

**TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION**

Air Permit File Number 0990322-007-AC
Premier Funeral Services & Cremations, Inc.
d/b/a/ Treasure Coast Crematory

*Addition of two refurbished human cremation units to existing human
crematory facility located at 730 North Dixie Highway, Lake Worth, Florida*

Palm Beach County, Florida

Permitting Authority:
Palm Beach County Health Department
Division of Environmental Health and Engineering
Air Pollution Control Section
P.O. Box 29 (901 Evernia Street)
West Palm Beach, FL 33402-0029

Permit Engineer: Jose M. Garcia, P.E.
Filename: 0322007.TE

June 2, 2005

1.0 APPLICATION INFORMATION

1.1 Applicant

Premier Funeral Services & Cremations, Inc.
d/b/a/ Treasure Coast Crematory
730 North Dixie Highway
Lake Worth, FL 33460

Authorized Representative:

Gloria Rizzo, President

1.2 Application Review

1-14-05: Health Department received application to construct two refurbished human cremation incinerators.

2-08-05: Health Department issued request for additional information (RFI).

5-05-05: Health Department received additional information from E.J. LeBoss of Air Observations, Inc.

5-16-05: Health Department deemed application complete.

2.0 FACILITY INFORMATION

2.1 Location

Treasure Coast Crematory
730 North Dixie Highway
Lake Worth, FL 33460

UTM: Zone 17; 594.27 km E; 2945.63 km N

2.2 Standard Industrial Classification Code

SIC No. 7261 - Human Crematory

2.3 Regulatory Classification

Based on the equipment design this facility will be classified as a natural, non-Title V, minor source of air pollution.

3.0 PROJECT DESCRIPTION

The applicant requests a construction permit to install two refurbished human cremation units in their existing facility located at 730 North Dixie Highway in Lake Worth, Florida. The existing facility consists of two Crawford Model No. C-1000H incinerator units. The two proposed units will be refurbished to meet Crawford Model No. C-1000H specifications. All four units use natural gas or LPG to fire the primary and secondary burners. The secondary chamber volume of each unit is sized such that exhaust gases will be exposed for 1.0 second if operated at 1800°F. The secondary chamber temperature will be monitored and recorded continuously by a circular chart recorder. Previous operation of this type of unit indicates compliance with the state regulations.

4.0 RULE APPLICABILITY

The proposed project is subject to preconstruction review under the applicable provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This facility is located in Palm Beach County, an area designated as "maintenance" for the pollutant ozone and attainment for all other criteria pollutants in accordance with Rule 62-275.410 and 62-275.400 respectively. The proposed project is exempt from review under Rule 62-212.400 F.A.C., Prevention of Significant Deterioration (PSD), because this new source is considered a minor emitting facility for the purpose of PSD regulations (potential to emit less than 250 tons per year of pollutant). The proposed facility shall comply with all applicable provisions of the Florida Administrative Code and, specifically, the following chapters and rules:

Florida Administrative Code:

Chapter 62-4 - Permits.

Rule 62-4.160 - General Permit Conditions.

Chapter 62-210 - Stationary Sources - General Requirements.

Rule 62-210.300 - Permits Required.

Rule 62-210.350 - Public Notice and Comment.
Rule 62-210.370 - Reports.
Rule 62-210.650 - Circumvention.
Rule 62-210.700 - Excess Emissions.
Chapter 62-212 - Stationary Sources - Preconstruction Review
Rule 62-212.300 - General Preconstruction Review Requirements
Chapter 62-296 - Stationary Sources - Emissions Standards
Rule 62-296.320 - General Pollutant Emission Limiting Standards.
Rule 62-296.401 - (5) Human Crematories
Chapter 62-297 - Stationary Sources - Emissions Monitoring
Rule 62-297.310 - General Test Requirements.
Rule 62-297.400 - EPA Test Methods Adopted by Reference

5.0 SOURCE IMPACT ANALYSIS

5.1 Potential Emissions of Criteria Pollutants

Criteria pollutants (carbon monoxide, lead, nitrogen oxides, particulate matter less than 10 microns, sulfur dioxide, and volatile organic compounds) will be emitted as a result of the combustion of natural gas, liquefied petroleum gas, and human bodies in the cremation units. The following permit limits, requested permit limits, and maximum equipment parameters will be used to establish the potential criteria pollutant emissions:

- Particulate matter emissions of 0.08 grains per dry standard cubic foot of flue gas at 7% oxygen or less. **[Rule 62-296.401(5)(a), F.A.C.]**
- Carbon monoxide emissions of 100 parts per million by volume, dry basis, corrected to 7% O₂ on an hourly average basis. **[Rule 62-296.401(5)(b), F.A.C.]**
- The hours of operation are unrestricted (8760 hours per year). **[Applicant's Request]**
- Primary and secondary burner fuel is limited to natural gas or LPG. **[Applicant's Request]**

Carbon Monoxide (CO): The maximum potential CO emissions are based on the maximum allowable emissions.

Assume the units operate at about 10% oxygen:

$$E(\text{CO}) = (2 \text{ units}) [(100 \text{ ft}^3 \text{ CO @ 7\% O}_2/\text{unit}) / (10^6 \text{ ft}^3)] \times (28 \text{ lb/lb-mol}) (\text{lb-mole} / 385 \text{ ft}^3) \times [(20.9 - 10.0) / (20.9 - 7.0)] \\ \times (941 \text{ dscf/min}) (60 \text{ min/hr}) (8760 \text{ hr/yr}) (\text{ton}/2000 \text{ lb}) = \underline{2.82 \text{ tons per year}}$$

Nitrogen Oxides (NO_x): The maximum potential NO_x emissions are based on a maximum charging rate of 150 pounds per hour and the emission factors for SCC No. 5-02-005-05.

$$E(\text{NO}_x) = (2 \text{ units}) (150 \text{ lb/unit-hr}) (\text{tons}/2000 \text{ lb}) (8760 \text{ hr/yr}) (3.0 \text{ lb NO}_x/\text{ton burned}) (\text{tons}/2000 \text{ lb}) = \underline{1.97 \text{ tons per year}}$$

Particulate Matter (PM₁₀): The maximum potential PM₁₀ emissions are based on the maximum allowable emissions.

$$E(\text{PM}_{10}) = (2 \text{ units}) (0.08 \text{ grains/unit-dscf @ 7\% O}_2) (\text{lb}/7000 \text{ grains}) (941 \text{ dscf/min}) (60 \text{ min/hr}) (8760 \text{ hr/yr}) (\text{ton}/2000 \text{ lb}) \\ = 5.65 \text{ tons per year}$$

Assume the units operate at about 10% oxygen:

$$(5.65 \text{ tons/yr}) [(20.9 - 10.0) / (20.9 - 7.0)] = \underline{4.43 \text{ tons per year}}$$

Sulfur Dioxide (SO₂): Because both units fire natural gas or LPG, the emissions of SO₂ are considered negligible.

$$E(\text{SO}_2) = \underline{0.00 \text{ tons per year}}$$

Volatile Organic Compounds (VOC): The maximum potential VOC emissions are based on a maximum charging rate of 150 pounds per hour and the emission factors for SCC No. 5-02-005-05.

$$E(\text{VOC}) = (2 \text{ units}) (150 \text{ lb/unit-hr}) (\text{tons}/2000 \text{ lb}) (8760 \text{ hr/yr}) (3.0 \text{ lb VOC/ton burned}) (\text{tons}/2000 \text{ lb}) = \underline{1.97 \text{ tons per year}}$$

Table 5.1-1 Summary of Facility-Wide Potential To Emit Criteria Pollutants

Criteria Pollutant	Current Unit Potential-To-Emit Tons Per Year	Proposed Unit Potential-To-Emit Tons Per Year	Total Facility Potential-To-Emit Tons Per Year
Carbon Monoxide (CO)	2.82	2.82	5.64
Nitrogen Oxides (NO _x)	1.97	1.97	3.94
Particulate Matter (PM ₁₀)	4.43	4.43	8.86
Sulfur Dioxide (SO ₂)*	0.00	0.00	0.00
Volatile Organic Compounds (VOC)	1.97	1.97	3.94

* Because both units fire natural gas or LPG, the emissions of SO₂ are considered negligible.

5.2 Potential Emissions of Hazardous Air Pollutants

Hazardous Air Pollutants will be emitted as a result of the combustion of natural gas, liquefied petroleum gas, and human bodies in the cremation units. The potential emissions of hazardous air pollutants have been estimated as follows:

Table 5.2-1 Summary of Facility-Wide Potential To Emit Hazardous Air Pollutants

Pollutant	Emission Factor	Unit	Emissions (tons/yr)
Antimony	3.02E-05	(lb/body cremated) ¹	2.65E-04
Arsenic	3.00E-05	(lb/body cremated) ¹	2.63E-04
Beryllium	1.37E-06	(lb/body cremated) ¹	1.20E-05
Cadmium	1.11E-05	(lb/body cremated) ¹	9.72E-05
Chromium	2.99E-05	(lb/body cremated) ¹	2.62E-04
Chromium (VI)	1.35E-05	(lb/body cremated) ¹	1.18E-04
Cobalt	1.75E-06	(lb/body cremated) ¹	1.53E-05
Formaldehyde	2.89E-09	(lb/ton cremated) ²	3.80E-09
Hydrogen Chloride	7.20E-02	(lb/body cremated) ¹	6.31E-01
Hydrogen Fluoride	6.55E-04	(lb/body cremated) ¹	5.74E-03
Lead	6.62E-05	(lb/body cremated) ¹	5.80E-04
Mercury	3.29E-03	(lb/body cremated) ¹	2.88E-02
Nickel	3.82E-05	(lb/body cremated) ¹	3.35E-04
Polycyclic Aromatic Hydrocarbons	3.76E-06	(lb/body cremated) ¹	3.29E-05
Selenium	4.36E-05	(lb/body cremated) ¹	3.82E-04
TCDF, Total	1.10E-08	(lb/body cremated) ¹	9.64E-08
TCDD, Total	1.41E-09	(lb/body cremated) ¹	1.24E-08
Total HAPs			6.68E-01

1. Based on SCC 31502101 for Crematory Stacks and assuming 4 incinerators x 150 lb/hr (changing rate) x 8760 hrs/yr x ton/2000 lb = 2628 ton/yr.

2. Based on EPA's Emission Inventory of HAP Emissions from MACT Sources - National Area Source Estimates for Human Cremation and assuming in Baseline SCC 31502101 for Crematory Stacks and assuming: 4 incinerators x body/2hr x 8760 hrs/yr = 17,520 bodies/yr.

5.3 Title V Applicability Determination

Based on the maximum design capacity of the cremation units and the proposed allowable permit conditions, this facility is classified as a natural, non-Title V, minor source of air pollution.

6.0 CONCLUSION

As reasonable assurance of compliance with the air pollution regulations, the applicant provided an emissions stack test report for: Baldwin Fairchild Funeral Home located in Orlando, Florida under air permit 0950126-005-AG. The test was conducted for an identical unit (refurbished to meet Crawford Model C-1000H human cremation incinerator specifications) on October 27, 2004 Coastal Air Consulting, Inc. Because this application was received on January 14, 2005, this identical unit stack test is within the 5 years required by rule. The test indicates compliance with the standards for visible emissions, particulate matter, and carbon monoxide.

Based on the information described in this evaluation, provided by the applicant, and subject to the conditions in the proposed draft permit, the Health Department believes the proposed project will not discharge, emit, or cause pollution in contravention of Department standards or rules. **[Rule 62-4.070(1), F.A.C.]**