

PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **022013-001**

Project Number: 2012-12-032
Installation Number: 019-0124

Parent Company: Kinney Mortuary Service & Crematory, Inc.

Parent Company Address: 1114 Wilkes Boulevard, Columbia, MO 65201

Installation Name: Heartland Cremation & Burial Society

Installation Address: 616 Jackson Street, Columbia, MO 65203

Location Information: Boone County, S11, T48N, R13W

Application for Authority to Construct was made for:

The relocation of a Matthews Cremation Model IE43-PP2 Power Pak II crematory. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

FEB - 8 2013

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "Kyma L. Moore".

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Heartland Cremation & Burial Society
Boone County, S11, T48N, R13W

1. Process Requirements for the Human Crematory (EU-01)
 - A. Heartland Cremation & Burial Society will burn exclusively non-infectious human bodies or body parts (as defined in the Project Description) and containers not containing chlorine.
 - B. Charging of waste during burn cycles is prohibited.
 - C. Remains shall be incinerated at a rate not exceeding 150.0 pounds per hour.
 - D. Attachment A or a form approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.C.
 - E. The crematory shall be equipped with a continuous chart recorder that monitors, displays and records the temperature in the final combustion chamber with an accuracy of two percent ($\pm 2\%$).
 - F. Heartland Cremation & Burial Society shall maintain the temperature in the final combustion chamber at or above 1600 degrees Fahrenheit.
2. Opacity
 - A. The crematory (EP-01) shall have opacity of less than ten percent (10%) at all times.
3. Requirements for Operators of the Human Crematory (EU-01)
 - A. All crematory operators shall attend a training program equivalent to that developed by the American Society of Mechanical Engineers (ASME), by the crematory manufacturer or by an individual with more than one (1) year experience in the operation of the crematory. The training shall include basic combustion theory, operating procedures, monitoring of combustion control parameters and all emergency procedures to be

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

followed if the crematory should malfunction or exceed operating parameters.

- B. The crematory operator shall have the essential steps necessary for satisfactory operation of the crematory readily available to him or her in an easy to read and follow manual.
4. Restriction of Odors
- A. If a continued situation of verified nuisance odors exists in violation of 10 CSR 10-6.165, the Director may require through written notice that Heartland Cremation & Burial Society submit within ten days a corrective action plan adequate to timely and significantly mitigate the odors. Heartland Cremation & Burial Society shall implement any such plan immediately upon its approval by the Director. Failure to either submit or implement such a plan shall be in violation of this permit.
5. Record Keeping and Reporting Requirements
- A. Heartland Cremation & Burial Society shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include Material Safety Data Sheets (MSDS) for all materials used.
 - B. Heartland Cremation & Burial Society shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2012-12-032
Installation ID Number: 019-0124
Permit Number:

Heartland Cremation & Burial Society
616 Jackson Street
Columbia, MO 65203

Complete: December 17, 2012

Parent Company:
Kinney Mortuary Service & Crematory, Inc.
1114 Wilkes Boulevard
Columbia, MO 65201

Boone County, S11, T48N, R13W

REVIEW SUMMARY

- Heartland Cremation & Burial Society has applied for authority to relocate a Matthews Cremation Model IE43-PP2 Power Pak II crematory from its present location at 1114 Wilkes Boulevard in Columbia, Missouri to 616 Jackson Street in Columbia, Missouri.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are from the combustion of remains and natural gas. Potential mercury emissions from the human cremator are above the SMAL, but below the RAL.
- None of the NSPS regulations apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- An afterburner installed by the manufacturer is being used in association with the new equipment, as control devices.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of criteria pollutants are below de minimis levels. Section (1)(B) requires all incinerators to obtain construction permits.
- This installation is located in Boone County, an attainment area for all other criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was performed to determine the ambient impact of mercury.
- Emissions testing are not required for the equipment. Stack testing was conducted on a similar unit and approved by the Air Pollution Control Program.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Kinney Mortuary Service & Crematory, Inc., the parent company of Heartland Cremation & Burial Society, currently operates this Matthews Cremation Model IE43-PP2 Power Pak II crematory at 1114 Wilkes Boulevard in Columbia, Missouri (019-0111) in association with Permit 062003-008. It is now being relocated to 616 Jackson Street in Columbia, Missouri (019-0124). At this new location, no permits have been issued to Heartland Cremation & Burial Society from the Air Pollution Control Program.

PROJECT DESCRIPTION

Heartland Cremation & Burial Society (herein referred to as Heartland) has applied for authority to install a Matthews Cremation Model IE43-PP2 Power Pak II crematory at its new location, 616 Jackson Street in Columbia, Missouri. Because Heartland is relocating this crematory, this site has received a new installation ID number (019-0124).

The Power Pak II has a maximum burn capacity of 150 lbs per hour and will be fired by natural gas. The crematory is equipped with a secondary firing chamber to control VOC, PM and HAP emissions. Stack tests have been conducted on the exact cremator model in Orlando, Florida on December 9, 2004 and May 5, 2005, to demonstrate the crematory will comply with the Air Pollution Control Program's requirements for crematories. The stack test results and raw data for this crematory were reviewed by the program during the review of Permit 082009-013 and they demonstrate the crematory will achieve a combustion efficiency of 99.9%, that the maximum particulate concentration in the crematory's stack gas is less than 0.09 gr/dscf and that the crematory's opacity does not exceed 10%. These requirements were developed to ensure proper combustion, which ensures destruction of HAPs.

The crematory is permitted to cremate non-infectious human bodies and body parts. The Air Pollution Control Program's definition of this term is human bodies and body parts that do not fit the definition of medical/infectious waste as defined in the Code of Federal Regulations, 40 CFR 60.51, *Standards of Performance for New Stationary Sources*, Subpart Ec—"Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction is Commenced After June 20, 1996." The rule defines medical/infectious waste as:

Medical/infectious waste means any waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that are listed in paragraphs (1) through (7) of this definition. The definition of medical/infectious waste does not include hazardous waste identified or listed under the regulations in part 261 of this chapter; household waste, as defined in §261.4(b)(1) of this chapter; ash from incineration of medical/infectious waste, once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment; and domestic sewage materials identified in §261.4(a)(1) of this chapter.

- (1) Cultures and stocks of infectious agents and associated biologicals, including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures.
- (2) Human pathological waste, including tissues, organs, and body parts and body fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers.
- (3) Human blood and blood products including:
 - (i) Liquid waste human blood;
 - (ii) Products of blood;
 - (iii) Items saturated and/or dripping with human blood; or
 - (iv) Items that were saturated and/or dripping with human blood that are now caked with dried human blood; including serum, plasma, and other blood components, and their containers, which were used or intended for use in either patient care, testing and laboratory analysis or the development of pharmaceuticals. Intravenous bags are also included in this category.
- (4) Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.
- (5) Animal waste including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including research in veterinary hospitals), production of biologicals or testing of pharmaceuticals.
- (6) Isolation wastes including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.

- (7) Unused sharps including the following unused, discarded sharps: hypodermic needles, suture needles, syringes, and scalpel blades.

EMISSIONS/CONTROLS EVALUATION

The emission rates for PM₁₀, NO_x, VOC, SO_x (reported as SO₂) and CO used in this review were obtained from a stack test conducted on the exact cremator model. The stack test was ran at the nominal burning capacity of 100 pounds per hour and the emission rates were scaled up to the maximum burning rate of 150 pounds per hour. The emission factors used in the analysis of HAP emissions was obtained from WebFIRE, EPA's online emissions factor repository, retrieval, and development tool. The composite emission factor of HAPs, which are based on the SCC 3-15-021-01, is 0.076 pounds of HAP per body cremated. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/A	N/A	0.43	N/A
PM ₁₀	15.0	N/A	N/A	0.43	N/A
PM _{2.5}	10.0	N/A	N/A	0.43	N/A
SO _x	40.0	N/A	N/A	1.01	N/A
NO _x	40.0	N/A	N/A	6.57	N/A
VOC	40.0	N/A	N/A	0.02	N/A
CO	100.0	N/A	N/A	0.03	N/A
HAPs	10.0/25.0	N/A	N/A	0.33	N/A
Mercury	¹ 0.01	N/A	N/A	0.014	N/A

N/A = Not Applicable , ¹ SMAL

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of criteria pollutants are below de minimis levels. Section (1)(B) requires all incinerators to obtain construction permits.

APPLICABLE REQUIREMENTS

Heartland shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information, 10 CSR 10-6.110*
- *Operating Permits, 10 CSR 10-6.065*
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin, 10 CSR 10-6.170*
- *Restriction of Emission of Visible Air Contaminants, 10 CSR 10-6.220*
- *Restriction of Emission of Odors, 10 CSR 10-6.165*

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of mercury. The emissions were modeled using AERSCREEN, EPA's recommended screening model. The stack parameters are included in Table 2 and the results of the analysis are included in Table 3. The analysis shows that the RAL for elemental mercury will not be exceeded. The highest impact occurs outside the fence line at 39 feet from the stack.

Table 2: Stack Parameters

Stack Height (m)	Stack Inside Diameter (m)	Stack Gas Velocity (m/s)	Stack Gas Temperature (K)
6.4008	0.5081	4.3485	933.15

Table 3: Ambient Air Quality Analysis Results

Pollutant	Modeled Impact	RAL ($\mu\text{g}/\text{m}^3$)	Time Period
Mercury	0.0567	0.14	24-hour
	0.0094	0.07	Annual

NOTE: AERSCREEN analysis shows compliance with RAL

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Daronn Williams
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated December 14, 2012, received December 17, 2012, designating Kinney Mortuary Service & Crematory, Inc. as the owner and operator of the installation.
- WebFIRE, EPA's online emissions factor repository, retrieval, and development tool.
- Stack testing results and raw data conducted on December 9, 2004 and May 5, 2005, in Orlando, Florida, prepared by Air Testing & Consulting, Inc.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SIC	Standard Industrial Classification
GHG	Greenhouse Gas	SIP	State Implementation Plan
gpm	gallons per minute	SMAL	Screening Model Action Levels
gr	grains	SO_x	sulfur oxides
GWP	Global Warming Potential	SO₂	sulfur dioxide
HAP	Hazardous Air Pollutant	tph	tons per hour
hr	hour	tpy	tons per year
hp	horsepower	VMT	vehicle miles traveled
lb	pound	VOC	Volatile Organic Compound
lbs/hr	pounds per hour		
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Joseph P. Kinney
President
Heartland Cremation & Burial Society
1114 Wilkes Boulevard
Columbia, MO 65201

RE: New Source Review Permit - Project Number: 2012-12-032

Dear Mr. Kinney:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Daronn Williams, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:dwl

Enclosures

c: Northeast Regional Office
PAMS File: 2012-12-032

Permit Number: