



DEPARTMENT ORDER

**Oak Grove Crematory  
Kennebec County  
Gardiner, Maine  
A-1022-71-F-A**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment #1**

**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**

Oak Grove Crematory (Oak Grove) was issued Air Emission License A-1022-71-E-R on September 18, 2014, for the operation of emission sources associated with their crematory.

Oak Grove has requested an amendment to their license in order to add a new, larger initial capacity Class IV-A crematory incinerator to their license, Crematory #3.

The equipment addressed in this license is located at 89 Technology Drive, Gardiner, Maine.

**B. Emission Equipment**

The new crematory incinerator is a B & L Cremation Systems, Inc. model Phoenix II-1 with the following specifications:

<b>Unit</b>	Crematory #3
<b>Class Incinerator</b>	IV-A
<b>No. of Chambers</b>	2
<b>Type of Waste</b>	Type 4
<b>Max. Design Combustion Rate (lb/hr)</b>	150
<b>Auxiliary Fuel Input:</b>	Propane
<b>Primary Chamber (Btu/hr)</b>	0.5
<b>Secondary Chamber (Btu/hr)</b>	1.0
<b>Emission Control</b>	Afterburner

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:

<b>Pollutant</b>	<b>Current License (TPY)</b>	<b>Future License (TPY)</b>	<b>Net Change (TPY)</b>	<b>Significant Emission Levels</b>
PM	6.3	9.6	+3.3	100
PM <sub>10</sub>	6.3	9.6	+3.3	100
SO <sub>2</sub>	1.4	2.1	+0.7	100
NO <sub>x</sub>	4.2	6.3	+2.1	100
CO	3.0	4.5	+1.5	100
VOC	0.3	0.6	+0.3	50
CO <sub>2</sub> e	<100,000	<100,000	---	100,000

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

D. Application Classification

The facility is licensed as follows:

- As a natural minor source of air emissions, because facility emissions cannot exceed 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 06-096 C.M.R. ch. 100.

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. Crematory #3

Crematory #3 is a B & L Systems model Phoenix II-1 Human Crematory Incinerator. The unit has a maximum initial charge of 1,000 pounds, with a maximum design combustion rate of 150 pounds per hour. Crematory #3 fires propane in its auxiliary burners, which are rated at 0.5 MMBtu/hr for the primary chamber and 1.0 MMBtu/hr for the secondary chamber. Crematory #3 is equipped with an afterburner for pollution control, a temperature recorder for tracking operation of the unit, and an opacity detector to provide feedback to the operator.

BACT for Crematory #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<sub>2</sub>, the burning of propane as an auxiliary fuel, and the use of the following factors:

The BACT emissions from the **propane** burner portion of the total exhaust were based on the following:

PM/PM <sub>10</sub>	0.2 lb/1,000 gallons based on AP-42, Table 1.5-1, dated 7/08
SO <sub>2</sub>	0.1 lb/1,000 gallons based on AP-42, Table 1.5-1, dated 7/08
NO <sub>x</sub>	13.0 lb/1,000 gallons based on AP-42, Table 1.5-1, dated 7/08
CO	7.5 lb/1,000 gallons based on AP-42, Table 1.5-1, dated 7/08
VOC	1.0 lb/1,000 gallons based on AP-42, Table 1.5-1, dated 7/08

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

PM/PM <sub>10</sub>	0.20 gr/dscf corrected to 12% CO <sub>2</sub> based on 06-096 C.M.R. ch. 115, BACT
SO <sub>2</sub>	2.17 lb/ton based on AP-42, Table 2.3-1, dated 7/93
NO <sub>x</sub>	3.56 lb/ton based on AP-42, Table 2.3-1, dated 7/93
CO	2.95 lb/ton based on AP-42, Table 2.3-1, dated 7/93
VOC	0.299 lb/ton based on AP-42, Table 2.3-2, dated 7/93

The pound per hour BACT emission limits for Crematory #3 are as follows:

	<b>PM (lb/hr)</b>	<b>PM<sub>10</sub> (lb/hr)</b>	<b>SO<sub>2</sub> (lb/hr)</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
Propane	0.01	0.01	0.01	0.21	0.12	0.02
Remains	0.72	0.72	0.16	0.27	0.22	0.02
Total Emission Limit	0.73	0.73	0.17	0.48	0.34	0.04

Visible emissions from the Crematory #3 stack shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

## 2. Operating Parameters

- a. Operating temperature in the secondary chamber shall be maintained at or above 1600°F for the duration of the burn cycle, with a stack gas retention time, at or above 1600°F, of at least 1.0 second;
- b. 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 1600°F;
- c. No remains shall be introduced into the primary chamber until the temperature in the secondary chamber has reached 1600°F;
- d. 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 1600°F in the secondary chamber;
- e. A pyrometer and 1/4-inch test port shall be installed and maintained at that location of the crematory or refractory lined stack which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1600°F;
- f. 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; and
- g. 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

Oak Grove shall be restricted to the following annual emissions, based on a calendar year total. The tons per year limits were calculated based on firing propane as the auxiliary fuel and operation of each of the three crematory incinerators for 8,760 hours per year:

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

	<u>PM</u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>VOC</u>
Crematory #1	3.2	3.2	0.7	2.1	1.5	0.2
Crematory #2	3.2	3.2	0.7	2.1	1.5	0.2
Crematory #3	3.2	3.2	0.7	2.1	1.5	0.2
<b>Total TPY</b>	<b>9.6</b>	<b>9.6</b>	<b>2.1</b>	<b>6.3</b>	<b>4.5</b>	<b>0.6</b>

**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-1022-71-F-A, subject to the conditions found in Air Emission License A-1022-71-E-R and the following specific condition.

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 Condition (16) of Air Emission License A-1022-71-E-R (September 18, 2014):

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

- A. The crematories 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. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- B. The crematories shall not exceed the unit's maximum design combustion rates. Auxiliary fuel inputs to the primary and secondary chambers shall be propane. Compliance shall be demonstrated through fuel receipts. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- C. Each crematory shall not exceed a particulate matter emission limit of 0.12 gr/dscf, corrected to 12% CO<sub>2</sub>. Licensed allowed emissions for the crematories shall not exceed the following:

**Crematory Emission Limits  
(Pounds per hour, per crematory)**

<b>Pollutant</b>	<b>Crematory #1</b>	<b>Crematory #2</b>	<b>Crematory #3</b>
<b>PM</b>	0.73	0.73	0.73
<b>PM<sub>10</sub></b>	0.73	0.73	0.73
<b>SO<sub>2</sub></b>	0.17	0.17	0.17
<b>NO<sub>x</sub></b>	0.48	0.48	0.48
<b>CO</b>	0.34	0.34	0.34
<b>VOC</b>	0.04	0.04	0.04

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

[06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]

- D. Visible emissions from each crematory stack shall not exceed 10% on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]

- E. Operating temperature in the secondary chamber shall be maintained at or above 1600°F, with a stack gas retention time, at or above 1600°F, of at least 1.0 second. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- F. To insure 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 1600°F. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- G. No remains shall be introduced into the primary chamber until the temperature in the secondary chamber has reached 1600°F. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- H. Once the burn cycle has commenced by introduction of primary chamber combustion, the crematories 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 1600°F in the secondary chamber. The temperature in the secondary chamber shall be maintained at a minimum of 1600°F for the duration of the burn cycle. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- I. A pyrometer and 1/4-inch test port shall be installed and maintained at that location of the crematories or refractory lined stacks which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1600°F. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]
- J. 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. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]

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K. 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. [06-096 C.M.R. ch. 115, BACT and 06-096 C.M.R. ch. 115, BPT]

DONE AND DATED IN AUGUSTA, MAINE THIS 23 DAY OF July, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *Maure Allen Robert Core for*  
PAUL MERCER, COMMISSIONER

**The term of this amendment shall be concurrent with the term of Air Emission License A-1022-71-E-R.**

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 20, 2018

Date of application acceptance: July 2, 2018

Date filed with the Board of Environmental Protection:

This Order prepared by Jonathan E. Rice, Bureau of Air Quality.

