



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604**

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Decatur Foundry, Decatur, Illinois

FROM: Linda H. Rosen, Environmental Engineer
AECAB (IL/IN)

THRU: Nathan Frank, Section Supervisor
AECAB (IL/IN)

TO: File

BASIC INFORMATION

Facility Name: Decatur Foundry

Facility Location: 1745 North Illinois Street, Decatur, Illinois

Date of Inspection: 11/15/2021

EPA Inspector(s):

1. Linda H. Rosen, Environmental Engineer
2. Tess Russell, Environmental Engineer
3. Daniel Heins, Environmental Engineer

Other Attendees:

1. Todd Ray, Human Resources, Decatur Foundry
2. Rex Regsdale, CEO, Decatur Foundry
3. Lee Mosley, Maintenance Technician, Decatur Foundry
4. Paul Nelson, Environmental Compliance, Relbek Consulting

Contact Email Address: toddray@decaturfoundry.com; pgnelson@msn.com

Purpose of Inspection: Clean Air Act inspection. The facility is subject to a Federally Enforceable State Operating Permit (FESOP) and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Iron and Steel Foundries Area Sources, 40 CFR Part 63, Subpart ZZZZZ.

Facility Type: iron and steel foundry

Arrival Time: 1:30 p.m.
Departure Time: 4:50 p.m.

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☐ Stated authority and purpose of inspection
- ☒ Provided Small Business Resource Information Sheet
- ☐ Small Business Resource Information Sheet not provided.
- ☒ Provided CBI warning to facility

The following information was obtained verbally from representatives of Decatur Foundry unless otherwise noted.

Process Description:

The facility manufactures gray and ductile iron castings that are used in the motor, pump, and valve industries. Molds and cores are made by a no-bake process using a phenolic urethane liquid binder resin, sand (mostly silica but chromite sand in one mixer) and two catalyst liquids. There are 9 mixers. Two are core only which utilize no air fluidization and are uncontrolled. Seven mixers can be used for either molds or cores and 6 of these utilize air fluidization (either a blower or compressed air) and have their own baghouses or filter cartridges. Volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), such as phenol and naphthalene, are emitted mostly from the binders and are uncontrolled off the mixers. After the cores and molds are made, they are taken by forklift truck to the furnaces.

The facility operates two electric induction tilt furnaces of 3.5 metric tons each that melt industrial and auto scrap. They were installed in 2001 and the facility claims no modifications have been made since. If gray iron is being made, the inputs are clean pig iron, gray steel scrap and gray iron scrap (purchased or returns). Scrap includes vehicle rotors, crushed motor blocks and sometimes industrial cast iron. If ductile iron is made, the inputs are pig iron and ductile steel scrap such as ductile returns (auto crank shafts). All scrap comes from scrapyards. The vendors provide certifications that the scrap meets regulatory standards. Various alloys, including copper, carbon raiser, magnesium, manganese, nickel, tin, ferrosilicon and rarely chromium, are used, some for both gray and ductile and some for only ductile.

The melting process is about an hour. In the ductile process, the material is chemically tested prior to pouring. The furnaces then pour the melt into molds with or without cores. The melting process is a source of lead emissions. There is one baghouse that serves both furnaces. Each furnace has its own hood. The cooling process for the molds is 24 to 72 hours.

After the molds are cooled, shakeout, which is nearly all manual, separates the product from the mold. They reclaim about 90 percent of the sand. There are two baghouses in sand reclamation. They also operate a thermal reclamation process that heats sand in the oven and burns off the resin residuals. This operation is also controlled by a baghouse. The castings are then processed at the table blast (shot) or spin hanger operation, each equipped with one baghouse. There is also a job shop which machines the castings.

Staff Interview: There was a federal-state multi-media inspection a few years ago. After that, a fire occurred which took out some processes and caused other to be overloaded. For instance, there were 9 mixers and three were burned down, causing the others to increase their production. Because of this, when Illinois EPA inspected the facility shortly after the fire, they found the facility exceeding its permit limits. Illinois EPA therefore requested a permit renewal and that the original emission factors from the 1980's be re-established. Lead modelling is being done as part of the permit process. The facility increased the melt stack height to meet lead standards, modelled for lead emissions and submitted the results to Illinois EPA. They used American Foundry Society (AFS) emission factors which are lower than AP-42. In addition, the thermal reclamation operation was stack tested to obtain new emission factors.

The facility has an NAICS code of 331511 and employs 110. The facility operates 24 hours per day from 5 a.m. Monday to 11:30 p.m. on Friday. Sometimes, the facility operates 6 hours on Saturday morning primarily for molding operations and furnace repairs. To cut costs, the facility primarily melts at night, 6 batches, 3 per furnace. Furnaces are turned on at 5 or 6 p.m. and melting starts around 10 p.m. four nights per week, until 6 or 7 a.m.

The capture efficiency of the hoods has not been tested with respect to the American Conference of Governmental Industrial Hygienists (ACGIH). The facility operates 12 dust control systems, either cartridges or baghouses. They monitor the pressure drop on their baghouses. They conduct annual inspections of the baghouse by an outside technician. They maintain a log of corrective actions and filter changes. Baghouse dust analysis is done periodically.

The facility considers itself "small" under the 6Z NESHAP. The facility stated that, in 2020, it emitted 5 tons of HAPs, primarily naphthalene.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

There were 4 production rooms at the facility. We observed room M1 which was not operating at that time and contains 3 mixers. It had just opened a few days ago since the fire. We observed a Tom 550 fluidized mold mixer that makes cores, equipped with a baghouse (photo 1); a core mixer, uncontrolled (photo 2); and a Tom 350 mold mixer with a baghouse (photo 3). Some of the equipment was new. Next, we observed the middle production room which was two floors and was operating. I observed a core (photo 4) and a mixer equipped with dust control that was operating (photo 5). Cartridge filter 12 on the mixer was registering a pressure differential of 0.4 inches of water column and cartridge 9, which controls another mixer that makes both molds and

cores, was registering 1.8 inches of water column. We observed the furnaces (photos 6-9). One was operating and we observed it mid-tilt (photo 10). We observed a paint line for components. Three different coatings are used, one water based and two alcohol based.

We then observed the various types of scrap used at the facility (photos 11-15), the baghouse furnace (photo 16) and the thermal reclaimer (photos 17-18).

Photos and/or Videos: were taken during the inspection.

Field Measurements: were not taken during this inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

On March 7, 2022, Paul Nelson sent me the following information requested during the inspection:

- Lead modelling report

On August 17, 2022, I sent an email to Todd Ray and Paul Nelson, requesting the following information that was discussed during the inspection:

- Latest stack test for thermal reclaimer
- 12-month emission calculation spreadsheet
- Most recent baghouse dust analysis
- New air permit application

DIGITAL SIGNATURES

Report Author: Linda H. Rosen

Section Supervisor: Frank, Nathan

Digitally signed by Frank,
Nathan
Date: 2022.08.22 09:06:14
-05'00'

Facility Name: Decatur Foundry

Facility Location: 1745 North Illinois Street, Decatur, Illinois

Date of Inspection: November 15, 2021

APPENDICES AND ATTACHMENTS

1. Media Appendix

APPENDIX A: DIGITAL IMAGE LOG

1. Inspector Name: Linda Rosen		2. Archival Record Location: Electronic Records Center	
Image Number	File Name	Date and Time (CST)	Description of Image
1	RIMG0001.JPG	2021:11:15 15:35:05	Fluidized molder mixer that makes cores, not operating
2	RIMG0002.JPG	2021:11:15 15:35:16	Core mixer, no baghouse
3	RIMG0003.JPG	2021:11:15 15:38:39	Molder mixer with baghouse, not operating
4	RIMG0004.JPG	2021:11:15 15:43:13	Small core
5	RIMG0005.JPG	2021:11:15 15:46:30	Mixer with baghouse
6	RIMG0006.JPG	2021:11:15 16:10:24	Furnace
7	RIMG0007.JPG	2021:11:15 16:10:32	Furnace
8	RIMG0008.JPG	2021:11:15 16:11:16	Furnace
9	RIMG0009.JPG	2021:11:15 16:11:26	Furnace
10	RIMG0010.JPG	2021:11:15 16:14:33	Furnace mid tilt
11	RIMG0011.JPG	2021:11:15 16:16:02	Scrap
12	RIMG0012.JPG	2021:11:15 16:16:23	Scrap
13	RIMG0013.JPG	2021:11:15 16:17:05	Scrap-crank shafts
14	RIMG0014.JPG	2021:11:15 16:17:25	Scrap-rotors
15	RIMG0015.JPG	2021:11:15 16:18:32	Scrap-crushed blocks
16	RIMG0016.JPG	2021:11:15 16:23:32	Baghouse on furnace
17	RIMG0017.JPG	2021:11:15 16:33:00	Thermal reclaimer
18	RIMG0018.JPG	2021:11:15 16:33:00	Thermal reclaimer