



Missouri Department of

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**NATURAL RESOURCES**

Michael L. Parson, Governor

Carol S. Comer, Director

OCT 02 2018

Ms. Livi Isringhausen  
Environmental Compliance Manager  
Washington University Medical School  
600 South Euclid Campus Box 8229  
St. Louis, MO 63110

RE: Part 70 Operating Permit Significant Modification - Permit Number OP2018-051A  
Project Number: 2018-08-038; Installation Number: 510-0040

Dear Ms. Isringhausen:

Your Part 70 Operating Permit OP2018-051 is being modified in response to your August 20, 2018 request. Your request was to modify the performance testing requirements of Permit Condition 007 in order to remove them after it was brought to light that needing a performance test is no longer required through a compliance calculation demonstration.

The testing requirements in Permit Condition 007 have been removed and the Statement of Basis discussion for Construction Permit 96-10-083 has been updated with further discussion and compliance calculations.

Your permit is revised by replacing Permit Condition 007 with the revised Permit Condition 007A, as well as replacing the Statement of Basis discussion for Construction Permit 96-10-083. These permit conditions appear on the attached pages. In order to ensure that you are complying with the correction version of Permit Condition 007, please cross out, blacken, or redact the entire Permit Condition 007 of OP2018-051. You may alternatively replace the pages accordingly in your updated operating permit. Pages 14A and 15A of this modification can replace pages 14 and 15 of the original operating permit. Pages SB-4A, SB-4B, and SB-5A can replace pages SB-4 and SB-5 of the original operating permit.

This permit modification may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.



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Ms. Livi Isringhausen  
Page Two

You may appeal this permit to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.078.16 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within thirty 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 have any questions regarding this modification, please do not hesitate to contact Nicole Weidenbenner, PE, at the department's 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

A handwritten signature in cursive script that reads "Kendall B. Hale".

Kendall B. Hale  
Permits Section Chief

KBH:kwj

Enclosures

c: St. Louis Regional Office  
PAMS File: 2018-08-038



# PART 70 PERMIT TO OPERATE

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

**Intermediate Operating Permit Number: OP2018-051A**  
**Expiration Date: January 6, 2023**  
**Installation ID: 510-0097**  
**Project Number: 2018-08-038**

<b>PERMIT CONDITION 007A</b>	
10 CSR 10-6.060 Construction Permits Required St. Louis City Air Program Construction Permit 96-10-083	
<b>Emission Source</b>	<b>Description</b>
EP-07	Natural Gas-Fired Pathological Incinerator, 1.65 MMBtu/hr, installed 1989

**Note: This Permit Condition replaces Permit Condition 007 in OP2018-051.**

**Emission Limitation:**

The particulate emission shall not exceed more than 0.03 grains per dry standard cubic foot of exhaust gas corrected to seven percent (7%) of oxygen. [Section II, Item A]

**Operational Limitation:**

1. The incinerator shall be operated in accordance with the plans and specifications of the manufacturer. [Section I, Item B]
2. This incinerator shall only be charged with human remains and/or animal remains that contain no chlorine. The permittee may incinerate fiberglass or plastic, including fiberglass or plastic that contains chlorine. [Section I, Item C]
3. The incinerator operation shall be limited to twelve (12) hours a day, five (5) days per week. [Section I, Item D]
4. The incinerator shall be equipped with an operable charging lock-out mechanism which prohibits charging during the manufacturer's burn cycle. [Section I, Item E]
5. Incinerator shall have a plate affixed to the incinerator inscribed with the essential steps necessary for satisfactory operation of the incinerator. It shall state the Refuse Burn Capacity (RBC) in pounds of waste burned per hour or per batch. [Section I, Item F]
6. A trained operator shall be on duty and immediately available during all periods of incinerator operation. [Section I, Item G]
7. Human remains charges shall not exceed three hundred twelve (312) tons per consecutive 12 months. [Section I, Item H]

8. Human charges shall not exceed a limit of two hundred (200) pounds per hour.<sup>2</sup> [Section I, Item I]
9. The secondary combustion chamber gases shall be pre-heated to and maintained at or above 1400°F prior to charging and throughout the incineration process. [Section II, Item C]
10. Residence of the gases within the secondary chamber shall be at least one (1) second. [Section II, Item E].

**Monitoring/Recordkeeping:**

1. The permittee shall continuously record the secondary combustion chamber temperatures. [Section IV, Item 1]
2. The permittee shall use Attachment F or an equivalent to record the monthly and consecutive 12-month human charge rate.
3. The permittee shall record the quantity and type of waste incinerated using Attachment F or an equivalent. In addition, if the material incinerated did not originate within the installation, a record of the supplier or any containers and/or human/animal remains incinerated shall also be kept. [Section IV, Item 2]
4. The manufacturer’s operating instructions, guidelines, and specification sheets shall be available on-site at all times. [Section I, Item G]
5. The permittee shall use Attachment G or an equivalent to record all maintenance and malfunction activities performed on the incinerator. [Section IV, Item 3]
6. The permittee shall keep records of incineration operational hours using Attachment F or an equivalent. [Section IV, Item 5]
7. The permittee shall keep record or written certification of the appropriate training received by the operator, with the dates of training that includes a listing of the instructor’s qualifications or applicable certification school, which shall be available at the incinerator site at all times. [Section IV, Item 6]

**Reporting:**

1. All reports shall be submitted to the Air Pollution Control Program’s Compliance/Enforcement Section at P.O. Box 176, Jefferson City, MO 65102 or by email to [AirComplianceReporting@dnr.mo.gov](mailto:AirComplianceReporting@dnr.mo.gov).
2. The permittee shall report any deviations from the requirements of this permit condition in the semi-annual monitoring report and annual compliance certification required by Section V of this permit.

<b>PERMIT CONDITION 008</b>	
10 CSR 10-6.060 Construction Permits Required	
St. Louis City Air Program Construction Permit 96-10-083	
<b>Emission Source</b>	<b>Description</b>
EP-07	Natural Gas-Fired Pathological Incinerator, 1.65 MMBtu/hr, installed 1989

**Emission Limitation:**

The incinerator shall be operated in such a manner that the emission from the stack will not exceed 10% opacity for a period in excess of 6 minutes in any consecutive 60 minute period. [Section II, Item B]

<sup>2</sup> The permittee is in compliance with this limitation; the incinerator is rated at 150 lb/hr.

Emission Source	Description	MHDR	Emission Factor	Source	PTE (lb/hr)	Exempt?
EP-07	Incinerator	312 ton/yr <sup>29</sup>	6.0 lb/ton	SDAPCD	0.21	Yes, < 0.5 lb/hr
EP-11	Wet Cooling Towers (Power Plant)	24,512.9 gal/min recirculation <sup>30</sup>	-	Ch 13.4 of AP-42	< 0.01	Yes, < 0.5 lb/hr
EP-28	Wet Cooling Towers (Satellite Buildings)	56,708.5 gal/min recirculation	-	Ch 13.4 of AP-42	< 0.01	Yes, < 0.5 lb/hr
-	Carpentry Shop	52 lb/yr <sup>31</sup>	2000 lb/ton	Conservative Assum.	< 0.01	Yes, < 0.5 lb/hr
-	Machine Shop	52 lb/yr	2000 lb/ton	Conservative Assum.	< 0.01	Yes, < 0.5 lb/hr

10 CSR 10-6.405, *Maximum Allowable Emission of Particulate Matter from Fuel Burning Equipment Used for Indirect Heating*

According to 10 CSR 10-6.405(1)(E), an installation is exempt from this rule if all of the installation's applicable units are fueled only by landfill gas, propane, natural gas, Fuel Oil No. 2 through 6 (with less than one and two-tenths percent (1.2 %) sulfur), or other gases (with hydrogen sulfide levels less than or equal to four (4) parts per million volume as measured using ASTM D4084, or equivalent and mercury concentrations less than forty (40) micrograms per cubic meter as measured using ASTM D5954, or ASTM D6350, or equivalent or any combination of these fuels. All the indirect heating sources operated at this installation exclusively combust natural gas/ propane and Fuel Oil No. 2, therefore the installation is not subject to this rule.

**Construction Permit History**

Construction Permit 96-10-083, issued October 8, 1996

**The following replaces the discussion of Construction Permit 96-10-083 in OP2018-051:**

The construction permit was issued in accordance with 10 CSR 10-6.060 for EP-07 Pathological Incinerator.

- Section I contains operational limitations on the incinerator. Item A was excluded from this permit because city ordinances are not state or federally enforceable. All other items from this section have been added to this permit.
- Section II contains specific conditions for operation of the incinerator. Item B limits opacity. This condition has been added to the operating permit.
- Section III requires submittal of a performance test from this unit or a similar unit to verify particulate matter emissions. The installation was previously using a similar unit stack test (Emissions Testing of the Chas. E. Davis Funeral Home, Inc. Human Crematory, Inverness, Florida, May 5, 1993) for compliance. However, after closer review of the 1993 stack test during the renewal of this operating permit, it was determined that it could not be considered similar enough to use for compliance; there was too large a difference in temperature. However, this operating permit does not require re-testing. The following calculations demonstrate that the incinerator is in compliance with the grain limit:

<sup>29</sup> Based on Construction Permit 96-10-083's limitation.

<sup>30</sup> The MHDRs of EP-11 and EP-28 are assumed to be double their actual 2016 water throughput.

<sup>31</sup> Maximum dust collected assumed to be 1 lb/week for both the Carpentry Shop and Machine Shop.

The following converts the 0.03 grains per dry standard cubic foot limit to units of pounds per hour:

$$\left(\frac{0.03 \text{ gr}}{\text{scf}}\right) \times \left(\frac{\text{scf} \left(\frac{449.82 \text{ K}}{298 \text{ K}}\right)}{\text{acf}}\right) \times \left(\frac{2500 \text{ acf}}{\text{min}}\right) \times \left(\frac{1 \text{ lb}}{7000 \text{ gr}}\right) \times \left(\frac{60 \text{ min}}{\text{hr}}\right) = 0.97 \text{ lb/hr}$$

This assumes the following:

$$\text{acf} = \text{scf} \times \left(\frac{T_{\text{actual}}}{T_{\text{standard}}}\right) \times \left(\frac{P_{\text{standard}}}{P_{\text{actual}}}\right)$$

Where:

$T_{\text{actual}} = 350^{\circ}\text{F} = 449.82 \text{ K}$ , this is the stack temperature of the incinerator as obtained from the 2017 EIQ

$T_{\text{standard}} = 298 \text{ K}$

$P_{\text{standard}} = P_{\text{actual}}$ , assumed to be equal because the stack is being released at atmospheric pressure  
2500 acfm is the incinerator stack flow rate as obtained from the 2017 EIQ

7000 gr/lb is a standard unit conversion

The following converts the incinerator's uncontrolled PTE into units of pounds per hour:

$$\left(\frac{200 \text{ lb}}{\text{hr}}\right) \times \left(\frac{4.67 \text{ lb PM}}{\text{ton}}\right) \times \left(\frac{\text{ton}}{2000 \text{ lb}}\right) = 0.467 \text{ lb/hr}$$

Where:

200 lb/hr is the limit as defined in Permit Condition 007A and Construction Permit 96-10-083  
4.67 lb PM/ton is an AP-42 emission factor as obtained from Table 2.3-1

$$0.467 \text{ lb/hr PTE} < 0.97 \text{ lb/hr limit}$$

Because the limit is higher than what the incinerator can do at its allowed maximum hourly design rate, the permittee will not be able to reach this limit. As a result, the permittee is not required to do performance testing, and the performance testing submittal requirements of this construction permit have not been included in the operating permit.

- Section IV contains recordkeeping requirements. Item 4 requires recordkeeping of performance tests performed on the incinerator. Because stack testing has not been performed on the incinerator and is not required, this item has not been included in the operating permit. Item 7 requires records to be kept for up to 3 years. 10 CSR 10-6.065 requires Title V sources to retain all records for a minimum of 5 years. To be in compliance with the construction permit and the Title V record retention period, this installation will keep records for 5 years.

Construction Permit 98-10-060, issued December 12, 1998

This construction permit was issued in accordance with 10 CSR 10-6.060 for the installation of emergency generators and fuel tanks.

- Section II limits the hours of operation for the emergency generators. These requirements have been added to this permit.
- Section III limits when the emergency generators can be used, limits fuel type, and limits fuel sulfur content. These requirements have been added to this permit.
- Section IV requires records of operation for the generators and requires records to be kept for five years. These requirements have been added to this permit.

Construction Permit 01-05-014, issued September 15, 2001

This construction permit was issued in accordance with 10 CSR 10-6.060 for the installation of an emergency generator and fuel tank.

- Section II limits the hours of operation of the emergency generator. It has been added to this permit.
- Section III limits the fuel sulfur content and requires opacity monitoring of the generator. The opacity limitations were superseded by Construction Permit 01-05-014A. The fuel sulfur content limit has been added to this permit.
- Section IV requires recordkeeping and reporting of fuel records, hours of operation of the generator, Method 22 observations, permit exceedances, and it also requires records to be kept for a minimum of 5 years. These requirements have been added to this permit.

Construction Permit 01-05-013, issued October 31, 2001

This construction permit was issued in accordance with 10 CSR 10-6.060 for the installation of a replacement boiler (EP-25B).

- Section II limits the opacity of the new boiler and limits fuel usage. The opacity limitation in 40 CFR Part 60 Subpart Dc is equivalent to the opacity limit of this construction permit which has been applied to the boiler. In order to streamline this operating permit, the opacity limitation from the construction permit has not been included in this operating permit. The fuel usage limitation has been included in this permit.
- Section III requires fuel records to be kept and limits sulfur content. This limitation is equivalent to a requirement in 40 CFR Part 60 Subpart Dc. In order to streamline this operating permit, this construction permit limitation has not been added. This section also requires the old coal-fired boilers to be removed or rendered inoperable. This condition has been met and thus has not been added to this permit.
- Section IV requires recordkeeping of fuel records, fuel supplier records, exceedances of Method 22 and Method 9 observations, and requires maintenance of the records. These conditions are equivalent to those required in 40 CFR Part 60 Subpart Dc and thus have not been added to this permit.

## **Response to Public Comments**

A draft modification to the operating permit was put up on public notice on August 24, 2018 for 30 days. During this time period no public comments were received.