N8067
manila
Lapeer

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

N806750098

FACILITY: ARISTO CAST		**SRN / ID:** N8067
LOCATION: 7400 RESEARCH DR, ALMONT		**DISTRICT:** Lansing
CITY: ALMONT		**COUNTY:** LAPEER
CONTACT: Tim Patterson , Safety & Environmental Coordinator		**ACTIVITY DATE:** 08/28/2019
STAFF: Daniel McGeen	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Scheduled inspection.		
RESOLVED COMPLAINTS:		

On 8/28/2019, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) conducted an inspection of Aristo Cast, a facility which was last inspected in 2012.

Environmental contacts:

Mr. Tim Patterson, Safety & Environmental Coordinator; 810-798-2900; tpatterson@aristo-cast.com

Facility description:

This facility is a foundry, which works primarily with steel, but also with aluminum and other metals, to a lesser extent. They produce metal parts through an investment casting process, and do metal finishing activities, as neeed, for the parts. They have the ability to produce large metal castings, as well as small ones.

Emission units:

Emission unit* description	Applicable exemption	Compliance status
6 Electric wax presses	Rule 290	Compliance
Natural gas autoclave	Rule 282(b)(i)	Compliance
2 Natural gas ovens	Rule 282(b)(i)	Compliance
2 Induction steel melters	Rule 282(a)(iv)	Compliance
1 Natural gas aluminum smelter	Rule 282(a)(iv)	Compliance
2 Wheelabrator shot blast systems with a new shared fabric filter, which also controls a third process	Rule 285(2)(l)(vi)(C), and Rule 285(2)(d)	Compliance
Caustic dip tank	Rule 285(r)(iv)	Compliance

*An *emission unit* is any part of a stationary source which emits or has the potential to emit an air contaminant.

Regulatory overview:

Aristo Cast is considered to be a true minor source, rather than a major source. A *major source* has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns.

This facility is considered a minor or *area source* for Hazardous Air Pollutants (HAPs), because it is not considered to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

Aristo Cast is subject to 40 CFR Part 63, Subpart ZZZZZ, the Maximum Achievable Control Technology (MACT) for Iron and Steel Foundries Area Sources. It is classified as a small area source of HAPs, meaning that they melt less than 20,000 tons per year.

All of their processes at the plant are exempt from the requirement of Rule 201 of the Michigan Air Pollution Control Rules to obtain a Permit to Install.

Fee status:

This facility is not considered a Category I fee-subject source, because it is not a major source for criteria pollutants. It is not considered a Category II fee-subject source because it is not a major source for HAPs, and is not subject to a federal New Source Performance Standard (those standards which are found in 40 CFR Part 60). It is considered a Category III fee-subject source, because it is subject to 40 CFR Part 63, Subpart ZZZZZ.

MAERS status:

This facility is not required to report annual emissions through the Michigan Air Emissions Reporting System (MAERS). The threshold for a facility to be required to report to MAERS is typically considered to be VOC emissions of 10 TPY or more, pursuant to Operational Memorandum No. 13. This source is believed to emit less than 10 TPY of VOCs, and so has not been entered into the MAERS database.

Location:

Aristo Cast is located near the east end of an industrial and business park on the north side of Almont, Lapeer County. There businesses to the immediate northwest and to the east. Aristo Cast has a 3-D printing facility to the north, although this facility is not known to be a source of air emissions subject to regulation. The nearest residences are houses 800-900 feet to the east and southeast.

History:

AQD files on this facility go back to January, 2008. This facility has been inspected by AQD in 2008, 2011, and 2012. No violations have ever been found.

Complaint history:

AQD has no records of complaints ever having been received, regarding this facility.

Safety apparel required:

Safety glasses with side shields, and hearing protection.

Arrival:

AQD was represented today by Environmental Engineer Marina Ostaszewski, from the Permit Section, and AQD Lansing District Secretary Kelly DeWitt, for educational purposes, in addition to myself. This was not an unannounced inspection. It had been arranged in advance, to ensure that process equipment would be running at the time of the inspection, as staff time is limited for permit engineers, and they cannot make multiple trips to a far away site, if it is not running at the time of the first visit..

We detected no odors on public roads north or east of the plant, as we approached on Tubspring Road and Howland Road. We turned west onto Research Drive, and approached from the east. There were neither odors nor visible emissions, as we drove up to the plant parking lot. No visible emissions or odors could be detected from the plant. Weather conditions were sunny, clear, and 72 degrees F, with winds about 10 miles per hour, out of the south southwest.

We arrived at 10:08 AM. I brought with me my identification/credentials, per AQD procedure, and we signed in, in the plant lobby. We met with Mr. Tim Patterson, Safety & Environmental Coordinator, and with Mr. Jack Ziemba, owner of the facility.

Pre-inspection meeting:

We reviewed the previous inspection report, from 4/24/2012. Mr. Patterson explained that the only

equipment change related to air quality at the plant has been installation of a shared fabric filter was installed for their two wheel-abrator devices, replacing 3 smaller fabric filters. We were also advised that a third process is hooked up to it. The fabric filter that was installed was deliberately oversized, as I understand it, so additional devices could be routed to it in the future, if need be.

Michigan Air Pollution Control Rule 285(2)(d) provides an exemption from the requirement of Rule 201 to obtain a permit to install for installation of new control equipment. It reads as follows:

(d) Reconstruction or replacement of air pollution control equipment with equivalent or more efficient equipment.

As described, and as seen during the inspection, I did not see anything which would prevent this exemption from applying to the new fabric filter control device.

Inspection:

Mr. Patterson accompanied us through the plant. In addition to being their safety and environmental contact, he is also their casting foreman, and he explained that he would need to assist with training a new employee and pouring molten metal in a series of heats, intermittently, throughout the morning. My understanding is that *heat* is a term used in the metals industry, to describe the pouring of a batch of molten metal.

Mr. Patterson explained the casting process, where wax is injected into a die, to produce a wax pattern. The pattern is then dipped repeatedly into agitated vats of ceramic, and fluidized beds of sand, and allowed to dry, in between dips. The ceramic and stucco material form a shell around the wax patterns. A natural gas-fired autoclave is then used to melt the wax out of the shell. Next, the shells are preheated in a preheat oven, in an oxygen-rich environment. Metal is heated in two natural gas-fired melting units. The molten metal is then transferred into one or more transfer ladles. There are four ladles, one in each of the following sizes: 300, 200, 100, and 30 lbs. After the metal has been poured into the heated shells and it has solidified, a knockout unit is used to rattle the shell off of the new metal parts. The parts then go into two wheelabrator units, which are controlled by the new shared fabric filter dust collector. There usually is not a lot of flash to be removed. Finally, the parts go to a series of finishing tables, where air is drawn down through the table tops, and is then ducted to a dust collector. This keeps metal particulates away from employees, to avoid inhalation.

For compliance with Subpart ZZZZZ, on 8/13/2008, AQD received the company's Initial Notification Report, which is kept in the facility file in the AQD Lansing District office. It describes the plant as a small, 23,000 square foot investment casting house with approximately 35 employees. To comply with the MACT for mercury, they certified that they use spec metal which does not contain any motor vehicle scrap. To comply with requirements for contaminants other than mercury in scrap metal, they prepare and operate by written material specifications for the purchase and use of only materials that do not include post-consumer automotive body scrap, engine blocks, oil filters, oily turnings, lead components, chlorinated products, or free liquids. For binder formulation requirements, they certified that they do not use a binder chemical formulation that contains methanol as a specific ingredient.

They still appear to be in compliance with ZZZZZ. Mr. Patterson advised that they use virgin metals here, not scrap.

6 electric wax presses; Rule 290:

The wax presses were in use. One was removed and replaced with a used unit, Mr. Patterson advised, and one was replaced with an identical unit, for a total of 6 at the plant. I did not see any visible emissions. There was a barely detectable odor of melted wax.

Mr. Patterson indicated that they are still using the same material, paraffin, the wax that is used in candles. A Material Safety Data Sheet was provided in 2012, and he indicated they can provide an

updated Safety Data Sheet (SDS) for it. It is not clear to me that the Rule 290 exemption is actually even needed, for the melting of paraffin wax .

We were able to observe the wax versions of parts affixed to part racks, and repeatedly dipped into vats of a ceramic slurry and beds of sand. Mr. Patterson explained that after the formation of the ceramic shell, the wax patterns are placed in their autoclave, for the wax to be removed under heat and pressure.

Natural gas autoclave; Rule 282(b)(i):

The autoclave was not running, at the time of the inspection. It is considered exempt from needing a permit to install based upon the firing of sweet natural gas at less than 50 million Btu/hour. It was installed prior to the 12/20/2016 revisions to AQD exemption rules, and is therefore subject to Rule 282 (b)(i), rather than the 282(2)(b)(i) which became effective on 12/20/2016. The exemption criteria are the same under the new version of the exemption for a natural gas fired process such as this, as described below:

(b) Fuel-burning equipment which is used for space heating, service water heating, electric power generation, oil and gas production or processing, or indirect heating and which burns only the following fuels:
(i) Sweet natural gas, synthetic natural gas, liquefied petroleum gas, or a combination thereof and the equipment has a rated heat input capacity of not more than 50,000,000 Btu per hour.

2 natural gas ovens; Rule 282(b)(i)

There are 2 ovens used as preheat ovens for the ceramic shells. They provide an oxygen-rich environment. They were installed pre-12/20/2016, and are also considered exempt under Rule 282(b)(i). We observed a number of the ceramic shells brought out of one of the ovens, in preparation for receiving molten metal in the casting process. The oven did not appear to be a source of fugitive emissions.

2 induction steel melters, Rule 282(a)(iv):

These were installed prior to 12/20/2016, and are considered to be exempt pursuant to Rule 282(a)(iv), because they are electrically heated, and they have a capacity of 1,000 lbs or less each. We did not see any fugitive emissions from the heating of molten metal.

We witnessed a number of direct pours of molten steel, while we stood back at a safe distance. A new 75 lb ladle was in use, but AQD does not have regulations on ladel size for exempt processes such as this. I did not see any fugitive emissions of air contaminants.

For compliance with Subpart ZZZZZ, on 8/13/2008, AQD received the company's Initial Notification Report, which is kept in the facility file in the AQD Lansing District office. It describes the plant as a small, 23,000 square foot investment casting house with approximately 35 employees. To comply with the MACT for mercury, they certified that they use spec metal which does not contain any motor vehicle scrap. To comply with requirements for contaminants other than mercury in scrap metal, they prepare and operate by written material specifications for the purchase and use of only materials that do not include post-consumer automotive body scrap, engine blocks, oil filters, oily turnings, lead components, chlorinated products, or free liquids. For binder formulation requirements, they certified that they do not use a binder chemical formulation that contains methanol as a specific ingredient.

They still appear to be in compliance with ZZZZZ. Mr. Patterson advised that they use virgin metals here, not scrap.

1 natural gas aluminum smelter; Rule 282(a)(iv):

I did not witness this in operation today. It is natural gas-fired, and considered exempt under Rule 282 (a)(iv), rather than 282(2)(a)(iv), because it was installed pre-12/20/2016.

Wheelabrator shot blast systems and shared fabric filter; Rule 285(l)(vi)(C), and Rule 285(2)(d):

The two Wheelabrator shot blast systems were not running, at the time of the inspection. As discussed earlier in this report, the two systems once shared three fabric filter dust collectors, but now share a large fabric filter. This new collector is located in between them, and exhausts outdoors. The Wheelabrators each have a lengthy section of ductwork which connects to the fabric filter. These sections of duct work can functionally be considered as "gravity collectors", because heavier particulates would drop out prior to reaching the fabric filter. A gravity collector can qualify as a mechanical pre-cleaner. Therefore, the shot blasters and their new fabric filter appear to satisfy the exemption criteria of Rule 285(2)(l)(vi)(C), below:

(l) The following equipment and any exhaust system or collector exclusively serving the equipment:
(vi) Equipment for carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, sand blast cleaning, shot blasting, shot peening, or polishing ceramic artwork, leather, metals, graphite, plastics, concrete, rubber, paper board, wood, wood products, stone, glass, fiberglass, or fabric which meets any of the following:
(A) Equipment used on a nonproduction basis.
(B) Equipment that has emissions that are released only into the general in-plant environment.
(C) Equipment that has externally vented emissions controlled by an appropriately designed and operated fabric filter collector that, for all specified operations with metal, is preceded by a mechanical precleaner. (Emphasis added.)

Also, as discussed earlier in this report, the replacement of air pollution control equipment with equivalent or more efficient equipment is exempted by Rule 285(2)(d).

Additionally, a knockout hammer to remove the ceramic from solidified metal parts is also hooked up to the new fabric filter, we were advised.

Mr. Patterson added that an air hammer is also hooked up to the new fabric filter. He advised us that they deliberately bought a fabric filter larger than the Wheelabrators actually needed, so they could tie in other processes to the filter, over time. The air hammer was not running, at the moment, but he explained its function to us.

Caustic dip tank; Rule 285(r)(iv):

There is a 55 or 56 gallon (my notes were difficult to read) caustic pot which they use as a dip tank for treating metal. This is considered exempt under Rule 285(l)(iv), which exempts metal cleaning process that exhaust into the general, in-plant environment. It is my understanding that it has been at the plant for some time, prior to the 12/20/2016 revision which updated Rule 285(r)(iv) to 285(2)(r)(iv).

Miscellaneous:

There were a number of minor metal working processes which exhaust to the indoor air, and can be considered exempt under Rule 285(l)(vi)(B). Some of these, like the finishing tables, exhaust to particulate collectors, as I understand it.

Rule 285(l)(vi)(B) exempts the following:

(l) The following equipment and any exhaust system or collector exclusively serving the equipment:
(vi) Equipment for carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, sand blast cleaning, shot blasting, shot peening, or polishing ceramic artwork, leather, metals, graphite, plastics, concrete, rubber, paper board, wood, wood products, stone, glass, fiberglass, or fabric which meets any of the following:
(A) Equipment used on a nonproduction basis.
(B) Equipment that has emissions that are released only into the general in-plant environment. (Emphasis added.)
(C) Equipment that has externally vented emissions controlled by an appropriately designed and operated fabric filter collector that, for all specified operations with metal, is preceded by a mechanical precleaner.

Mr. Patterson explained that they and MIOSHA staff have conducted sampling of indoor air at the plant, with portable/wearable monitors. They have not been able to find any problems with the in-plant air, he informed us, and they were actually compliant ahead of the new MIOSHA silica regulation.

Conclusion:

No instances of noncompliance could be identified with either the Michigan Air Pollution Control Rules or with 40 CFR Part 63, Subpart ZZZZZ. The facility was clean and neat. We left the facility at 12:20 PM. I could detect neither odors nor visible emissions, as we left the facility and drove through the surrounding industrial/business park.

NAME _____ DATE 9/29/2019 SUPERVISOR B. M.