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west virginia department of environmental protection

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Division of Air Quality  
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Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
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## ENGINEERING EVALUATION / FACT SHEET

### BACKGROUND INFORMATION

Application No.: R13-3296  
Plant ID No.: 097-00070  
Applicant: Poling-St. Clair Funeral Home, Inc.  
Facility Name: Buckhannon  
Location: Buckhannon, Upshur County, WV  
NAICS Code: 812220  
Application Type: Construction  
Received Date: February 2, 2016  
Engineer Assigned: Caraline Griffith  
Fee Amount: \$1000.00  
Date Received: February 4, 2016  
Completeness Date: March 8, 2016  
Due Date: June 6, 2016  
Newspaper: *The Record Delta*  
Applicant Ad Date: February 15, 2016  
UTMs: Easting: 566.904 km Northing: 4,315.619 km Zone: 17N  
Description: This construction permit application is for the installation and operation of a human crematorium at the Buckhannon facility.

### DESCRIPTION OF PROCESS

Poling-St. Clair Funeral Home, Inc. proposes to install a new natural gas fired Matthews International, Matthews Cremation Division, Model Power-Pak I human crematory for use at their facility. The Power-Pak I, is a multi-chamber unit having an average 150 lbs/hr or 750 lbs/maximum load (approx. 1,000 BTU/lb). The primary chamber burner is rated at 500,000 BTU/hr/burner and the secondary chamber burner is rated at 900,000 BTU/hr, for a total of 1,400,000 BTU/hr.

Control of air pollution is achieved through the design of the Power-Pak I cremation unit, including its ability to operate the secondary chamber between 1400-1800 degrees Fahrenheit at a retention time in excess of 1.0 second. The emissions controls features are a Secondary Chamber Afterburner and a Microprocessor Temperature Control System and UV flame detectors on burners.

Promoting a healthy environment.

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## SITE INSPECTION

On February 25, 2016, Mike Kolb, an inspector with the Enforcement and Compliance Section of the DAQ, conducted a site inspection of Poling - St. Clair Funeral home in Buckhannon WV. The Funeral Home is located at 95 S. Kanawha Street. Upon arriving he met with Mr. Jeffrey St. Clair and Mr. Codi Cabrera. They looked at google earth imagery and determined that the Funeral Home, Mr. Cabrera's house, and a few other structures occupy about half of the block. To the east south east is a school approximately 550 feet away, almost due south and 100 to 120 feet higher are some houses and a large water tank. The rest of the area around the Funeral home is a makeup of residential and fraternities along with a variety of different businesses (food, convenience, insurance offices and some churches). Mr. St. Clair stated that they had a town meeting ( also televised ) about the crematorium going in. He stated that a few concerns were brought up but have been addressed and that three newspaper ads were ran.

The crematorium will be constructed in an existing garage located behind the funeral home and that a new garage will be constructed to the north east of the funeral home.

### Directions to Facility:

From I-79, take Exit 99 to Buckhannon. Merge onto US 119 N/US-33 E and go for approx. 11.2 miles. Take the exit toward County Rd 12/Main Street and turn right onto Old Weston Rd. Go for 0.4 miles and continue onto W. Main Street. Turn right onto S. Locus Road, and then continue onto S. Kanawha Street. The destination is on your right.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

With the submitted application, Poling-St. Clair Funeral Home, Inc. included a compliance test report of a Matthews International MCD IE43-PPI Human Cremator located in Apopka, Florida. The pollutants measured during the stack tests for the human cremator were filterable particulate matter, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO. This demonstration was conducted using U.S. EPA Methods, 1-4, 3A, 5, 7E, 9, 10 and 202. On June 30, 2015, three test runs were done to calculate emissions. Average measured particulate matter rate between the three runs was 0.17 pounds per hour at 15% O<sub>2</sub>.

The only emission source will be the human crematory.

Table #2 Facility Potential to Emit (PTE)		
Pollutant	Emission Limitations	Emission Limitations
	lb/hr	TPY
Particulate Matter (PM)	0.17	0.74
Nitrogen Oxides (NO <sub>x</sub> )	0.23	0.42
Carbon Monoxide (CO)	0.01	0.06
Sulfur Dioxide (SO <sub>2</sub> )	0.19	0.35
Volatile Organic Compounds (VOC)	0.23	0.42

### REGULATORY APPLICABILITY

The following state regulations apply.

#### **45CSR4 – To Prevent and Control the Discharge of Air Pollutants Into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors**

The purpose of this rule is to prevent and control any discharge that may cause or contribute to objectionable odors. The Poling-St. Clair Funeral Home, Inc. Buckhannon Facility should not emit any objectionable odors.

#### **45CSR6 - To Prevent and Control Air Pollution From Combustion of Refuse**

The purpose of this rule is to prevent and control air pollution from combustion of refuse. The permittee has proposed to install and operate one human crematory. This rule defines incineration as the destruction of combustible refuse by burning in a furnace designed for that purpose. The proposed cremators are designed to destroy human and animal remains and associated containers through incineration. Thus, it meets this definition.

Per section 4.1, these crematories must meet the particulate matter limit by weight. The human crematory will have an allowable particulate matter emission rate of 0.407 pounds per hour (based on maximum design-incineration rate of 150 lb/hr). This allowable rate is higher than the estimated hourly potential of 0.17 lb/hr. Thus, the unit should meet this PM standard.

The crematory is subject to the 20% opacity (visible emission) limitation in section 4.3 of this rule. The opacity and the allowable limits should be met since the crematory is equipped with a secondary chamber with an afterburner, which is designed to reduce the particulate matter

and other pollutants entrained in the exhaust stream into products of complete combustion. It is estimated that at any given time during the incineration process the minimum retention time will be 2.0 seconds. The rule of thumb for nearly complete combustion is 1.0-second retention time in the secondary chamber. Thus, this particular crematory should meet the applicable limitations of this rule.

### **45CSR13 - Permits for Modification, Modification, Relocation and Operation of Stationary sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation**

The potential-to-emit from the proposed crematory is below 6 pounds per hour and 10 tons per year for each of the criteria pollutants, which is less than the permit trigger level as defined in 45CSR§13-2.24.b. However, Rule 6 requires all incinerators to obtain a construction or modification permit regardless of size. Poling-St. Clair Funeral Home, Inc. has proposed to install one cremator, which is subject to Rule 6. Therefore, the facility is required to obtain a permit as required in 45CSR§6-6.1. and 45CSR§13-2.24.a. The facility has met the applicable requirements of this rule by publishing a Class I Legal Advertisement in *The Record Delta* on February 15, 2016, paid the \$1,000.00 application fee, and submitted a complete permit application.

As a result of this Construction, the Buckhannon facility will not be classified as a major source of hazardous air pollutants or major source under Title V. In addition, the emission unit is not subject to a New Source Performance Standard. Thus, the facility is not subject to Title V and will not be required to obtain an operating permit under 45CSR30. Therefore, the Buckhannon facility will remain classified as a "9B - Crematory Incinerator" source as defined in 45CSR22.

### **45CSR22 Air Quality Management Fee Program**

This facility is a minor source and not subject to 45CSR30. Poling-St. Clair Funeral Home, Inc. is required to keep their Certificate to Operate current. They paid the \$1000 fee associated with a Rule 13 permit application.

### **TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS**

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. The file contains summaries of the IRIS database information on hydrogen chloride and mercury. For a complete discussion of the known health effects, refer to the IRIS database located at [www.epa.gov/iris](http://www.epa.gov/iris).

## AIR QUALITY IMPACTS ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed Modification does not meet the definition of a major source as defined in 45CSR14.

## MONITORING OF OPERATIONS

Poling-St. Clair Funeral Home, Inc. must monitor both the primary and secondary chamber temperatures. The temperature of the secondary chamber must be recorded. Other monitoring that is needed for this type of unit is the weight of each cremation.

Monitoring the secondary chamber temperature is an indicator that the temperature in the secondary chamber is sufficient to ensure complete combustion of the products of incomplete combustion such as particulate matter, carbon monoxide, and volatile organic compounds. The secondary chamber must be operated at a minimum temperature of 1,400<sup>0</sup>F, but no more than 1,800<sup>0</sup>F, which is suggested by the manufacturer.

To ensure compliance with the visible emission standard of Rule 6, the writer proposes requiring visible emission checks to be conducted once every quarter.

## RECOMMENDATION TO DIRECTOR

The information provided in the permit application and the conditions set forth in the permit indicates the Matthews Cremation Division IE43-PPI (Power Pak I) human cremator should meet all applicable state rules and federal regulations when operated. Therefore, the writer recommends that a Rule 13 Construction Permit should be granted to Poling-St. Clair Funeral Home, Inc. for their proposed human crematory at the Buckhannon facility.

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Caraline Griffith  
Permit Engineer

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Date

Engineering Evaluation of R13-3296  
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