

P1153

MANA

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

P115356490

<b>FACILITY:</b> 555 Nonprofit Gallery and Studios		<b>SRN / ID:</b> P1153
<b>LOCATION:</b> 2941 E. Warren Avenue, DETROIT		<b>DISTRICT:</b> Detroit
<b>CITY:</b> DETROIT		<b>COUNTY:</b> WAYNE
<b>CONTACT:</b> Carl Goines , Executive Director		<b>ACTIVITY DATE:</b> 10/23/2020
<b>STAFF:</b> Samuel Liveson	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> Minor
<b>SUBJECT:</b> On-site inspection.		
<b>RESOLVED COMPLAINTS:</b>		

On October 23, 2020, I conducted an announced, self-initiated inspection of 555 Nonprofit Gallery and Studios (555 Arts), located at 2941 East Warren Avenue in Detroit, Michigan. Accompanying me on the inspection was Air Quality Division (AQD) Senior Environmental Engineer Gerald Krawiec.

The purpose of this inspection was to determine the facility's compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Michigan Air Pollution Control Rules; 40 CFR Part 63 Subpart ZZZZZ – National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources; and 40 CFR Part 63 Subpart ZZZZZZ – National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries.

Mr. Krawiec and I arrived on site around 2:00 PM on October 23. We met with Carl Goines, Executive Director of 555 Nonprofit Gallery and Studios, and Jay Elias of Evolution Art Studio, Director of Veterans Programming and Foundry Development. They provided a walkthrough of the facility.

#### Legislative Inquiry

On October 21, 2020, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) received an inquiry from Senator Stephanie Chang's office regarding 555 Arts. The inquiry asked for the status of permits the business holds and any additional relevant information we may have. The inquiry was in response to an email from a resident sharing concerns about an open-air foundry.

#### Announced Inspection

Due to health and safety concerns related to the COVID-19 pandemic, all planned inspections from the AQD are announced. On Friday October 23, I talked with Mr. Elias via email and over the phone about the purpose of our inspections, and about visiting the facility that day around 2:00 pm.

#### Facility Overview

555 Arts has been an organization since 2002. The organization creates art of various materials including metals from foundry operations. 555 Arts purchased the 4-story building at this location in 2010, and they worked on the building more in 2017. They raise money through fundraisers, workshops, and commissions.

#### Stationary Source Determination

Evolution Art Studio appears to lease space from 555 Arts in the 4-story building. Two entities are a single stationary source if they are adjacent or contiguous; if they are under common control (a lease agreement indicates a "control" relationship, although that is not always the case); and if they have the same industrial grouping relationship. From these three conditions, 555 Arts and Evolution Art Studio appear to be one stationary source. Guidance on stationary source determination is available from the AQD "Stationary Source Determinations" policy and procedure.

#### Facility Walk-Through

##### *Current Location of Furnaces, and Plans for Future Use*

The organization has four furnaces, two of which are cupola style blast furnaces, and two of which are crucible furnaces. Furnace capacities range from 30 pounds to 150 pounds. During our inspection on October 23, the furnaces were located outside, near the building. However, on Thursday October 29, Mr. Elias let me know that the equipment has been moved to another location. Mr. Krawiec from AQD verified that day that the furnaces were no longer on site. On November 9, Mr. Goines clarified that the

furnaces moved off site were put into storage, and the organization plans to determine what is necessary to continue producing art castings and providing programming back at 555 Art's location.

#### *Furnace Information*

Below is information about the four furnaces the facility has.

Furnace	Furnace #1	Furnace #2	Furnace #3	Furnace #4
Name	--	Pinky	Little Champ	--
Style	Crucible	Cupula	Cupula	Crucible
Capacity	60 pounds	100-150 pounds	50-80 pounds	30 pounds
Diameter		10 inch	16 inch	
Material	Bronze and aluminum	Scrap iron	Scrap iron	Aluminum predominately
Flux	--	Marble chips	Marble chips	--
Fuel	Propane	Charcoal, coke, wood	Charcoal, coke, wood	Propane
Last run	Never operated	February 2020	July 4, 2020	--

#### *Mold Formation*

To create molds into which to pour the molten metal from furnaces, the facility uses silica sand and bentonite clay. They showed us an electric mixer located inside the lower level of the facility. I did not request safety datasheets of the bentonite clay used.

#### *Welding*

Some welding occurs on site. Welding appears to be exempt from obtaining a Permit to Install per Air Pollution Control Rule 285(2)(i).

#### *Flux*

Marble pellets from a store like Home Depot are used for flux. From our discussion on site, marble is a similar fluxing agent to limestone. The fluxing agent helps with viscosity. When melting, flux causes impurities to rise to the top layer of the metal, so you can pour out the layer of slag until metal is remaining.

#### *Metals*

Recycled iron is melted. This is primarily from house radiators that are donated or purchased. Copper is also melted. Copper is received mainly via donations of joints or fittings. Scrap aluminum is melted. Lastly, bronze is melted. The bronze is donated as ingots and is not scrap.

Regarding metals from motor vehicle scrap, the facility has received some donated brake rotors. According to Mr. Elias, the facility does not use other motor vehicle scrap.

#### *Fuel Used*

As indicated in the table above, the crucible furnaces use propane for fuel, while the cupula style furnaces use charcoal, coke, or wood.

#### *Paint booths, boilers, cold cleaners, and emergency generators*

From our discussion and from a facility walkthrough, there don't appear to be paint booths, boilers, cold cleaners, or emergency generators are on site.

#### *Furnace Operation*

Furnaces were not in operation during the inspection. According to Mr. Elias and Mr. Goines, they do not notice very much opacity when the furnaces are operating. If there is overflow metal that does not fit into the molds, it is poured into ingots. Regarding the length of the charge cycle, the furnaces need an hour or an hour and a half to warm up. At that time, a cycle may take 2 hours. Additionally, the lining in the furnace would erode if furnaces were frequently used.

#### *Furnace Usage Records*

Furnaces are not used on a daily or weekly basis, as is clear from the dates the furnaces were last used. However usage information is not clearly documented. Each charge is marked with a tick mark. Mr. Elias estimated that 800 pounds were poured in February, and 1600 pounds last Halloween.

#### Applicable Regulations

##### *Permit to Install – Michigan Air Pollution Control Rule 201*

Rule 201 of the Michigan Air Pollution Control Rules states the following:

Rule 201. (1) Except as allowed in R 336.1202, R 336.1277 to R 336.1291, or R 336.2823(15) a person shall not install, construct, reconstruct, relocate, or modify any process or process equipment, including control equipment pertaining thereto, which may emit any of the following, unless a permit to install that authorizes such action is issued by the department.

(a) Any air pollutant regulated by title I of the clean air act and its associated rules, including 40 C.F.R. §51.165 and §51.166, adopted by reference in R 336.1902.

(b) Any air contaminant.

R336.1278 to R 336.1291 contain exemptions from obtaining a permit to install. The exemption most closely related to furnace operation at 555 Arts is Rule 282(2)(a)(iv), provided below:

#### Rule 282.

...

(2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following:

(a) Any of the following processes or process equipment which are electrically heated or which fire sweet gas fuel or no. 1 or no. 2 fuel oil at a maximum total heat input rate of not more than 10,000,000 Btu per hour:

...

(iv) Crucible furnaces, pot furnaces, or induction melting and holding furnaces that have a capacity of 1,000 pounds or less each, in which sweating or distilling is not conducted and in which fluxing is not conducted utilizing free chlorine, chloride or fluoride derivatives, or ammonium compounds.

Because furnaces #2 and #3 use charcoal, coke, and wood as fuel sources, and are cupola furnaces (not crucible, pot, or induction melting furnaces), furnaces #2 and #3 appear to require a Permit to Install. Furnaces #1 and #4 appear to be exempt from obtaining a Permit to Install. Propane appears to be a sweet gas due to its low sulfur content. The capacity of furnaces is less than 1,000 pounds each, sweating or distilling is not conducted, and fluxing does not utilize free chlorine, chloride or fluoride derivatives, or ammonium compounds.

The facility does not have a Permit to Install for furnaces #2 and #3. However, because equipment has been removed off site, the facility appears to be in compliance at this time.

##### *Michigan Air Pollution Control Rule 301*

Rule 301(1)(a) of the Michigan Air Pollution Control Rules states the following:

Rule 301. (1) Except as provided in subrules (2), (3), and (4) of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:

(a) A 6-minute average of 20% opacity, except for 1 6-minute average per hour of not more than 27% opacity.

As mentioned earlier, according to Mr. Elias and Mr. Goines, they do not notice very much opacity when the furnaces are operating. AQD staff did not observe furnaces in operation. 20% opacity would obscure 20% of the observer's view, meaning that 80% of the background through the smoke is visible.

##### *Michigan Air Pollution Control Rule 331*

Rule 331(1)(a) of the Michigan Air Pollution Control Rules states the following:

Rule 331. (1) It is unlawful for a person to cause or allow the emission of particulate matter from any process or process equipment in excess of any of the following limits:  
(a) The maximum allowable emission rate listed in table 31.

In table 31, for coal firing from new equipment ("new" meaning having been issued a permit to install after January 18, 1980) and propane firing (which appears to be under category J, which is the general category of process or process equipment), particulate emissions are limited to 0.10 pounds per 1,000 pounds of exhaust air. AQD has related particulate emission limits to opacity limits such that a particulate limit greater than 0.076 pounds per 1,000 pounds of exhaust air relates to a visible emission limit of 20% opacity.

#### *Michigan Air Pollution Control Rule 901*

Rule 901(b) of the Michigan Air Pollution Control Rules is written below:

Rule 901. Notwithstanding the provisions of any other rule, a person shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:

...  
(b) Unreasonable interference with the comfortable enjoyment of life and property.

In the email from the resident that resulted in the legislative inquiry into 555 Arts, the resident complained about "a horrible burning smell" allegedly from 555 Arts. Unreasonable odors at a complainant's residence may be a violation of rule 901(b).

#### *40 CFR Part 63 Subpart ZZZZZ - National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources (40 CFR Part 63 Subpart 5Z)*

Subpart 5Z defines an iron and steel foundry as "...a facility or portion of a facility that melts scrap, ingot, and/or other forms of iron and/or steel and pours the resulting molten metal into molds to produce final or near final shape products for introduction into commerce. Research and development facilities, operations that only produce non-commercial castings, and operations associated with nonferrous metal production are not included in this definition."

Research and development facilities, as defined in section 112(c)(7) of the Clean Air Act, are "...any stationary source whose primary purpose is to conduct research and development into new processes and products, where such source is operated under the close supervision of technically trained personnel and is not engaged in the manufacture of products for commercial sale in commerce, except in a de minimis manner."

Regarding operations that only produce non-commercial castings, on November 23, 2020, Mr. Elias let me know that 555 Arts has not produced any castings on site that have been sold commercially. A manhole cover that 555 Arts was commissioned to create was cast at Rivers of Steel Arts in Pittsburg, PA. The 555 Arts website seems to indicate that the facility produces commercial castings because, looking at the 555 Arts website, under "Metal Arts", the page displays the following text:

#### What We Offer

- Casting in iron, bronze, and aluminum
- Custom design
- Original sculpture
- Public Art
- Creative Castings
- Architectural Ornamentation

Below that text, there is a form to "Get a Quote". However, if the facility only produces non-commercial castings, it may not be subject to Subpart 5Z.

If the facility does elect to sell castings, and if it takes furnaces out of storage and installs them, it

appears they would need to submit an initial notification form for Subpart 5Z. They would likely be considered a small foundry since the annual melt capacity of these furnaces is likely less than 10,000 tons per §63.10880(g). Whether 555 Arts is a new or existing affected source may depend upon the original fabrication date of the furnaces. Part of the definition of construction in §63.2 states “*Construction* means the on-site fabrication, erection, or installation of an affected source. Construction does not include the removal of all equipment comprising an affected source from an existing location and reinstallation of such equipment at a new location...”

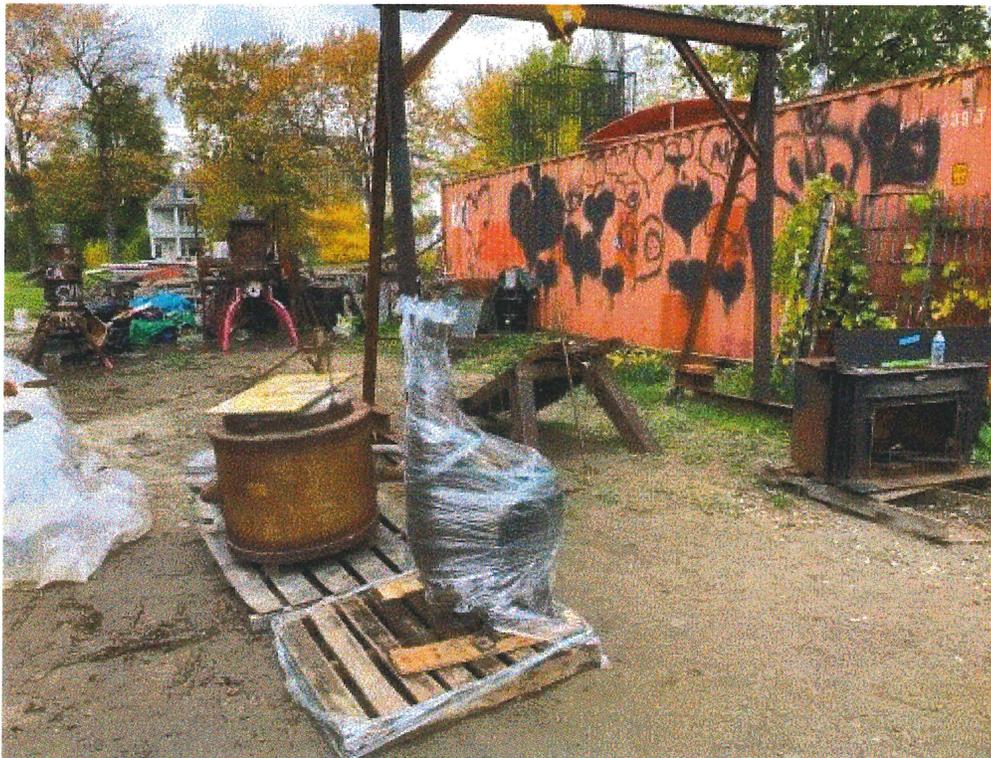
The facility has not submitted an initial notification of compliance status for Subpart 5Z, and I did not request records demonstrating compliance with this subpart. Because equipment has been removed off site, and because the facility produces only non-commercial castings, the facility appears to be in compliance at this time.

*40 CFR Part 63 Subpart ZZZZZZ – National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries (40 CFR Part 63 Subpart 6Z)* Subpart 6Z applies if the facility uses material containing aluminum foundry hazardous air pollutants (HAP), copper foundry HAP, or other nonferrous foundry HAP.

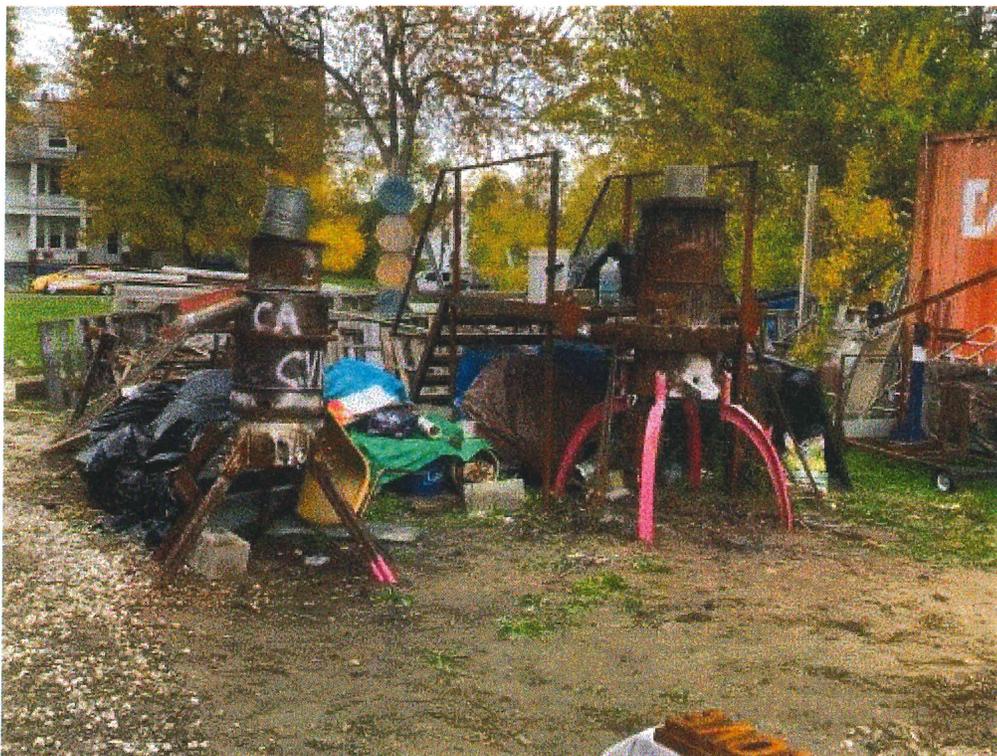
In addition to using material containing the above HAP, a facility is subject to Subpart 6Z if they have an annual melt capacity of 600 tons per year of aluminum, copper, and other nonferrous metals. Annual copper and other nonferrous foundry metal melt capacity means, for new affected sources, the lower of the copper and other nonferrous metal melting operation capacity, assuming 8,760 operating hours per year or, if applicable, the maximum permitted copper and other nonferrous metal melting operation production rate for the melting operation calculated on an annual basis. 555 Arts is not likely subject to Subpart 6Z because the facility capacity is likely less than 600 tons of nonferrous material annually considering furnace capacity and cycle time.

#### Conclusion

Because furnaces are not currently located on site, the facility appears to be in compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Air Pollution Control Rules; 40 CFR Part 63 Subpart 5Z, and 40 CFR Part 63 Subpart 6Z. Before installing equipment at this location, the facility should take steps to consider whether to apply for a Permit to Install, and to comply with applicable federal standards.



**Image 1(Furnace #1) :** Furnace #1



**Image 2(Furnace #2 & #3) :** Furnace #2 is on the right in the image. Furnace #3 is on the left of the image.



**Image 3(Furnace #4) :** Furnace #4

NAME *Alan R.*

DATE 1/5/2021

SUPERVISOR JK