oxidizer/Boiler #5 to less than 329 tons per year. Records shall be kept on a monthly and 12-month rolling total basis.

- (3) Pioneer shall monitor P5 minutes of operation monthly, and calculate emissions on a monthly and 12-month rolling total using the test data of 135.3 lbs/hr CO when burning #6 fuel oil. P5 Treater minutes of operation shall be documented through both paper log sheets that the machine operators complete each day, and in minute-by-minute data recorded in the facility's computer database system.
- (4) When burning #6 fuel oil and not operating the P5 treater, Pioneer will calculate CO emissions on a monthly and 12-month rolling total using the CO emission rate of 15.7 lb/hr. Pioneer shall calculate CO emissions by multiplying the license lb/hr emission limit by the number of hours of operation.
- (5) When firing natural gas, Pioneer shall calculate CO emissions on a monthly and 12- month rolling total using the following emission rates from each operating scenario:

Emission Unit combination:	Average CO emission rate (lb/hr) while burning natural gas:
Specialty Resins only	0.60
P5 only	13.3
Specialty Resins + P5	15.7
Specialty Resins + P4 + P5	32.9
Specialty Resins + C4 + P5	42.0
Specialty Resins + C4 + P4 + P5	78.4

Pioneer shall calculate the CO emissions by multiplying the above lb/hr emission rate by the number of hours of operation, depending on the operating scenario. The P5 Treater minutes of operation shall be documented through both paper log sheets that the machine operators complete each day, and in minute-by-minute data recorded in the facility's computer database system. P4 and C4 operations shall be recorded in paper log sheets that the machine operators complete each day and through minute-by-minute data in the facility's computer database system. K1 – K8 operations shall be recorded in paper batch logs that are written by the reactor operators, and the Specialty Resins Department's diverter damper position (vented to Thermal Oxidizer or vented to atmosphere) is recorded every 15 minutes in the Citect computer database system.

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- (6) Pioneer shall submit an application to incorporate this amendment into the Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 CMR 140, Section 2(J)(2)(c)]

DONE AND DATED IN AUGUSTA, MAINE THIS 12th DAY OF February 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PATRICIA W. AHO, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: December 30, 2011

Date of application acceptance: January 6, 2012

Date filed with Board of Environmental Protection: _____

This order prepared by Edwin Cousins, Bureau of Air Quality



