COMPANY: Vaughn Greene Funeral Services, PA
LOCATION: 4905 York Road, Baltimore, MD 21212
APPLICATION: Installation of a Matthews Environmental Solutions Power-Pak II Plus human crematory.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Company Presentation of Proposed Installation</td>
</tr>
</tbody>
</table>
Vaughn Greene Funeral Home – New Crematorium

VIRTUAL INFORMATIONAL MEETING 11/2
IN-PERSON INFORMATIONAL MEETING 11/9
THE APPLICANT

- Family-owned and operated
- 26 years in business
- 4 Baltimore-area locations

Vaughn Greene Funeral Services, P.A.
Application

Air Quality Permit

• For new equipment

New cremation facilities

• At existing funeral chapel
Cremation has surpassed burial as the most popular end-of-life option in the US.

- National Funeral Directors Association
Project Team

Vaughn Greene Funeral Services
William Miller
Managing Member

Matthews Environmental Solutions
Michael Tricoche – Engineer
Jeffrey Barron

Castles & Cottages
William “Doug” Beims – Architect

Century Engineering
Bob Bathurst, PE – Principal

J. Neil Lanzi & Lisa D. Sparks, Counsel to Vaughn Greene
Site – 4905 York Road
Installation Location

Within existing building
Surveyed Area Map
No residences within 150’ radius
North – Vacant lot, tree line & Rossiter Avenue

East – Parking lot and thick tree line

West – York Road and commercial (including post office)

South – Wing of funeral home and parking lot
June 04, 2020

Wright, Constable & Skeen, LLP
c/o J. Neil Lanzi
102 W. Pennsylvania Avenue, Suite 406
Towson, MD 21204

Re: 4903-4907 York Road

Dear Mr. Lanzi:

This letter is in response to your zoning inquiry for the above referenced property.

Please be advised that the subject property is located in a C-2 Commercial District and authorized for use as funeral home in compliance with all applicable zoning regulations. Per Subsection 1-306(c)(2) of the Zoning Code, a funeral home use includes the use of the premises for a crematorium. The use as stated would be allowed in conjunction with the existing funeral home. Our records show no zoning violations with respect to this property.

Should you have any additional questions regarding this matter, please contact the Zoning Office at 410-396-4128.

Sincerely,

[Signature]

Geoffrey Veale
Zoning Administrator
Rendering – 
Side Elevation
Rendering – Detail of Stack Enclosure

Stack enclosure design includes siding and decorative shutters.
Stack Enclosure Details

- 40’ from the ground
- **Same height** as the two existing chimneys on original building (1947)
  - No increase in overall height
- **Roof line and enclosure** designed to blend with existing materials and architecture
- **Rises 12’7”** above retort area pitched roof peak
Rendering –
3 Dimensional Front
Equipment

Matthews Environmental Solutions
Power-Pak II Plus
Equipment Features

• Emission Monitoring System
  • Automatic monitoring and correction of visible smoke

• M-pyre® 2.0 Operating Controls
  • Live operating graphics

• Smoke-Buster™ System
  • Complete combustion of smoke and odor

• Acoustic Cabinet
  • Noise isolation technology and improved insulation

• Stainless Steel Stack
  • Non-corrosive, with 4.5” refractory lining for durability, strength, and safety
Emissions

Legend:

- Residential Fireplace
- Diesel Truck
- Restaurant Cooking 100 Hamburgers Per Hour
- Matthews Cremator

Graph showing emission rates for particulate matter, nitrogen oxides, and volatile organic compounds for different sources.
### Calculation Of Emissions

#### Estimated Emission Calculation

Matthews Environmental Solutions  
(previously Matthews Cremation Division)  
Crematory Incinerator Model IEH-11PPI Plus

<table>
<thead>
<tr>
<th>Emission Calculation</th>
<th>Assumptions</th>
<th>Calculation Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Emission Rate</strong></td>
<td>Maximum operation of 12 hours per day, 6 days per week</td>
<td>( \text{Emission Rate} = \text{Incinerator Burn Rate} \times \text{Emission Factor} )</td>
</tr>
</tbody>
</table>
| **Sulfur Dioxide (SO_2)** | 175 lb/hr, 2.17 lb/ton | \[
\begin{align*}
175 \text{ lb/hr} & \times 2.17 \text{ lb/ton} \times 1 \text{ ton} = 390 \text{ lb/TPY} \\
& = 0.190 \text{ lb/hr} \\
& = 0.353 \text{ TPy} \\
& = 16.55 \text{ ppmv}
\end{align*}
\]
| **Nitrogen Dioxide (NO\_x as Nitrogen Dioxide)** | 175 lb/hr, 5.56 lb/ton | \[
\begin{align*}
175 \text{ lb/hr} & \times 5.56 \text{ lb/ton} \times 1 \text{ ton} = 997.5 \text{ lb/TPY} \\
& = 0.311 \text{ lb/hr} \\
& = 0.563 \text{ TPy} \\
& = 38.1 \text{ ppmv}
\end{align*}
\]
| **Particulates (PM \_2.5 \& PM \_10)** | 175 lb/hr, 4.67 lb/ton | \[
\begin{align*}
175 \text{ lb/hr} & \times 4.67 \text{ lb/ton} \times 1 \text{ ton} = 817.5 \text{ lb/TPY} \\
& = 0.40 \text{ lb/hr} \\
& = 0.76 \text{ TPy} \\
& = 0.04 \text{ g/m}^3
\end{align*}
\]
| **Carbon Monoxide (CO)** | 175 lb/hr, 2.95 lb/ton | \[
\begin{align*}
175 \text{ lb/hr} & \times 2.95 \text{ lb/ton} \times 1 \text{ ton} = 532 \text{ lb/TPY} \\
& = 0.258 \text{ lb/hr} \\
& = 0.48 \text{ TPy} \\
& = 52.08 \text{ ppmv}
\end{align*}
\]
| **Hydrocarbons (TOC/VOC - methane)** | 175 lb/hr, 2.09E-01 lb/ton | \[
\begin{align*}
175 \text{ lb/hr} & \times 2.09E-01 \text{ lb/ton} \times 1 \text{ ton} = 35.8 \text{ lb/TPY} \\
& = 0.026 \text{ lb/hr} \\
& = 0.049 \text{ TPy} \\
& = 9.16 \text{ ppmv}
\end{align*}
\]

#### Notes:
1. Incinerator Emissions based on EPA emissions from Table 2.3-1 and 2.3-2 of AP-42 (5th Edition).
2. All conversion factors from AP-42 Appendix A.

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**Wright, Constable & Skeen, LLP**  
**Attorneys At Law**

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Compliance with MDE Regulation - Particulates

26.11.08.05

.05 Particulate Matter.

...

B. Requirements for Areas III and IV.

(1) Calculations. Except as provided in Regulations .08 and .08-2 of this chapter, incinerator or hazardous waste incinerator emissions shall be adjusted to 12 percent carbon dioxide.

(2) Except as provided in Regulations .07, .08, and .08-2 of this chapter, a person may not cause or permit the discharge of particulate matter into the outdoor atmosphere from any incinerator, hazardous waste incinerator, or crematory to exceed the following limitations:

(a) Special medical waste incinerators burning less than 1 ton of refuse per hour and less than 8 tons of refuse per day and crematories, 0.10 grains per standard cubic foot dry 0.10 gr/SCFD (229 mg/dscm);

(b) All other incinerators and hazardous waste incinerators, 0.03 gr/SCFD (68.7 mg/dscm).
Compliance with MDE Regulation – CO

26.11.08.04

.04 Carbon Monoxide in Areas III and IV.

A. Applicability and Exceptions.

(1) This regulation is applicable only in Areas III and IV.

(2) This regulation applies to any person who owns or operates any installation that discharges carbon monoxide gas at a rate exceeding 500 pounds (227 kilograms) per day and at a concentration exceeding 12 percent by volume.

B. General Requirements.

(1) A person may not cause or permit the discharge of carbon monoxide gas into the atmosphere from any installation unless it is burned in a direct flame afterburner with excess oxygen for at least 0.3 second at a temperature of at least 1,300°F.

(2) The direct flame afterburner shall be equipped with a properly functioning recording pyrometer located and positioned in the work area so that it is readily visible to the operator of the installation.

The Power-Pak II Plus produces very minimal Carbon Monoxide:

3.00 ppm @ 7%O₂

AND

1. Secondary chamber of cremation unit has a retention time of above 1.0 second

2. Records and displays temperature of the secondary chamber during operation to comply with MDE requirements.
Emission Reduction Measures

- ✔ Installation of temperature monitor and recorder for constant verification of correct operations
- ✔ > 1 second retention time in secondary chamber @ 1600°F
- ✔ No burning of PVC plastic bags
Community Contact

Courtney Miller

410-804-9146

cmiller@vcgfs.com
Questions