



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

DATE: JAN 03 2020

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
GII, LLC. d/b/a General Iron Industries, Chicago, Illinois

FROM: Scott Connolly, Environmental Engineer
AECAB (IL/IN)

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

TO: File

BASIC INFORMATION

Facility Name: GII, LLC. d/b/a General Iron Industries (General Iron)

Facility Location: 1909 North Clifton Ave, Chicago, Illinois 60614

Date of Inspection: November 13-15, 2019

EPA Inspectors:

1. Scott Connolly, Environmental Engineer
2. Karina Kuc, Environmental Scientist
3. Daniel Heins, Environmental Engineer

Other Attendees

1. Jim Kallas, Environmental Manager, General Iron
2. Adam Labkon, Vice President, General Iron
3. John Pinion, Principal Engineer, RK Associates,
4. Rich Sollars, Project Manager, Mostardi Platt
5. Josh Kukla, Engineer, Mostardi Platt
6. Adam, Chemical Engineer, Catalytic Products International

Contact Email Addresses: Jim Kallas, jim@general-iron.com
John Pinion, jpinion@rka-inc.com

Purpose of Inspection: To observe performance testing of General Iron's new scrubber and regenerative thermal oxidizer that was installed as required by the August 22, 2019 Administrative Consent Order EPA-5-19-113(a)-IL-08.

Facility Type: Metal Shredding and Recycling Facility

Day 1: Wednesday, November 13, 2019

Arrival Time: 9:05 am

Departure Time: Approximately 3:00 pm

Day 2: Thursday, November 14, 2019

Arrival Time: 9:20 am

Departure Time: 4:40 pm

Day 3: Friday, November 15, 2019

Arrival Time: 10:00 am

Departure Time: 2:15 pm

Inspection Type:

- ☐ Unannounced Inspection
- ☒ Announced Inspection

Process Description:

General Iron obtains and processes scrap metal received by truck from demolition companies, auto scrappers, peddlers and other recycling services. Generally, loads of scrap metal are unloaded from trucks into large piles, both at the shredder and at other locations onsite. The shredder processes mostly demolition waste and postconsumer scrap, with a smaller portion of auto bodies. Cranes load scrap metal onto a conveyor, which feeds metal into the hammermill shredder. A water injection system sprays water into the shredder to reduce dust and cool the metal. A capture hood encloses most of the shredder and routes air emissions through a cyclone and roll-fabric filter for particulate matter control. Air is pulled from the fabric filter to a regenerative thermal oxidizer (RTO) and caustic scrubber to control volatile organic compounds (VOC) and combustion byproducts, before air is exhausted to the atmosphere. Shredded metal exits the shredder and is fed through a magnetic separator, which separates non-magnetics from ferrous metal. Additional non-ferrous is removed in a z-box cyclone and stored in piles before front loaders transport it to the non-metallic separation area. Non-ferrous metals are separated from non-metallics through a series of air separators. Some non-ferrous metals are separated and sold as a mixture and some are sold separately. Non-metallic fluff is sent by truck to a landfill. Ferrous metal is transported to steel mills by truck or barge.

Staff Interview:

General Iron facility staff stated that shredder amps increase when the hammers in the mill become worn down. Mr. Kallas stated that new hammers were installed between days 2 and 3 to replace hammers that were worn down during normal operations. Percent of the total feed containing autos will be calculated by measuring the total weight of cars stored during onsite and calculating an average weight per car. During each test run, the number of cars will be

counted and multiplied by the average weight of the cars to obtain the weight of cars shredded. General Iron does not operate the yard water sprayer for dust control during the winter, due to freezing conditions. Mr. Sollars of Mostardi Platt stated that the metal samples will be sent to Bureau Veritas, in Ontario for analysis. Prior to the first testing date Mostardi Platt measured the stack diameter used during testing to be 5.617 feet. Because testing was not completed during the dates of the inspection General Iron facility staff stated that testing would be completed on November 18, 2019.

TOUR INFORMATION

EPA toured the facility: Yes

Data Collected and Observations:

To calibrate the Method 25A total hydrocarbon analyzer, Mostardi Platt calibrated with propane using a mid-concentration span and a low concentration span. The mid concentration span included calibrations at 4500 ppm, 902.5 ppm, 604.3 ppm and 301.2 ppm. The low concentration span included calibration gases at 10.07 ppm, 20.59 ppm and 30.03 ppm.

Day 1:

On Day 1, Mostardi Platt planned to conduct particulate matter, VOC and visible emissions testing using EPA Methods 5, 202, 25A and 9. The start of Run #1 was delayed because of extended step up operations and the Method 202 impinger train solutions were freezing. During the testing on Day 1, the RTO consistently entered fault conditions and automatically shut down. Pressure drop monitors at the inlet to the RTO triggered the shut downs of the RTO when positive pressure was recorded. Multiple shutdowns of the shredder and RTO resulted in extended downtime during planned Run #1. Prior to its completion Run #1 was cancelled because it was not possible to keep the impinger train solutions in liquid and the probe for carbon monoxide monitoring froze, resulting in inaccurate readings.

Day 2:

On Day 2, Mostardi Platt conducted metals and acid gases testing using EPA Methods 29 and 26. Prior to testing, Catalytic Products International (CPI) staff replaced differential pressure probes in the RTO to correct erroneous readings that occurred during Day 1. Three 96-minute test runs were conducted, using 2 separate impinger trains that were cleaned and swapped between test runs. The sample train utilized a flexible tube to connect the sample rode to the impinger train. EPA personnel observed steam exiting the top and side of the shredder enclosure downstream of the hammermill, near the exit conveyor. EPA personnel intermittently observed particulate matter smoke and a burning smell past the point where steam dissipated, downwind of the shredder, during Runs #1 and #2.

Run #1

Start: 8:45 am

End 10:43 am (Run paused from 9:00-9:04 am)

Production Rate: 370 tons per hour and 31% cars

Run #2

Start: 12:00 pm
End: 2:11 pm
Production Rate: 408 tons per hour and 34% cars

Run #3

Start: 3:30 pm
End: 5:37 pm
Production Rate: 378 tons per hour and 29% cars

Day 3:

On Day 3, Mostardi Platt conducted one run of particulate matter, VOC and visible emissions testing using EPA Methods 5, 9, 202 and 25A. Multiple pauses in the test run were caused by shutdowns of the RTO. CPI and facility staff stated that “process push” causes the RTO booster fan to spin faster than the allowable rotation rate, which causes fault conditions and an RTO shutdown. Visible emissions and strong odors were observed exhausting from the RTO make up air vent/bypass every time the RTO shut down. Visible emissions events were observed occurring between 1 and 4 minutes during each RTO fault.

Run #1

Start: 10:33 am
End: 1:18 pm (Run paused from 11:03 am to 11:17 am, 11:23 am to 12:36 pm, 12:51 pm to 1:15 pm)
Production Rate: 366 tons per hour and 67% cars

Photos and/or Videos: were taken during the inspection.
A photo and video log is contained in Appendix A.

Field Measurements: were taken during this inspection.

- Field Measurements were taken by Mostardi Platt stack testers during required on-site emissions testing.
 - EPA Method 1 – Sample and Velocity Traverses
 - EPA Method 2 – Velocity Measurement with S-type Pitot
 - EPA Method 3 – Determination of Molecular Weight
 - EPA Method 4 – Determination of Moisture Content
 - EPA Method 5 – Particulate Matter Measurement
 - EPA Method 9 – Visible Emission Observations
 - EPA Method 25A – Gaseous Organic Concentration by Flame Ionization
 - EPA Method 26 – Hydrogen Chloride, Halides, Halogens
 - EPA Method 29 – Metals Emissions from Stationary Sources
 - EPA Method 202 – Condensable Particulate Matter

RECORDS REVIEW

1. Production data, including scrap shredding rate and feed percent autos was reviewed at the end of each test run.

CLOSING CONFERENCE

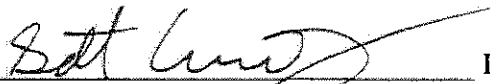
Requested documents:

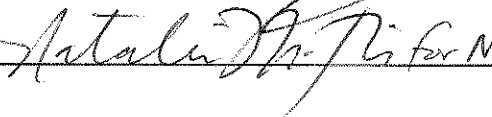
- Finalized test report containing all test run data, including calculations and data sheets.

Compliance Assistance: I recommended that the square RTO bypass duct be rotated so that it does not vent directly onto the truck scale.

Concerns: Visible emissions were observed venting out of the RTO bypass duct when RTO faults occurred. Visible emissions from the shredder building were also observed on Day 2.

SIGNATURES

Report Author:  Date: 1/3/2020

Section Chief:  for NF Date: 1/3/20

Facility Name: GII, LLC. d/b/a General Iron Industries
Facility Location: 1909 North Clifton Ave, Chicago, Illinois
Date of Inspection: November 13-15, 2019

APPENDICES AND ATTACHMENTS

I. Appendix A: Digital Image Log

Facility Name: GII, LLC. d/b/a General Iron Industries
Facility Location: 1909 North Clifton Ave, Chicago, Illinois
Date of Inspection: November 13-15, 2019

APPENDIX A: DIGITAL IMAGE LOG

1. Photographer Name: Scott Connolly	2. Dates of Inspection: November 13-15, 2019
3. Company/Facility Name: GII, LLC. d/b/a General Iron Industries	4. Street Address, City, State: 1909 North Clifton Ave, Chicago, Illinois
5. Number of Images: 56	6. Archival Record Location: Photos are contained on the attached CD labelled "General Iron Inspection Photos 11/15/19"

Image Number	File Name	Date and Time	Description of Image
1	PB130001.JPG	11/13/2019 8:43	RTO Control Box Front Panel
2	PB130002.JPG	11/13/2019 8:43	RTO Control Panel Temperature readout
3	PB130003.JPG	11/13/2019 8:44	Shredder Scrubber caustic totes
4	PB130004.JPG	11/13/2019 8:46	Shredder scrubber recirculation water piping
5	PB130005.JPG	11/13/2019 8:47	Shredder scrubber recirculation water piping
6	PB130006.JPG	11/13/2019 8:47	Shredder scrubber recirculation water piping
7	PB130007.JPG	11/13/2019 8:51	RTO system overview and RTO control panel during testing.
8	PB130008.JPG	11/13/2019 8:54	RTO and testing contractor location
9	PB130009.JPG	11/13/2019 8:54	RTO combustion chamber overview
10	PB130010.JPG	11/13/2019 8:54	Ducting to RTO and make up air intake and bypass
11	PB130011.JPG	11/13/2019 8:54	Car pile next to shredder at the start of testing.
12	PB130012.JPG	11/13/2019 9:27	Stack testing equipment next to scrubber
13	PB130013.JPG	11/13/2019 9:27	Caustic Scrubber vessel and stack
14	PB130014.JPG	11/13/2019 9:28	Filter building and connecting ducting from shredder
15	PB130015.JPG	11/13/2019 9:30	Pressure reading set up used by testing contractors during testing
16	PB130016.JPG	11/13/2019 9:40	Stack sampling location
17	PB130017.JPG	11/13/2019 10:11	Shredder building, including location where duct previously exhausted into the building.
18	PB130018.JPG	11/13/2019 12:56	Shredded material exit conveyor and roll magnet near new rubber sheeting on shredder building
19	PB130019.JPG	11/13/2019 12:56	Shredded material exit conveyor and roll magnet near new rubber sheeting on shredder building
20	PB130020.JPG	11/13/2019 13:34	Impinger weight sheet prior to test runs.
21	PB130021.JPG	11/13/2019 13:34	Method 202 impinger sample train
22	PB140022.JPG	11/14/2019 10:32	Emissions exiting the top and side of the shredder building
23	PB140023.JPG	11/14/2019 10:32	Emissions exiting the top and side of the shredder building after drifting over duct work

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24	PB140024.JPG	11/14/2019 10:32	Emissions exiting the top and side of the shredder building
25	PB140025.JPG	11/14/2019 10:33	Emissions exiting the top and side of the shredder building
26	PB140026.JPG	11/14/2019 10:33	Emissions exiting the top and side of the shredder building
27	PB140027.JPG	11/14/2019 10:36	Open door on UMO to clear an equipment jam
28	PB140028.JPG	11/14/2019 10:39	Stack testing location and stack plume
29	PB140029.JPG	11/14/2019 11:38	Emissions exiting the top and side of the shredder building
30	PB140030.JPG	11/14/2019 11:38	Emissions exiting the top and side of the shredder building
31	PB140031.JPG	11/14/2019 11:44	Emissions exiting the top and side of the shredder building
32	PB140032.JPG	11/14/2019 12:39	Fabric filter "clean" side
33	PB140033.JPG	11/14/2019 12:39	Fabric filter "dirty" side
34	PB140034.JPG	11/14/2019 12:39	Fabric filter overview
35	PB140035.JPG	11/14/2019 14:49	Yard overview and steam exiting top of shredder building as seen from outside the yard.
36	PB140036.JPG	11/14/2019 14:49	Shredder system overview and steam exiting the top of the shredder building as seen from outside the yard
37	PB140037.JPG	11/14/2019 14:50	Shredder system overview and steam exiting the top of the shredder building as seen from outside the yard
38	PB140038.JPG	11/14/2019 15:30	Scrubber control panel and process overview
39	PB140039.JPG	11/14/2019 15:40	Sample probes before metals testing run #3
40	PB140040.JPG	11/14/2019 15:45	Sample train and purge gas tanks between metals testing runs #2 and #3
41	PB150041.JPG	11/15/2019 12:20	Day 3 RTO readout panel after pressure gauge was changed
42	PB150042.JPG	11/15/2019 12:31	Inlet stack sample location for VOC testing
43	PB150043.JPG	11/15/2019 12:31	Car pile during pause in Run #1 VOC testing
44	PB150044.JPG	11/15/2019 12:31	Shred pile during pause in Run #1 testing
45	PB150045.JPG	11/15/2019 13:01	Visible emissions exiting RTO bypass vent
46	PB150046.JPG	11/15/2019 13:01	Car pile during a pause in Run #1 VOC testing
47	PB150047.JPG	11/15/2019 13:18	Visible emissions exiting RTO bypass vent
48	PB150048.JPG	11/15/2019 13:18	Visible emissions exiting RTO bypass vent
49	PB150049.JPG	11/15/2019 13:18	Visible emissions exiting RTO bypass vent
50	PB150050.JPG	11/15/2019 13:18	Visible emissions exiting RTO bypass vent
51	PB150051.JPG	11/15/2019 13:18	Visible emissions exiting RTO bypass vent
52	PB150052.JPG	11/15/2019 13:19	Visible emissions exiting RTO bypass vent
53	PB150053.JPG	11/15/2019 13:19	Visible emissions exiting RTO bypass vent
54	PB150054.JPG	11/15/2019 13:20	Visible emissions exiting RTO bypass vent

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55	PB150055.JPG	11/15/2019 13:53	VOC data logger right at time of RTO failure, hydrocarbon concentration was at 2500 ppm immediately before photo was taken
56	PB150056.JPG	11/15/2019 14:24	Steam off the roll magnets and emissions from the shredder building after VOC testing Run #1