

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

N685956864

<b>FACILITY:</b> Irwin Cremation Service L.L.C.		<b>SRN / ID:</b> N6859
<b>LOCATION:</b> 51528 SchoenherrRd, SHELBY TWP		<b>DISTRICT:</b> Warren
<b>CITY:</b> SHELBY TWP		<b>COUNTY:</b> MACOMB
<b>CONTACT:</b> Craig Irwin ,		<b>ACTIVITY DATE:</b> 01/20/2021
<b>STAFF:</b> Adam Bognar	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> MINOR
<b>SUBJECT:</b> Scheduled Inspection		
<b>RESOLVED COMPLAINTS:</b>		

On January 20, 2021, Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division (EGLE-AQD) Staff, I, Adam Bognar conducted a scheduled inspection of Irwin Cremation Service (the “facility”), located at 51528 Schoenherr Road, Shelby Charter Township, MI 48315. 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) No. 263-00A.

I arrived at the facility at around 9 am. I met with Mr. Craig Irwin, Owner (irwincremationsvc@att.net, Cell: 586-243-5754). I identified myself and stated the purpose of the inspection. Mr. Irwin is the owner and the only employee. The furnaces normally operate once in the morning from approximately 8 am to 1 pm and again in the evening from approximately 2 pm to 6 pm. After a brief discussion about recordkeeping, Mr. Irwin gave me a tour of the facility.

Irwin Cremation Service operates two crematory furnaces. Both are used to cremate human remains (no animals). The first crematory furnace, manufactured by Matthews Cremation Division, was installed in 2000. The second crematory furnace, manufactured by Matthews Cremation, was installed in 2013. Both furnaces operate in a very similar manner. Both furnaces are serviced by Matthews Cremation.

Prior to cremation, remains are kept in cardboard boxes near the furnaces. The cardboard boxes 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, screened for metals using a magnet, ground to a fine dust, then boxed into an urn/box for the family to pick up. Any metals collected such as hip replacements are recycled at a nearby scrap yard.

#### **PTI No. 263-00A**

PTI No. 263-00A was issued on August 30, 2013 for a Matthew’s Cremation Division Power Pak II Natural gas cremator and a Matthews Cremation Division Power Pak III Plus natural gas cremator. Both furnaces are operated in the same way. Before the remains are charged to the furnace, the secondary combustion chamber is pre-heated until it reaches 1200°F. Remains are charged into the primary chamber of the furnace through a steel door at the front of the furnace. As the cremation proceeds, the combustion gases travel out of the primary combustion chamber into the secondary combustion chamber where they are further combusted. Over the first approximately 15 minutes of combustion the secondary combustion temperature gradually rises to approximately 1750°F for the remainder of the cremation. 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.

Both furnaces are equipped with an opacity alarm. If the opacity gets too high, the primary burner is shut off while the secondary burner keeps running. This allows the secondary combustion chamber to “catch up”. These alarms are calibrated approximately every six months. Mr. Irwin performs the calibrations himself by holding tinted glass in front of the opacity sensor and comparing the opacity reading to a known value. Neither furnace is equipped with a probe to monitor excess oxygen in the exhaust gas.

#### **EUCREMATORY1 - Matthews Cremation Division Power Pak II – Installed around 2000**

Section I - Special Condition (SC) 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.

Section II – SC 1: States that the permittee shall only burn pathological wastes in the incinerator. Mr. Irwin stated that only pathological wastes are burned. The records I reviewed indicate that only human remains are burned at this facility. 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.

Section III – SC 1: 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.

This furnace was not operating during this inspection. Mr. Irwin stated that the furnace is always operated above 1600°F during cremation; however, Mr. Irwin stated that he normally inserts the remains when the temperature is at 1200°F. Mr. Irwin stated that the temperature quickly climbs to 1700°F once combustion begins.

This is problematic since their permit requires that the secondary chamber be kept above 1600°F *at all times* waste is being combusted. Currently the first 15-30 minutes of combustion are conducted at a secondary combustion temperature less than 1600° F. Mr. Irwin stated that neither of his furnaces will reach 1600°F without turning on the primary burner.

I called the furnace manufacturer, Matthews Cremation, to ask how hot the secondary combustion chamber can reach without turning on the primary burner. Matthews Cremation reiterated what Mr. Irwin stated – Matthews Cremation furnaces built before the year 2001 are not designed to preheat the secondary combustion chamber to 1600°F. Matthews stated that the secondary combustion chamber in these older furnaces will only reach around 800-1200°F before stalling. Matthews Cremation further stated that retrofitting these older units with the necessary equipment (new burners, refractory, baffles, piping, ect..) to reach these temperatures would likely be cost prohibitive for most cremators.

AQD decided not to issue a violation notice for this non-compliance. Instead, AQD sent Irwin Cremation Services a letter explaining the compliance issue and providing the facility with options to get into compliance. The letter explained that Irwin 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.

Section III – SC 2: States that the incinerator shall be installed, maintained, and operated in a satisfactory manner to control emissions. Due to the issues noted in the above paragraph, Irwin Cremation Services is not in compliance with this condition.

Section IV – SC 1: Requires that the permittee install, calibrate, maintain, and operate a device to monitor and record the secondary combustion chamber temperature. This machine has a thermocouple that monitors the secondary combustion chamber temperature; however, this machine is not currently equipped with a chart recorder to continuously record the temperature. Irwin Cremation Services is not in compliance with this condition.

Mr. Irwin stated that he has purchased a chart recorder for this incinerator. Since Mr. Irwin is already working to resolve this violation notice, AQD will use enforcement discretion and not issue a violation notice for this non-compliance. Irwin Cremation must install the chart recorder in a timely manner and begin keeping records of secondary combustion temperature otherwise a violation notice will be issued.

Section VI – SC 1,2,3: Specifies recordkeeping requirements for the incinerator. 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.

Mr. Irwin was able to provide me with some of these records during the inspection. These records are not kept digitally. The facility maintains hand-written logs of each cremation. I reviewed records from January 2020 through January 2021. The facility notes the name of the deceased, the weight of the body, and the start time of each cremation.

Secondary combustion chamber temperature records are not maintained for this furnace. This furnace is not equipped with a chart recorder to continuously monitor temperature. Mr. Irwin has purchased a chart recorder and agreed to begin keeping records of secondary combustion chamber temperatures.

Section VIII – SC 1: 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.

#### **EUCREMATORY2 - Matthew's Cremation Division Power Pak III Plus – Installed 2013**

Section I - Special Condition (SC) 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. An opacity sensor is present on each machine that will adjust the combustion parameters to mitigate excess opacity. This furnace was operating during this inspection. I walked outside to observe the stack during operation. I did not notice any opacity coming from the stack.

Section II – SC 1: States that the permittee shall only burn pathological wastes in the incinerator. Mr. Irwin stated that 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.

Section II – SC 2: Limits the charge size to this furnace to 750 lbs. Mr. Irwin stated that he does not accept cases larger than 500 lbs. I did not see any cases larger than 500 lbs in the records I reviewed.

Section II – SC 3: States that the permittee shall not burn any fuel in the furnaces other than natural gas. The furnaces burn only natural gas. Both furnaces at this facility appear to burn only natural gas. I observed that the natural gas meter outside the facility showed that natural gas is being utilized while the newer furnace was on.

Section III – SC 1: 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.

This furnace was operating during my inspection. The temperature during this inspection was at 1650°F; however, Mr. Irwin explained that during his routine start up of the furnaces the primary burner (combustion burner) is turned on when the secondary combustion chamber reaches 1200°F. Mr. Irwin stated that Matthew's Cremation recommended that he operate the furnaces in this manner. Mr. Irwin further explained that the secondary combustion chamber temperature climbs from 1200°F to 1600+°F within the first 15 minutes of combustion; however, turning on the primary burner while the secondary combustion chamber is below 1600°F is a violation of this permit condition. Both EUCREMATORY1 and EUCREMATORY2 are operated in this manner.

AQD discussed this issue with Mr. Irwin. AQD gave Irwin Cremation the option to either comply with the permit by increasing the secondary combustion chamber temperature at startup, or apply for a permit modification that will allow lower startup temperatures. Mr. Irwin decided that he will increase the temperature of his furnaces at start-up to comply with the existing PTI. AQD will use enforcement discretion in this case. I spoke with Warren District Supervisor Ms. Joyce Zhu about this issue. No violation notice will be issued as long as Irwin Cremation only cremates after the secondary combustion chamber reaches 1600 degrees Fahrenheit according to PTI No. 263-00A.

Section III – SC 2: States that the incinerator shall be installed, maintained, and operated in a satisfactory manner to control emissions. Due to the issues noted in the above paragraph, Irwin Cremation Services is not in compliance with this condition.

Section IV – SC 1: 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 circular chart recorder that continuously records secondary combustion temperature.

The circular chart recorder readings were also made available to me during my inspection. I reviewed chart recorder records from January 2020 through January 2021. Based on these charts it appears that the secondary combustion chamber temperature readings are regularly kept above 1600°F. I did not notice any instance where the combustion chamber temperature fell below 1600°F during combustion in the records I reviewed. The temperature appeared to be consistent during combustion with no large fluctuations. Occasionally, the temperature spikes up to 1800°F or 1900°F in the first hour of combustion before stabilizing at around 1650°F. It is difficult to tell from the chart recorder data alone that combustion occurred while the secondary chamber was below 1600°F. The chart increases from 0 to 1650+ very quickly.

Section VI – SC 1,2,3,4,5,6: Specifies recordkeeping requirements for EUCREMATORY2. The facility must keep records of the time 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.

Mr. Irwin was able to provide me with these records during the inspection. These records are not kept digitally. The facility maintains hand-written logs of each cremation. I reviewed records from January 2020 through January 2021. The facility notes the name of the deceased, the weight of the body, and the start time of each cremation. Records of maintenance are maintained. These records show that a new thermocouple was installed in April 2020. Quarterly records of the periods of time when pathological waste is combusted are maintained.

#### **Incinerator Operation and Maintenance Guidelines**

PTI No. 263-00A contains a list of operation and maintenance guidelines. I went through this list with Mr. Irwin to see how he operates this facility.

- A trained operator, Mr. Irwin, is responsible for doing basic maintenance checks on the incinerator such as cleaning spark plugs, replacing thermocouples, and greasing bearings.
- Grates are cleaned before each cremation

- Waste is currently combusted once the furnaces reach 1200 °F instead of the 1600°F in these guidelines. This is in violation of permit to install No. 263-00A and will be cited in a violation notice.
- Bodies larger than 500 lbs are not accepted in either furnace.
- The charge doors are only opened towards the end of the cremation to check and make sure the remains are fully burned. Mr. Irwin stated that he has had occasional (approximately once per year) pacemaker explosions in his furnaces, but that the furnaces have not been damaged by these events.
- Only human remains are combusted in these furnaces.
- Combustion air ratios are adjusted as needed by Matthews Cremation during annual/biannual maintenance.
- Mr. Irwin stated that he periodically observes the stacks to watch for signs of opacity. The stack is visible during normal business hours for the purpose of doing Method 9 readings.
- A copy of the manufacturer's manual is kept near each of these furnaces.
- Basic maintenance is performed by Mr. Irwin on an as needed basis such as cleaning spark plugs and greasing bearings. Full maintenance checks by a crematory expert are generally conducted annually by Matthews Cremation.

### **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). 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 exhausted to the general in plant environment. No laser engraving is conducted at this facility.

### **Compliance Determination**

At the time of this inspection Irwin Cremation Services was not operating in compliance with the conditions of Permit to Install No. 263-00A. AQD will use enforcement discretion and not issue a violation for this non-compliance. Mr. Irwin stated that going forward he will only cremate in the furnaces after the secondary combustion chamber reaches 1600 degrees Fahrenheit. The compliance issues found at Irwin Cremation Services during this inspection are summarized below:

- Irwin Cremation Services begins combustion in EUCREMATORY1 & EUCREMATORY 2 before the secondary combustion chamber reaches 1600°F. This is a violation of EUCREMATORY1 Section III – SC 1&2.
- Irwin Cremation Services failed to equip EUCREMATORY1 with a device to continuously measure secondary combustion temperature. This is a violation of EUCREMATORY1 Section IV – SC 1.
- Irwin Cremation Services failed to maintain records of secondary combustion chamber temperature in EUCREMATORY1. This is a violation of EUCREMATORY1 Section VI – SC 2.
- Irwin Cremation Services begins combustion in EUCREMATORY2 before the secondary combustion chamber reaches 1600°F. This is a violation of EUCREMATORY2 Section III – SC 1&2.

NAME Adam Bogner

DATE 5/12/2021

SUPERVISOR K. Kelly