

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

N774556885

FACILITY: RESSURRECTION CEMETERY-CREMATORY		SRN / ID: N7745
LOCATION: 18201 CLINTON RIVER RD, CLINTON TWP		DISTRICT: Warren
CITY: CLINTON TWP		COUNTY: MACOMB
CONTACT: Nick Starr , Manager		ACTIVITY DATE: 01/21/2021
STAFF: Adam Bogнар	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On January 21, 2020, Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division (EGLE-AQD) Staff, I, Adam Bogнар conducted a scheduled inspection of Resurrection Cemetery (the “facility” or “Resurrection Crematory”), located at 18201 Clinton River Road, Clinton Township. 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. 16-07 and 529 -95.

I arrived at the facility at around 9 am. I met with Mr. Nick Starr, Manager (nstarr@mtelliott.com, Office: 586-286-9020) and Mr. Kirk Allor, Operator. I identified myself and stated the purpose of the inspection.

Resurrection Crematory is a human crematory located on the grounds of Resurrection Cemetery. This crematory is operated by one full time employee from 7 am to 3 pm. Operating time depends on charge size and the start time of cremation. Generally, at least two to four cremations occur each day based on the records I reviewed. In the past, up to 9 cremations per day have been performed. Mr. Starr provided me with the records I requested and gave me a tour of the facility.

Resurrection Crematory operates three crematory furnaces. All three are used to cremate human remains (no animals or other waste). The first two crematory furnaces, manufactured by Matthew’s Cremation, were installed in 1995. The third crematory furnace, manufactured by Matthew’s Cremation, was installed in 2007. All three furnaces operate in a very similar manner. The main difference is that the older two furnaces do not have a chart recorder (and are not required to have one). Resurrection Crematory contracts Matthew’s Cremation to service the furnaces once per year.

Prior to cremation, remains are kept in cremation containers (often cardboard or wood) and stored either near the furnaces or in a refrigerator if needed. Up to 6 bodies can be stored at a time at this facility. The cremation containers are inserted into the furnace along with the remains. After the cremation, the cremated remains (cremains) are transferred to a grinding station where they are cooled (if needed), screened for metals using a magnet, ground to a fine dust, then placed into a package for the family to pick up.

Cremation can be a highly variable process. Different sized charges with differing body compositions can cause each cremation case to combust differently. I was able to view the startup process and operation of a 168lb charge. The first step is to insert the remains/cremation container into the furnace and shut the door. Next, the secondary combustion chamber is heated to approximately 850°F – this takes about 30 minutes. According to Mr. Allor at around 850°F the temperature struggles to get higher without turning on the ignition burner. Once the temperature reaches 850°F the ignition burner is turned on. The ignition burner is responsible for igniting the primary combustion burner. After the ignition burner is turned on, the secondary combustion temperature climbed to approximately 1350°F over the next 20-30 minutes. According to Mr. Allor the temperature struggles to get any higher without turning on the main burner. The primary combustion burner was turned on when the secondary combustion temperature was approximately 1350°F. Over the next 5-10 minutes the temperature climbed to 1650+ once the primary combustion burner was turned on. Based on the records I reviewed, the secondary combustion chamber temperature is usually kept around 1800°F for the majority of the cremation.

As the cremation proceeds, the combustion gases travel out of the primary combustion chamber into the secondary combustion chamber where they are further combusted. The goal of the secondary combustion chamber is to ensure complete combustion. Incomplete combustion of remains can lead to fallout, odors, hazardous emissions, and heavy smoke; all of which can be upsetting to neighbors of the facility and/or relatives of the deceased.

All three furnaces are equipped with opacity alarms. These alarms are calibrated each time Matthew’s cremations comes to service the incinerators (generally once every year). If the opacity gets too high, the primary burner is automatically shut off while the secondary burner keeps running. This allows the secondary combustion chamber to “catch up”. Mr. Starr was unsure what the opacity trigger level is for the opacity meter.

PTI No. 529-95

The latest revision of PTI No. 529-95 was issued on January 11, 1996 for two natural gas fired crematory furnaces. Neither furnace is equipped with chart recorders. I was able to see one of these furnaces operate during this inspection.

Special Condition 13: 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.

Special Condition 14: States that visible emissions from the incinerators shall not exceed a 6-minute average of 20% opacity. I did not notice any opacity coming from the operating furnace during my inspection.

Special Condition 15: States that verification of particulate matter (PM) emission rates from the incinerators may be required for operating approval. This test has never been conducted. AQD is not requesting that Irwin Cremation perform a PM emission test at this time.

Special Condition 16: Requires proper operation and adequate maintenance of the incinerator to control emissions. Operation of the furnaces at Resurrection Crematory cannot be considered "proper operation" because they combust waste in the incinerator at a temperature below 1600°F. See discussion below under Special Condition 18.

There is a list of operation and maintenance guidelines in the permit. I have addressed this list in the bullet points below. These bullet points apply to all three furnaces at this facility.

- A trained operator, Mr. Kirk Allor, is responsible for doing basic maintenance checks on the incinerators such as cleaning spark plugs and greasing bearings.
- Grates are cleaned prior to each cremation
- The units are preheated for approximately 1 hour before the primary combustion chamber is turned on.
- Mr. Allor stated that this facility has accepted cremation cases as large as 1000 lbs.
- The charge door is not opened until at least 1.5 hours after the beginning of cremation. This is to prevent operator injury from exploding medical devices or excessive combustion. The charge door is only opened to briefly check on the cremation process, if at all.
- Only human remains are combusted in these incinerators.
- Combustion air is adjusted as needed. This is done by Matthews Cremation during their annual furnace inspection.
- Mr. Allor and Mr. Starr observe the cremation stacks as needed. It is possible to view these stacks by walking just outside the facility and across the street.
- A copy of the manufacturer's manual is located in the office near the cremators
- Mr. Allor does basic inspections on the cremators on at least a quarterly basis.

Special Condition 17: States that the applicant shall not operate the incinerators unless all provisions of Rule 301 are met. I was able to observe the stack while the furnace was in operation. I did not notice any opacity.

Special Condition 18: States that the applicant shall not operate the incinerators unless a minimum temperature of 1600°F and a minimum retention time of 1.0 seconds in the secondary combustion chamber are maintained.

The facility is not in compliance with this condition. I observed waste begin combustion in these furnaces while the secondary combustion chamber was at 1350°F. The temperature quickly climbed to 1650°F once combustion began. Staff at Resurrection Crematory stated that it is not possible for the secondary combustion chamber to reach 1600°F prior to turning on the primary burner. Charging the furnace with the primary burner on is not a safe or proper way to cremate. AQD spoke with the furnace manufacturer, Matthews Cremation, about this issue. Matthews Cremation reiterated what Resurrection Crematory staff had said. Matthews Cremation furnaces manufactured prior to 2001 are not built to be able to reach a secondary combustion chamber temperature of 1600°F prior to charging the furnace. None of the three furnaces at Resurrection Crematory can reach a secondary combustion chamber temperature of 1600°F prior to turning on the primary burner.

I spoke with AQD Warren District Supervisor Ms. Joyce Zhu about this issue. AQD decided not to issue a violation notice for this non-compliance. Instead, AQD sent Resurrection Crematory a letter explaining the compliance issue and providing the facility with options to get into compliance. The letter explained that Resurrection Cremation must retrofit the furnace so that the secondary combustion chamber can reach 1600°F prior to turning on the primary burner, OR, modify their current permit to install to allow for a lower secondary combustion temperature during start up. If this non-compliance is not fixed in a timely manner, then a violation notice will be issued.

Special Condition 19: States that the applicant shall not operate the incinerators unless the secondary combustion chamber preheats for 30 minutes prior to firing of the primary combustion chamber. I observed that the secondary combustion chamber is preheated for approximately 1 hour prior to switching on the primary burner.

Special Condition 20: Specifies stack dimensions. The stacks were exhausted vertically unobstructed through stacks on top of the building. I did not climb to the roof to verify stack dimensions.

Special Condition 21: States that the disposal of collected air contaminants shall be performed in a manner which minimizes the introduction of air contaminants to the outer air. Collected air contaminants are not exhausted outdoors at any time. During secondary processing of cremains, there are two furnace filters connected to a fan that collects any dust generated and exhausts to the general in plant environment.

Special Condition 22: States that the applicant shall only burn Type O or Type 4 waste in the incinerators. Only human remains are combusted at this facility (Type 4 waste).

Special Condition 23: Requires the facility to maintain monthly records of the number of cremations performed in each incinerator. These records are maintained. Mr. Starr was able to provide me with these records during my inspection.

Permit to Install No. 16-07

PTI No. 16-07 was issued on February 15, 2007 for one Matthews Power-Pak II Ultra (IE 43-PPII) natural gas fired crematory incinerator. This cremation furnace operates in essentially the same way as the older cremation furnaces. The main difference is that this cremator is equipped with a circular chart recorder. Secondary combustion chamber temperature data is recorded continuously on this machine.

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. This furnace was not operating during this inspection. An opacity sensor is present on each machine that will adjust the combustion parameters to mitigate excess opacity.

Special Condition 1.2: States that the permittee shall only burn pathological wastes in the incinerator. Only pathological wastes are burned. 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.

Based on my discussions with Resurrection Crematory staff during this inspection, this facility is not in compliance with this condition. I observed that during operation of one of the older furnaces, waste is combusted while the secondary combustion chamber is below 1600°F. AQD decided not to issue a violation notice for this non-compliance. (see discussion under Permit to Install No. 529-95 Special Condition 18).

Special Condition 1.4: Requires proper operation and adequate maintenance of the incinerator to control emissions. There is a list of operation and maintenance guidelines in the permit (addressed in PTI No. 529-95 bullets points). Operation of the furnaces are Resurrection Crematory cannot be considered "proper operation" because they combust waste in the incinerator at a temperature below 1600°F. See discussion under Permit to Install No. 529-95 Special Condition 18 for more information.

Special Condition 1.5: Requires that the permittee install, calibrate, maintain, and operate a device to monitor and record the secondary combustion chamber temperature. This machine is equipped with a chart recorder. The machine was off during my inspection.

Special Condition 1.6: Requires the permittee to keep records of the time, description, and weight of waste combusted in EUCREMATORY2. These records are maintained. Mr. Starr was able to provide me with these records during this inspection. I reviewed records from January 1, 2020 through the date of this inspection. I didn't notice any issues with the records.

Special Condition 1.7: Requires the permittee to maintain continuous secondary combustion chamber records for EUCREMATORY2. These records are maintained. Mr. Starr was able to provide me with these records during this inspection. The temperature is recorded on circular chart recorders. The start time, stop time, and name of deceased is noted on each circular chart. The secondary combustion chamber is generally kept around 1800°F for the majority of the cremation. Occasionally, I observed that the secondary combustion temperature spikes up to as high as 2200°F.

Special Condition 1.8: Specifies stack dimensions. The stacks were exhausted vertically unobstructed through stacks on top of the building. I did not climb to the roof to verify stack dimensions.

Secondary Processing

Once combustion is complete the ashes/bones from the furnace, known as "cremains", are swept out of the furnace and transferred to a grinding station. 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). Staples are disposed of on site. Metal Implants are buried on the cemetery grounds (never recycled).

The cremains are then run through a grinder that pulverizes the cremains to a dust. This dust is transferred from the grinder to a box where it can be collected by the family. This workstation is equipped with a blower that draws air through furnace filters and exhausts 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 before grinding.

Compliance Determination

At the time of this inspection Resurrection Crematory was not operating in compliance with the conditions of Permit to Install (PTI) Nos. 16-07 and 529-95. The compliance issues at Resurrection Crematory are summarized below:

Resurrection Crematory begins combustion in the crematory furnaces before the secondary combustion chamber reaches 1600°F. This is a violation of PTI No. 529-95 Special Conditions 16 & 18. This is also a violation of Permit to Install No. 16-07 Special Conditions 1.3 & 1.4. AOD will use enforcement discretion and not issue a violation notice for these violations (see discussion under PTI No. 529-95 SC 18.)

NAME Adam Bogros

DATE 5/12/2021

SUPERVISOR K. Kelly