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DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

P050236250

FACILITY: LOVING MEMORY CREMATION		SRN / ID: P0502
LOCATION: 357 HOWARD STREET, LAPEER		DISTRICT: Lansing
CITY: LAPEER		COUNTY: LAPEER
CONTACT: Julie Richardson , Vice President		ACTIVITY DATE: 08/31/2016
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled inspection of veterinary crematory incinerator.		
RESOLVED COMPLAINTS:		

On 8/31/2016, the DEQ, AQD conducted a scheduled inspection of Loving Memory Cremation, which operates a crematory incinerator for deceased pets.

Environmental contact:

Julie Richardson; Vice President; 810-728-6529; julie@samheronins.com

Emission units:

Emission unit ID	Emission unit description	Permit to Install No.	Compliance status
EUCFS2300	Cremation Systems Model CFS-2300 Fuel type: natural gas Maximum charge: 300 pounds Burn rate 150 lbs/hr Charge type: animal (pet) remains	52-14	Compliance

Regulatory overview:

This company has a Permit to Install (PTI), No. 52-14, issued on 4/18/2014, for a veterinary crematory facility. They are permitted to cremate the remains of deceased pets, but not any human remains. They are considered a minor source for criteria air pollutants, that is, those pollutants for which there is a National Ambient Air Quality Standard (NAAQS). These pollutants include: carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds, lead, particulate matter smaller than 10 microns (PM-10), and particulate matter smaller than 2.5 microns (PM2.5). A major source would have the Potential to Emit (PTE) 100 tons per year (TPY) or more of one of the criteria pollutants.

The facility is considered to be a minor source, or area source, for Hazardous Air Pollutants (HAPs). A major source of HAPs has a PTE of 10 TPY or more of a single HAP, or 25 TPY or more of aggregate HAPs.

Fee status:

This facility is not a Category I fee subject source, because it is not a major source for criteria pollutants. It is not a Category II fee-subject source because it is not a major source for Hazardous Air Pollutants (HAPs), nor is it subject to federal New Source Performance Standards. Additionally, it is not Category III fee-subject, because it is not subject to federal Maximum Achievable Control Technology standards. The facility is not required to submit an annual air emissions report via the Michigan Air Emissions Reporting System (MAERS).

Location:

This facility is located in an area of light industrial and commercial businesses. It is in the west wing of a small industrial building, the east part of which is home to an upholstery manufacturing service. The nearest residences are about 500 feet to the west, 750 feet to the south, and 480 feet to the northeast, according to ArcGIS Explorer.

Recent history:

On 4/17/2014, AQD's Brian Culham attempted to conduct an inspection, but the facility did not appear to be operating. On 1/8/2015 and 2/17/2015, I had attempted to conduct an unannounced inspection. No one was at the site, and there were no footprints or tire tracks in the snow leading up to the facility's front door. I drove by the site on other occasions in 2015, but did not see any indications that someone was at the facility.

Arrival:

Given the past history of being unable to see anyone at the site, I called the phone number for Ms. Julie Richardson, Vice President, to ask if they were still operating. Ms. Richardson informed me that they frequently operate. We arranged a time and date for the inspection, when they knew they would be running, to avoid AQD making any wasted trips out to the site.

I arrived at 10:06 AM. There were no visible emissions from the facility's exhaust stack, nor were any odors detectable. Weather conditions were cloudy, humid, and 73 degrees F, with winds out of the north at 5-10 miles per hour (mph).

I met Ms. Richardson, and provided my credentials, per AQD procedures. I also provided a copy of the DEQ brochure *Environmental Inspections: Rights and Responsibilities*, per AQD procedures. I brought along the DEQ boiler NESHAP card on the federal boiler regulations, but the facility does not have a boiler onsite, only a hot water heater which is residential in size. She showed me the unit, which she believed was 5 gallons in size. This appeared to be an accurate assessment.

Inspection:

Ms. Richardson explained that they work with area vet clinics. She described their process, and my understanding of it is detailed below:

They require the veterinary offices they serve to list the deceased pet's weight, along with identification, on a paper tag. At Loving Memory, the paper tag is replaced with a metal tag, which has an identification number on it, though not the weight. This metal tag enters the crematory incinerator along with the remains, and the weight is recorded on a daily operating form. The metal tag does not melt during cremation, and is used to identify the burnt bone fragments which are removed from the incinerator. The bone fragments are ground in an enclosed container. The metal tag is then polished, having been tarnished by the heat, and is kept with the ashes, which go into a handmade ceramic urn.

Ms. Richardson showed me some metal pails of burnt bone fragments, which had recently been removed from the crematory incinerator. The fragments would then be ground up, she explained, in a processor, to be turned into a powder or ash. She showed me a pail of ashes which had been processed. She offered to show me the inside of their freezers, where deceased pets are kept prior to cremation, but I declined this invitation.

The processor which grinds bone fragments is a large metal container, with a tightly fitting lid. Ms. Richardson showed me that the lid seals rather tightly, and explained that this prevents any dust or ash from being emitted, during processing.

She informed me that they researched crematory incinerators prior to purchasing this one, and chose this because they felt it was the best type. The manufacturer, based in Chicago, is able to remotely diagnose any operational problems, she said. She pointed out a USB flash drive or thumb drive which, she explained, records the temperature and all other operating data.

The crematory incinerator was running right now, I was advised. The computer display showed that the unit had been running for 50.9 minutes already, and that time remaining in the burn cycle was 36.7 minutes.

Ms. Richardson showed me the manufacturer's literature on the four phases of operation for the unit:

1. Ignition phase: During this phase, the cremation process will be started by the main burner. The purpose of this phase is to incinerate the container and other non-organic materials, as well as begin gasification of the remains. DO NOT OPEN THE DOOR DURING THIS PHASE.
2. Burning phase: During this phase, the main burner will gradually gasify the remains by ramping up the temperature and consuming organic materials. The remains should be approximately 90% consumed by the end of this phase. As the gasified remains burn, the main chamber and afterburner temperatures will rise to their highest levels. DO NOT OPEN THE DOOR DURING THIS PHASE.
3. Calcining phase: During this phase, the main burners will operate at high excess air and high velocity to penetrate and breakdown the remaining organic materials. This phase will raise the main chamber temperature above 1,700°F for proper calcining of the remains. No organic matter should be present by the end of this phase.
4. Cool down phase: During this phase, the chamber is cooled by air injection from the burners. This phase is intended to cool the chamber to a temperature at which the remains can be removed from the chamber for processing. In approximately 60 minutes (default setting) the main chamber temperature will reduce to less than 700°F.

It is my understanding that the crematory incinerator has an opacity monitor in the exhaust stack, and that the control system for EUCFS2300 would e-mail company Ms. Richardson in the event of any unacceptable readings.

I checked compliance with each Special Condition in the PTI, and reviewed the recommended operation guidelines in Appendix A of the PTI with Ms. Richardson.

I. EMISSION LIMITS

SC 1. This condition sets a limit for particulate matter (PM) of 0.20 lb/1,000 lbs of exhaust gas. To verify compliance with this condition, a stack test would be necessary. At the present time, based upon the crematory incinerator EUCFS2300 operating with no signs of visible emissions, AQD does not have any reason to suspect that the unit is out of compliance with this limit.

II. MATERIAL LIMITS

SC 1. This condition requires that only pathological waste and associated materials from animals be incinerated in EUCFS2300. From the pails of bone fragments I saw earlier, it appeared that canine remains had been cremated.

SC 2. The permit prohibits the permittee from charging more than 300 pounds per charge in the crematory incinerator. Ms. Richardson explained that they have never gone up to 300 pounds, and that they feel such a weight of material could wear the unit out prematurely. The daily operating record I observed for the month of August 2016 showed that no charge weighed over 300 lbs. On only 4 occasions in August did charge weight exceed 200 lbs.

SC 3. The permittee is prohibited from burning any fuel other than natural gas. I was informed that this is the only fuel.

III. PROCESS/OPERATIONAL RESTRICTIONS

SC 1. This requires that the permittee not combust waste unless a minimum temperature of 1,600 degrees F and a minimum retention time of 1.0 seconds in the secondary combustion chamber are maintained. The manufacturer's information in the original permit application identifies a retention time of 1.5 seconds minimum. I did not have any means to verify the retention time. However, the computerized operating system for the EUCFS2300 displayed an actual temperature reading of 1,734 degrees F for the secondary combustion chamber, above the minimum requirement. The primary chamber was presently at 1,548 degrees F. A minimum temperature is not specified for the primary chamber.

SC 2. This requires that the crematory incinerator shall be installed, maintained, and operated in a satisfactory manner to control emissions from the EUCFS2300. A list of recommended operating and

maintenance (O&M) procedures are specified in Appendix A of PTI No. 52-14. There were no visible signs that the unit was not installed, maintained, or operated in a satisfactory manner.

We reviewed the O&M procedures in Appendix A. The company appears to be complying with the procedures.

APPENDIX A

Incinerator Operation and Maintenance Guidelines

1. Designate a trained operator for the unit and make that person responsible for compliance with the air pollution control requirements. *She and her partner are the trained operators, she indicated.*
2. Clean grates before each day's operation (more often if necessary), and dispose of the ashes properly. *I was informed that the grates are cleaned in between each run.*
3. Do not combust waste until the secondary combustion chamber (afterburner) is at or above the minimum required temperature. The temperature must be maintained for the duration of the burn cycle. *I was advised that they do not combust waste until the temperature of the secondary combustion chamber is above the minimum required 1,600 degrees F.*
4. Do not overload the incinerator. Stay within the loading rates and follow the manufacturer's instructions. *I was told that they stay below the maximum allowable charge weight of 300 lbs, which is required by the permit. Their daily operational log which I observed for August of 2016 concurs with this.*
5. Schedule charges to minimize opening the charging door as infrequently as possible. Opening the charging door lets cold air in and quenches the fire causing smoke. *I was informed that they do not open the charging door once the unit is running.*
6. Burn only the type of wastes that the incinerator has been approved to burn. Follow the manufacturer's instructions to maximize the efficiency of the unit, and to properly burn the waste(s). *I was told that they burn the remains of deceased pets, and did not see anything that contradicted this. The crematory incinerator, as I saw it today, appeared to be efficiently combusting.*
7. Keep the combustion air adjusted, according to the manufacturer's instructions. *I was informed that the unit adjusts its own combustion air automatically.*
8. Observe the stack frequently and adjust the operation as necessary to eliminate smoke and fly ash. *I was told they watch the stack frequently, and that the unit self regulates, with its own opacity monitor. I could see what appeared to be the equipment in place for the opacity sensor.*
9. Post a copy of the manufacturer's manual and this Guideline near the incinerator. *The manual was located at a desk, adjacent to the incinerator. They have a copy of the PTI at their office, which is a very short distance away, I was told. I gave Ms. Richardson a spare copy of the PTI, which contains Appendix A, to keep at the desk adjacent to the unit.*
10. Make quarterly inspections to check and service all of the equipment. If a qualified person is not available for proper inspections, a service contract with a reputable manufacturer is advisable. *I was informed that they have been trained by the manufacturer to perform routine maintenance, such as cleaning opacity sensor lenses, spark plugs, and other parts of the unit.*
11. Follow manufacturer's operation and maintenance guidelines. *I was informed that they are doing this.*

IV. DESIGN/EQUIPMENT PARAMETERS

SC 1. This requires the permittee to install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the temperature in the secondary combustion chamber on a continuous basis. The unit did appear to have a temperature measuring device to monitor and record this parameter. On a digital readout, it was possible to see a chart of the temperature, over time. There were no indications of any problems with the device.

Ms. Robinson sent me an e-mail, to demonstrate the electronic notification that she receives from the unit, each time it is used (attached for reference). The e-mail includes a chart showing afterburner temperature, main chamber temperature, stack temperature, and the charge weight (190 lbs for today, run #2). She indicated that the manufacturer can view the data at their Chicago location, to remotely diagnose any issues.

SC 2. This requires the facility to maintain a scale at the facility for the purpose of verifying the charge weight. They do not have a scale, but Ms. Richardson explained they have a system in place to ensure

they know the weight of the charge entering the incinerator each time it is used. This is the system described earlier in this report, involving the use of metal tags to identify and document the weight of each deceased pet. This can be considered an equivalent system, for purposes of compliance.

V. TESTING/SAMPLING

NA, as there are no Special Conditions pertaining to this.

VI. MONITORING/RECORDKEEPING

SC 1. This requires completion of records in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month. The daily operating record which I observed onsite appeared to be in a satisfactory format, and it listed operations as recent as 8/23. For operating today, 8/31, the company will have until 9/15/2016 to enter today's data in their recordkeeping.

SC 2. This requires the permittee to monitor and record the temperature in the secondary combustion chamber to be monitored and recorded on a continuous basis. It appears that this is being done, as discussed earlier in this report.

SC 3. The permittee is to keep, in a satisfactory manner, daily records of the time (duration of burn) and weight of waste combusted in EUCFS2300, as required by SC II.2. I reviewed their most recent recordkeeping form, a log of the crematory incinerator's daily operations. The weight of each charge was listed. On some days, more than one charge was processed. They ran on August 1, 2, 3, 4 (twice that day), 6, 8, 9, 10, 11 (twice that day), 12, 13, 16, 17, 18 (twice), 21 (twice that day), and 23.

SC 4. The permittee is to keep in a satisfactory manner, records on a calendar quarter basis of the periods of time when pathological waste is burned in the incinerator, as required by 40 CFR 60.50c(b). The records kept pursuant to SC 3. above appear to satisfy this requirement.

SC 5. The permittee is to keep, in a satisfactory manner, secondary combustion chamber temperature records for EUCFS2300 as required by SC VI. 2. This appears to be done on an electronic basis, and the data is retained on a flash drive/thumb drive, which I observed plugged in to the computerized operating system. I was informed that they can call up records upon request, for any specific day of operation.

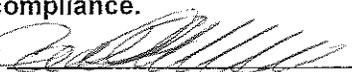
SC 6. The permittee is to keep, in a satisfactory manner, a record of all service, maintenance, and equipment inspections for EUCFS2300. It is my understanding that they do most of the maintenance themselves, including recalibrating the opacity sensor in the exhaust stack, and were trained to do so by the manufacturer. I was shown their maintenance records, which they document on a calendar. I advised that they keep these records for 5 years, and that they could also keep these records in a separate log.

As I prepared to leave the site, at 11:26 AM, there were no visible emissions from the exhaust stack, only heat waves. No odors were detectable onsite. I drove through some residential areas to the south of the facility, and detected no odors. Weather conditions were 73 degrees F and cloudy, with winds 5-10 mph, out of the north.

Conclusion:

The facility appeared to be in compliance with PTI No. 52-14. I did not identify any instances of noncompliance.

NAME



DATE

9/28/2016

SUPERVISOR



