NARRATIVE
6655 Lookout Road Unit #102
USE REVIEW

M. P. Murphy and Associates is proposing to lease unit #102 (1700 s.f.) in the existing building located at 6655 Lookout Road in the City of Boulder. The property is part of the Green’s Industrial Park, a subdivision approved for general industrial use under the G-I zone and constructed in 1983.

Mr. Murphy is proposing to use unit #102 of the existing building as a crematorium. The 1700 s.f. rental unit will include the actual retort used to cremate human remains, a refrigeration unit for temporary body storage and a body preparation area. The 1700 s.f. rental unit will include a modification to enlarge the existing office so it can be used as a room for meeting with the family of the deceased and allow viewing of the body.

This facility is not a mortuary and will not be used for funerals or host large public gatherings. The only time that members of the public will be at this facility is for meetings with the deceased family and viewing of the deceased. The Applicant estimates that they will conduct approximately one to two family meeting or viewings of the deceased per week.

One of the perceived concerns about crematorium is the handling of biohazard materials resulting from body preparation. These materials must be handled as per Federal, State and Local Regulation. These regulations require any biohazard materials must be disposed of by an entity licensed to handle biohazard materials such as Stericycle Inc. All materials must be disposed of properly which prohibits discharging of any materials related to body preparation through any sewage disposal system.

We understand the perceived issues related to the process of cremation and wanted to address some of the common misperceptions. The following are some of the issue that may arise from people not familiar with the cremation process and responses provided by the manufacturer of the proposed crematorium.

1. What is the air quality of gases that are released through the chimney of the cremation unit?
   - As a result of the Clean Air Act of 1990, the Environmental Protection Agency first classified crematories as medical waste incinerators, then later as OSW (“Other Solid Waste”) incinerators. After an intensive, testing in 1999 on working crematories that covered most types of emissions, including particulate matter, carbon monoxide and mercury, done jointly with the Cremation Association of North America and reviewing information presented, the EPA decided not to regulate human or animal crematories due to the insignificant amount of hazardous emissions from crematories.
   - The emissions from cremation equipment are not much different than any other fuel burning device. The two most common pollutants from the
cremation process are particulates and carbon monoxide. Particulates are tiny particles of dust, soot and ash resulting from combustion of the human remains, container and fuel. Carbon monoxide (CO) is a by-product of the combustion process including the human remains, container and fuel. The typical quantity of particulates captured from an entire cremation would be the size of a deck of cards. Carbon monoxide emissions from cremation equipment are a non-issue. One of the more stringent emission standards for CO is 100ppm. A well operated cremation system would average less than 15ppm.

- The proposed unit allows for wasted afterburning heat to be recycled through the floor, eliminating fluid problems, lowering fuel consumption and extending the hearth life.

- The entire combustion process is completed within the air controlled chambers eliminating burning in the stack. The cremation is performed using a temperature controlled burner and air jets which stimulate the cremation process. The secondary chamber is where the gases from the cremation process, called products of combustion, are subjected to adequate temperature and turbulence for typically one (1) second or more in order to clean them before they can be exhausted into atmosphere.

- The unit has an integrated automatic system that constantly monitors the stack gases to prevent visible emissions. This feature enables the unit to make all necessary adjustments automatically.

2. Can adjacent property owners and passers-by see when the crematorium is operating?

- Human remains consist of 85% moisture, which vaporizes during the cremation process; 10% combustible solids which release approximately 1000 BTUs per pound and transfer from a solid to vapor state; and 5% non-combustible solids which absorb heat and energy from the cremation process and remain as solids (bone fragments and ash materials) when cremation is completed. The 5% non-combustible solids are returned to the family for memorialization. There are not any elements in human remains that would be harmful to the environment as a result of cremation?

- Due to high internal temperatures and the passing of gas by-products through a secondary combustion chamber the only visible elements leaving the chimney would be primarily water vapor and small amounts (15 ppm) of carbon dioxide.

- Also as a result of the secondary combustion chamber no flames or heat glow are detectable.

3. How safe is the cremation unit?

- The chimney includes a three inch insulating liner is provided as a safety feature. While gases seldom exceed 800°F, the liner reduces heat penetration under every condition, preventing the possibility of fire. The exterior temperature of the chimney and the chamber does not exceed 150°F. Also the chimney must meet building standards which would
include a metal collar used to separate the chimney from other combustible materials.

- All chambers are constructed of high duty refractory walls with six inch 3000°F high duty brick in all non-insulating areas. The hearth is cast from 3000°F abrasive resistant material and the main chamber ceiling is insulating firebrick. This results in a external temperature that does not exceed 150°F.

- By the time a cremation is complete, the remains have been exposed to temperatures in excess of 1600° F. In the “Mass Fatality Management for Incidents,” a document prepared by the US Army and the Department of Justice, cremation and the destruction of both biological and chemical agents were discussed. They stated, “Cremation is the only option whereby remains are considered free from contamination and can be safely returned to the family with no additional constraints.”

- Operators are required to wear adequate personal protective equipment (PPE). Operators need to protect themselves from the potential respiratory irritations that the dust in cremation could cause. Operators need to wear an adequate particle mask to protect their nose and mouth from inhalation of the dust particles. Wearing gloves will minimize skin contact with the dust and the chances of transferring it from hands to other parts of the operator’s body.

(See attached correspondence from Matthews Cremation)
Matthews Cremation Division offers several accessories to complement the professional crematory.

**Power-Pak II**

The New Standard

SMOKE-BUSTER™ 140

2-Hours or Less Cremation Time

Up to 4 Cremations in 8 Hours

Matthews Cremation Division

2045 Sprit Boulevard

4ppolis, FL 32703

Phone: 407-885-5553

Toll Free: 1-800-327-2831

Fax: 407-885-5900

www.matthewscremationdivision.com
To the best of my knowledge, all field and analytical procedures comply with Florida Department of Environmental Protection requirements and all test data and plant operating data are true and correct.

Kenneth E. Given, P.E.
5-18-05
Date
1.0 INTRODUCTION

On May 5, 2005, Air Testing & Consulting, Inc. conducted the following tests on Baldwin Fairchild’s Human Crematory Incinerator located at 301 N. Ivanhoe Blvd. in Orlando, Florida:

1. Particulate Emission (EPA Methods 1 – 5)
2. Carbon Monoxide (EPA Method 10)
3. Visible Emissions (EPA Method 9)
4. Oxygen (EPA Method 3A)

These tests were performed at the request of Mathews Cremation Division to prove compliance on the Power Pak II crematory incinerator. Orange County, Environmental Protection Division, representatives, Gregory Bryant, Ilka Bundy and John Casper audited the test.

2.0 SUMMARY OF RESULTS

The results of the emission testing are presented in the Test Summary. The Particulate emissions averaged 0.0549 grains per dry standard cubic foot (gr/dscf) and CO emissions averaged 2.2 parts per million (ppmv), each corrected to 7% O₂. Opacity, highest six-minute average, on the stack, was 0%.
4.0 PROCESS DESCRIPTION

The facility operates a Matthews Power Pak II crematory for the purpose of disposing of human remains. The unit is rated at 100 lbs/hr and operates on a two hour cycle. See attached flow diagram. The design firing rate to the primary chamber is 0.7 MMBtu/hr and the rate to the afterburner is 1.2 MMBtu/hr.

After the secondary chamber has been heated sufficiently, the cremator burner ignites the cremation process is initiated. A typical cremation takes from 1 to 2 hours, but the time may vary depending on the body weights and various other factors. (See “Crematory Process Flow Diagram”).

The testing personnel detected no objectionable odor during the stack test.
### 3.0 SUMMARY OF TEST DATA

**PLANT:** BALDWIN  
**UNIT:** POWER-PACK II  
**RUN NUMBERS:** 1, 2, 3

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FIELD DATA AND SAMPLES UNDER THE CONTROL OF TIM CAPELLE  
LABORATORY ANALYSIS UNDER THE CONTROL OF ATC
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E. VISIBLE EMISSIONS
**AIR TESTING & CONSULTING, INC.**

(813) 651-0878

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**Process Equipment**

**CREMATORY**

**Control Equipment**

**AFTER BURNER**

**Fuel Type/Rate**

NAT. GAS

**Material Type/Rate**

HUMAN REMAINS

**Describe Emission Point**

STACK EXIT

**Height Above Ground Level**

Start 15 Stop ✔

**Direction from Observer**

Start 310° Stop 310°

**Describe Emissions**

Start N/A Stop ✔

**Emission Color**

Start N/A Stop ✔

**Water Droplets Present**

No

**Ambient Temp**

Start 85° Stop 62°

**Plume Type**

C

**Sky Conditions**

Start Cloudy Stop ✔

**Operating Rate**

1/2

**Operating Mode**

Collector

**Stack with**

Plume ✔

**Wind Speed**

Start 1 Stop 4.7

**Sun Location**

X

**Emission Point**

Observer's Position

**Observer's Name(Put signature)**

GIVEN

Certified by E.T.A

Date 2/05

**Comments**

- I certify the above process data is true to the best of my knowledge.

**SIGNATURE**