

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection**

N749660602

FACILITY: LINCOLN MEMORIAL PK CEMETERY		SRN / ID: N7496
LOCATION: 21661 FOURTEEN MILE RD., CLINTON TWP		DISTRICT: Warren
CITY: CLINTON TWP		COUNTY: MACOMB
CONTACT: Sue Sullivan , Manager		ACTIVITY DATE: 10/22/2021
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On October 22, 2021, Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division (EGLE-AQD) Staff, I, Adam Bognar conducted a scheduled inspection of Lincoln Memorial Crematorium (the “facility”), located at 21661 East 14 Mile Road, Clinton Township, MI 48305. The purpose of this inspection was to determine the facility’s compliance status with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment, Great Lakes, and Energy (EGLE-AQD) rules; and Permit to Install (PTI) Nos. 281-05 and 251-07.

I arrived at the facility at 10 am. I met with Ms. Sue Sullivan, Manager (sullys48312@hotmail.com, Office: 586-791-3486). I identified myself and stated the purpose of the inspection. Ms. Sullivan gave me a tour of the facility. Mr. Martin Zimmerman, Foreman, was also present during the inspection. There are four employees that operate this crematory from 9 AM to 4 PM Monday through Saturday.

Lincoln Memorial Crematorium operates two crematory furnaces. Both are used to cremate human remains. The facility only accepts remains from a limited number of funeral homes. The facility provides a cardboard box to the funeral home to store the body in. This box is shipped to Lincoln Memorial Crematorium where it is burned in one of the two furnaces. The facility is located on the grounds of a cemetery (Lincoln Memorial Cemetery). I-94 and a golf course are directly south of the facility. North and northeast of the facility is the Lincoln Memorial Funeral Grounds. The facility is bordered by Workmen Circle Cemetery to the west.

PTI No. 281-05 and PTI No. 251-07

These two PTI’s are identical to each other – each issued for a single crematory furnace on different dates. The furnaces are both identical Matthews Cremation Division Power-Pak II natural gas fired crematories with a 150 lb/hr maximum design capacity and a 500 lb maximum load. PTI No. 281-05 was issued on December 13, 2005 for furnace “M1” and PTI No. 251-07 was issued on August 8, 2007 for furnace “M2”. Therefore, I will address the conditions of both PTIs at once, highlighting any difference between furnaces as applicable.

Special Condition 1.1: Limits Particulate Matter (PM) emissions to 0.20 lbs/1000 lbs of exhaust gases, corrected to 50% excess air. Compliance with this condition is determined by monitoring the opacity of the furnace exhaust. I did not notice any opacity coming from the furnace during this inspection. An opacity sensor is present on each machine that will adjust the combustion parameters to mitigate excess opacity. Additionally, there are two monitor screens near the crematories where operators can continuously view a video stream of the stacks.

Special Condition 1.2: States that the permittee shall only burn pathological wastes in the incinerator. Ms. Sullivan stated that only pathological wastes are burned. This claim is supported by the records they keep of each cremation case. Human remains and the boxes (wood/cardboard) used to transport the remains are the only waste burned at this facility. No animal remains are burned at this facility.

Special Condition 1.3: States that the permittee shall not combust waste in the incinerator unless a minimum temperature of 1600 ° F and a minimum retention time of 1.0 seconds in the secondary combustion chamber are maintained.

To begin the cremation process, the box containing human remains is moved into position in front of the furnace entrance. The furnace is pre-heated until the secondary combustion chamber reaches 1650°F. The furnace operator opens the furnace door and inspects the flame patterns and makes sure everything looks right inside the furnace. The body is inserted into the furnace and the furnace door is closed.

During my previous inspection in October 2020, I observed the secondary combustion chamber temperature begin to decrease after the cremation case was inserted into the furnace, eventually falling as low as 1440°F. A violation notice was sent to Lincoln Memorial Cremation for this non-compliance.

Also during my October 2020 inspection, Mr. Zimmerman explained that the temperature sometimes dips when the furnace hasn't been used for a while. In that case, the furnace had not been used in a couple of days, which is rare according to facility staff. Mr. Zimmerman made a manual adjustment to the furnace which quickly brought the temperature back up above 1600°F. This problem was further caused by an improper flame pattern in the incinerator. Mr. Zimmerman explained that they have a work order with Matthew's Cremation to come in to fix the flame pattern, but Matthew's Cremation has been very busy during the Covid-19 Pandemic.

During this inspection I verified that Matthew's Cremation fixed the flame pattern. Ms. Sullivan provided me with a work order showing that the furnace recently had a full look over by a certified Matthew's technician. The technician had to come out several times before he could correctly diagnose the problem with the burners.

Mr. Zimmerman stated that there was likely an issue with the thermocouple during my last inspection. Mr. Zimmerman explained that normally thermocouples either work fine or fail completely, but the thermocouple during my previous inspection was somewhere in between. Furnace M2 was operating during this inspection. It was towards the end of a cremation case during my inspection. The secondary combustion chamber was operating at 1650°F. Furnace M1 was off during this inspection. There are not primary combustion chamber thermocouples on either furnace, only the secondary combustion chamber temperature is monitored/recorded.

Special Condition 1.4: States that the incinerator shall be installed, maintained, and operated in a satisfactory manner.

A trained operator, Mr. Zimmerman, is responsible for doing basic maintenance checks on the incinerator such as replacing the thermocouple, inspecting flame patterns, checking for signs of wear, and replacing temperature recording discs. Mr. Zimmerman explained that they do not accept oversized bodies at this facility. Anything more than about 400 lbs is rejected. I did not notice any cremation case over 400 lbs in the records I reviewed.

The furnace door is opened after about 2 hours of combustion time to check on the body. The furnace door is only cracked about 6 inches for this check. There is a line on each machine marking this 6-inch opening.

A copy of the manufacturer's manual is available in a cabinet near the furnaces. Guidelines on starting, stopping, and maintaining the furnace are posted near each furnace.

A service technician from Matthew's Cremation comes out annually to inspect and service the furnaces. The last time this service was performed was on April 16, 2021.

An opacity sensor is present on both furnaces. A laser is passed through the furnace exhaust to read the opacity. If the opacity gets too high, the furnace automatically shuts down the front burners and adjusts the fuel/air ratio to reduce smoke. Each furnace stack has a camera pointed at it that broadcasts to screens inside the crematorium. Staff operating the furnaces can look at these screens to determine if any opacity is present. This device is calibrated by Matthew's cremation staff during the annual tune-up.

Special Condition 1.5: States that the permittee shall install, calibrate, and maintain in a satisfactory manner a device to monitor and record the temperature in the secondary combustion chamber on a continuous basis. Both furnaces are equipped with thermocouples that report temperature data to a circular chart recorder. The thermocouples are inspected annually and replaced as needed. The thermocouples were both replaced in 2021. The circular chart recorder only operates once the furnace is turned on and stops turning once the furnace is off.

Special Condition 1.6, 1.7, 1.8: Specifies recordkeeping requirements for the incinerators. The facility must keep records of the time, description, and weight of waste combusted in the incinerator. Additionally, the facility must keep continuous temperature data for the secondary combustion chamber during each of these combustions.

These records are maintained. Ms. Sullivan showed me the binder containing these records while I was on-site. These records have been kept in this manner since the facility began operation. These records are not kept digitally. The facility maintains hand-written logs of each cremation. I randomly reviewed records from October 2020 through October 2021. The facility notes the name of the deceased, the weight of the body, and the start and end time of each cremation.

The circular chart recorder readings were also made available to me during my inspection. Circular chart data is maintained going back to when the facility began operating. I looked at several charts from October 2020 through October 2021. Based on these charts it appears that the secondary combustion chamber temperature readings are regularly kept above 1600°F. I did not notice instances where the combustion chamber temperature fell below 1600°F in the records I reviewed. The temperature appeared to be consistent during combustion with no large fluctuations.

Special Condition 1.9: Specifies stack dimension requirements. I did not verify stack dimensions during this inspection. Both furnace stacks appear to be exhausted unobstructed vertically upwards to the ambient air.

Secondary Processing

Once combustion is complete the ashes/bones from the furnace, known as “cremains”, are swept out of the furnace into a bucket. A magnet is run through these cremains to remove any metal implants/staples that may have been in the body (so they don’t damage the grinder). The cremains are then run through a grinder that processes all of the cremains to a dust. The grinder is around 1-2 gallons in size and is covered while in operation. This dust is transferred from the grinder to a bag inside a box where it can be collected by the family or disposed of.

This workstation is equipped with a blower that draws air through two furnace filters and exhaust the air back into the general in-plant environment. These furnace filters serve to collect some of the dust generated from the grinding and transferring processes. Another purpose of this blower system is to cool the cremains.

Emergency Generator

There is a “Winco 35000” 35 kW diesel internal combustion engine on-site used for emergency power generation. This is located directly outside the facility. Mr. Zimmerman stated that the generator has only been used 1 or 2 times. The unit is tested once per year by turning it on for about 30 minutes.

Ms. Sullivan showed me a purchase order indicating that the engine was installed on May 16, 2006. The unit is subject to 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (MACT ZZZZ). The only requirement of MACT ZZZZ is to comply with 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (NSPS IIII). Since the engine was manufactured before April 1, 2006, the engine does not appear to be subject to NSPS IIII.

The diesel emergency generator appears to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(g) since it has less than 10,000,000 BTU/hr maximum heat input (actual max heat input= 358,275 BTU/hr = 35 kW output @ 33% thermal efficiency)

Compliance Determination

At the time of this inspection, Lincoln Memorial Crematorium appears to be operating in compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment, Great Lakes, and Energy (EGLE-AQD) rules; and Permit to Install (PTI) Nos. 281-05 and 251-07.

The violation notice dated December 10, 2020 will be resolved as a result of this inspection. The flame pattern has been fixed by Matthew's Cremation. The secondary combustion chamber temperature of Furnace M1 is now able to maintain 1600°F throughout the cremation.

NAME Adam Bogros

DATE 10/28/2021

SUPERVISOR K. Kelly