STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Pine Grove Crematorium **Penobscot County** **Bangor, Maine** **A-949-71-E-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #2**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S. § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Pine Grove Crematorium (Pine Grove) has applied for an Air Emission License amendment, permitting the operation of a new Class IV-A crematory incinerator.

The equipment addressed in this license is located at 1347 Hammond St., Bangor, Maine.

B. Emission Equipment

The crematory incinerator, Cremator #3, is a B&L Cremation Systems Inc. Model N-20AA with the following specifications:

Class Incinerator	IV-A
No. of Chambers	2
Type of Waste	Type 4
Max. Design Combustion Rate (lb/hr)	150
Auxiliary Fuel Input: **Primary Chamber (Btu/hr)** **Secondary Chamber (Btu/hr)**	 0.5 1.0
Emission Control	Afterburner

The crematory combustion gases vent to a 30 foot Above Ground Level (AGL) stack. This matches the stack heights for existing units at the facility and will be considered Best Practical Treatment for the stack height of the new crematory.

C. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	6.3	8.5	2.2	100
PM_{10}	6.3	8.5	2.2	100
SO_2	1.4	2.2	0.8	100
NO_x	4.2	6.1	1.9	100
CO	3.0	4.5	1.5	100
VOC	0.4	0.5	0.1	100

This modification is determined to be a minor modification and has been processed as such.

D. Facility Classification

The facility is licensed as follows:

- As a natural minor source of air emissions, because no license restrictions are necessary to keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. BEST PRACTICAL TREATMENT

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 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

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 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Cremator #3

Cremator #3 is a B&L Cremation Systems Inc. Model N-20AA crematory incinerator with a loading capacity of 700 lbs and an incineration rate of 150 lb/hr. Cremator #3 consists of a primary and secondary chamber with heat input ratings of 0.5 and 1.0 MMBtu/hr respectively, and will fire natural gas. The secondary chamber is maintained at a temperature of at least 1,600 ºF with a retention time of greater than one second. Cremator #3 exhausts through its own stack.

BACT for Cremator #3 is the following:

1. Emission Limits

Emissions information is based on a licensed allowed particulate matter emission limit of 0.12 gr/dscf, corrected to 12% CO_2, the burning of natural gas as an auxiliary fuel, and the use of the factors below.

The BACT emission limits from the natural gas burner portion of the total exhaust were based on the following:

PM/PM_{10}	0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115 BACT
SO_2	0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
NO_x	100 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
CO	84 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
VOC	5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98

The BACT emissions from the biomedical portion of the total exhaust were based on the following:

PM	0.12 gr/dscf corrected to 12% CO_2 based on 06-096 C.M.R. ch. 104
SO_2	2.17 lb/ton, AP-42 Table 2.3-1 dated 7/93
NO_X	3.56 lb/ton, AP-42 Table 2.3-1 dated 7/93
CO	2.95 lb/ton, AP-42 Table 2.3-1 dated 7/93
VOC	0.299 lb/ton, AP-42 Table 2.3-2 dated 7/93

The pound per hour BACT emissions for Cremator #3 are as follows:

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Natural Gas Burner	0.8	0.8	0.01	0.15	0.12	0.01
Remains	0.41	0.41	0.16	0.27	0.22	0.02
Total Emission Limit	1.21	1.21	0.17	0.42	0.34	0.03

Visible emissions from the crematory stack shall not exceed 10% opacity based on a six (6) minute block average basis.

2. Operating Parameters

- Operating temperature in the secondary chamber shall be maintained at or above 1,600 ºF for the duration of the burn cycle, with a stack gas retention time, at or above 1,600 ºF, of at least 1.0 second.
- To ensure an efficient burn and to prevent odors and visible emissions, the secondary chamber shall be preheated, as specified by the manufacturer, until the pyrometer temperature measures at least 1,600 ºF.
- No remains shall be introduced into the primary chamber until the temperature in the secondary chamber has reached 1,600 °F.
- Once the burn cycle has commenced by introduction of primary chamber combustion, the crematory shall be operated in an efficient manner, and as specified by the manufacturer, for the period of time between preheat and reaching the set operational temperature to be a minimum of 1,600 °F in the secondary chamber.
- A pyrometer and ¼-inch test port shall be installed and maintained at that location of the crematory or refractory-lined stack which provides sufficient volume to ensure a flue gas retention time of not less than 1.0 second at a minimum temperature of 1,600 ºF.
- A log shall be maintained recording the weight of the remains, preheat time, charging time, and the temperature of the secondary chamber every 60 minutes after start-up until and including final shutdown time. For facilities operating a chart recorder, the start time, date, and weight charged shall be logged on the chart.
- The crematory operator(s) shall receive adequate training to operate the crematory in accordance with the manufacturer's specifications and shall be familiar with the terms of the Air Emission License.

C. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the

facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

Annual emissions were calculated by assuming that each crematory operates for 8,760 hours/year at its maximum combustion and charge rate.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Cremator #1	3.15	3.15	0.70	2.10	1.49	0.18
Cremator #2	3.15	3.15	0.70	2.10	1.49	0.18
Cremator #3	2.11	2.11	0.72	1.81	1.50	0.13
Total TPY	**8.5**	**8.5**	**2.2**	**6.1**	**4.5**	**0.5**

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

III. AIR QUALITY ANALYSIS

According to 06-096 C.M.R. ch. 115, the level of air quality analysis and monitoring are determined on a case-by-case basis. Based on analysis for similar sources, the size of the source, the allowable emissions, the location, and the stack height, ambient air quality standards, including increments, are not expected to be violated. Therefore, an ambient air impact analysis will not be required for this source at this time.

ORDER

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

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

The Department hereby grants Air Emission License Amendment A-949-71-E-A, subject to the conditions found in Air Emission License A-949-71-C-R/A, in amendment A-949-71-D-A, and the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Specific Condition (16) of Air Emission License A-949-71-D-A.

(16) **Cremators #1, #2, and #3**

[06-096 C.M.R. ch. 115, BPT for Cremators #1 and #2, and 06-096 C.M.R. ch. 115, BACT for Cremator #3]

A. Cremators #1, #2, and #3 shall be used for the disposal of type 4 waste and shall not be used for the disposal of plastics, cytotoxic (antineoplastic) drugs or any radioactive wastes and shall not be used to dispose of any medical waste classified as type 7 waste, as defined in 06-096 C.M.R. ch. 100.

B. Cremators #1, #2, and #3 shall not exceed the unit's maximum design combustion rates. Auxiliary fuel inputs to the primary and secondary chambers shall be natural gas. Compliance shall be demonstrated through fuel receipts.

C. Each crematory shall not exceed a particulate matter emission limit of 0.12 gr/dscf, corrected to 12% CO_2. Licensed allowed emissions for the crematories shall not exceed the following:

Crematory Emission Limits lb/hr (per crematory)

	Cremator #1	Cremator #2	Cremator #3
PM	0.72	0.72	1.21
PM_{10}	0.72	0.72	1.21
SO_2	0.16	0.16	0.17
NOx	0.48	0.48	0.42
CO	0.34	0.34	0.34
VOC	0.04	0.04	0.03

Compliance shall be demonstrated through stack testing by request of the Department, in accordance with the appropriate method found in 40 C.F.R. Part 60, Appendix A.

D. Visible emissions from the stack of each crematory shall not exceed 10% on a 6-minute block average basis.

E. The secondary chamber of each unit shall be maintained at a temperature at or above 1,600 ºF and have a stack gas retention time of at least 1.0 second.

F. To ensure an efficient burn and to prevent odors and visible emissions, the secondary chamber of each unit shall be preheated, as specified by the manufacturer, until the pyrometer temperature measures at least 1,600 ºF.

G. No remains shall be introduced into the primary chamber of any unit until the temperature in the associated secondary chamber has reached 1,600 °F.

H. Once the burn cycle has commenced by introduction of primary chamber combustion, each crematory shall be operated in an efficient manner, and as specified by the manufacturer, for the period of time between preheat and reaching the set operational temperature to be a minimum of 1,600 ^{0}F in the secondary chamber. The temperature in each secondary chamber shall be maintained at a minimum of 1,600 ºF for the duration of the burn cycle.

I. A pyrometer and ¼-inch test port shall be installed and maintained at that location of each crematory or refractory lined stack for each unit which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1,600 ºF.

J. A log shall be maintained for each unit recording the weight of the remains, preheat time, charging time and the temperature of the secondary chamber every 60 minutes after start-up until, and including, final shutdown time. For facilities operating a chart recorder, the start time, date, and weight charged shall be logged on the chart.

K. The crematory operator(s) shall receive adequate training to operate each crematory in accordance with the manufacturer's specifications and shall be familiar with the terms of the Air Emission License.

DONE AND DATED IN AUGUSTA, MAINE THIS 15th DAY OF AUGUST, 2022.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for ____
MELANIE LOYZIM, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-949-71-C-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 6/10/22
Date of application acceptance: 6/28/22

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

FILED

AUG 15, 2022

State of Maine
Board of Environmental Protection