

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

A158848787

FACILITY: SUPERIOR BRASS & ALUMINUM		SRN / ID: A1588
LOCATION: 4893 DAWN AVE, EAST LANSING		DISTRICT: Lansing
CITY: EAST LANSING		COUNTY: INGHAM
CONTACT: David Fedo , Compliance Manager		ACTIVITY DATE: 04/30/2019
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced, scheduled inspection		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow (author), Samantha Braman (AQD Lansing District), Marina Ostaszewski (AQD Permits)

Personnel Present: Dave Fedo, Compliance Manager (davidjfedo@superiorbrass-mi.com)

Purpose

Conduct an unannounced, scheduled compliance inspection of Superior Brass & Aluminum (Superior) to determine compliance with PTI No's 642-78 ;18-17; and 72-06B. PTI 72-06B was issued after the last inspection conducted by Lansing District staff in May 2017, and therefore particular attention was paid to compliance with PTI 72-06B. MACT Supbart ZZZZZZ compliance was also determined.

Facility Background/Regulatory Discussion

Superior's primary industry is producing brass castings for fire hydrants. They use 8 different alloys of brass, which are preformulated to ASTM certified standards (establishes the alloy specifications).

Superior generally operates one shift (Monday – Thursday, 9-hr days; Friday, 8-hr day), 5 days per week, with occasional Saturdays, depending on industry demands.

Superior is a nonferrous foundry that no longer casts aluminum. They are classified as an area source of hazardous air pollutants and are subject to the Aluminum, Copper, and Other Nonferrous Foundries Area Source NESHAP Subpart ZZZZZZ. Eric Grinstern, AQD's foundry specialist, conducted an inspection in September 2015, to determine Superior's compliance with the MACT at that time, and found them in compliance.

Inspection

S. Braman, M. Ostaszewski, I arrived at Superior Brass & Aluminum at approximately 12:30 p.m. April 30, 2019 and met with Dave Fedo. I provided D. Fedo with a January 2017 Permit to Install Exemptions handbook and explained to him that any installations should be reviewed for exemption, and if they do not meet the exemption, a PTI must be applied for.

D. Fedo provided with us with a tour of the facility, which included observation of the permitted pieces of equipment.

Table 1 contains a list of all permitted and exempt equipment which I identified during the inspection.

Table 1. Equipment located onsite

Emission Unit	Changes/Add'l Info	PTI or exemption	Federal Regulation, if applicable
EURECLAIM	Green sand (new sand) reclaiming system. Sand is transferred via covered conveyors to four hooded storage bins use with sand mold making at the facility. Control: cartridge dust collector	18-17	NA
Metal saws, grinders, and sanders	Cut-off saws (2) Grinders (4) Wheellabrator (1)	642-78/ Rule 285(2)(l)(vi)(C)	NA

	Belt Sanders (1) Control: 3 cartridge dust collectors		
EUMELT/POUR	4 400-lb electric pot furnaces	72-06B	MACT Subpart ZZZZZZ
EUSHAKEOUT	Drum shakeout and casting separation system Control: cartridge dust collector	72-06B	NA
EUCORESHAKE	Core making and shakeout process Control: cartridge dust collector	72-06B	NA
Parts Washer	Used to degrease parts. Lid was closed. Surface area is less than 10 ft²	Rule 281(2)(h)	NA

PTI 642-78

This permit covers the following metal-working processes: saws, grinders, a Wheelabrator belt sander, and band saws with associated particulate control devices; see Table 1 for the specific type and quantity of each piece of equipment present. Superior has a total of 3 cartridge dust collectors used to control these processes: One is used to control emissions from all cut-off saws, another is used to control the combined exhaust from the grinders and the belt sanders, and the Wheelabrator is controlled by its own particulate control device. These processes would all qualify for exemption under Rule 285(2)(l)(vi).

Visible emissions from these process are limited to 20% opacity. While onsite outside, I did not see any signs of opacity from any of the dust collector stacks.

D. Fedo and I discussed the option to operate the equipment under an exemption, rather than PTI 642-78. He stated that he would like to have the PTI voided and operate under an exemption. A request to void this permit was sent to Sue Thelen on 5/16/19.

Superior is currently in compliance with PTI 642-78.

PTI 18-17 (EURECLAIM, "New Sand")

PTI 18-17 covers processes associated with EURECLAIM, a green sand handling and reclaiming system. D. Fedo explained that green sand is a mixture of crushed rock, bentonite clay and water and is used to create the foundry molds, and internally, Superior refers to this system as "New Sand." Once the mold is poured and set, the sand mold is removed from the cast product (via EUSHAKER in PTI 72-06B) and returned to EURECLAIM. In the EURECLAIM process, additional bentonite clay is added to the used sand to ensure the appropriate ratios of all green sand components is maintained. The "new sand" is then used in to feed the mold machines. Emissions are controlled by a cartridge dust collector.

There are currently no Material Limits, Process/Operational Restrictions or Reporting Requirements for EURECLAIM.

Emission Limits & Testing/Sampling Requirements

Superior is limited to 0.058 lb/hr each for PM, PM10 and PM2.5 from EURECLAIM. Testing to ensure compliance with these limits is only required if requested by the AQD District Supervisor. At this time, it is my professional judgment that testing is unnecessary as there were no signs of opacity from the dust collector exhaust associated with EURECLAIM during the inspection.

Design/Equipment Parameters & Monitoring/Recordkeeping.

EURECLAIM's dust collector is required to be installed, maintained, and operated in a satisfactory manner, including operating the dust collector in accordance with the manufacturer's instructions. Records are required to be kept for all part replacements, repairs, and maintenance performed on the dust collector. The dust collector is required to be equipped and maintained with a differential pressure gauge, a bag leak detector, and an alarm system.

The dust collector is equipped with a monitor for pressure drop with a proper operating range of 0.5 in. H₂O – 4.0" H₂O labeled on the monitor gauge, which D. Fedo said was established by the manufacturer, Donaldson Torit. The pressure drop was within the specified range during the inspection. D. Fedo said that if there is a hole in the baghouse bag or any other malfunction that causes a drop in pressure below the specified range, the alarm horn sounds and a visual alarm will light up. He said the audible and visual alarms are checked on a weekly basis to ensure that they are working in the event of a baghouse malfunction. He said that if the pressure drop exceeds the specified range, the bags are pulsed with air to relieve the pressure build-up associated with excessive particulate on the bags.

D. Fedo said maintenance checks are conducted on the baghouse every 18 – 24 months to determine the condition of the bags. If they find there is a need to replace any of the bags, all bags in the baghouse are replaced. He emailed me a memo on 5/8/19 addressing my request for the required replacements/repairs/maintenance records (see attached). He stated that maintenance staff check the pressure drop on the unit a minimum of 5 times per day to ensure proper operation. The EURECLAIM "new sand" dust collector was installed in 2017 and the original filters are currently in place. D. Fedo acknowledges in his memo that Superior will take better care in recording all inspections and replacements. This statement in addition to the replacement details of the bags is sufficient for meeting the recordkeeping and maintenance requirements with the caveat that improved records will be provided at future inspections.

Records from the manufacturer of the chemical composition of each type of sand that is processed in EURECLAIM, including the wt% of each component are also required to be kept. The sand that is conveyed and captured within EURECLAIM is a mixture of Olivine (a magnesium iron silicate) which contains nickel and chromium compounds at less than 1% and a "premix" which contains bentonite and various forms of silica (quartz, crystalline, cristobalite), with bentonite being the main (>50%) component. All components appear to have been evaluated within the PTI evaluation process.

Superior is in currently compliance with PTI 18-17.

PTI 72-06B

Core making and shaking (EUCORESHAKE), drum shakeout and casting separation (EUSHAKEOUT), and electric pot furnaces for melting and pouring the brass alloys (EUMELT/POUR) are covered under PTI 72-06B. PTI 72-06B was issued to allow Superior to use an existing 20,000 cfm Torit baghouse to control emissions from EUCORESHAKE that were previously emitted to the general in-plant environment. The EUCORESHAKE process, up through July 2018 used a silica-based core sand, and due to OSHA standards for respirable silica, Superior wanted to divert all emissions from this process outside the plant. During July 2018, Superior switched to a non-silica sand to ensure OSHA standards for respirable silica were met inside the plant. Discussion of this change with respect to exemptions is found under the EUCORESHAKE section of this report.

EUMELT/POUR

This emission unit covers the foundry operations (excluding MACT Subpart ZZZZZZ requirements) located within Superior and includes 4 electric pot furnaces (400# capacity each) and a pouring station for brass alloy processing. Electric pot emissions are externally controlled by cartridge dust collectors. Vents are located at the surface of the pot, in addition to the hood that partially encloses each pot.

There are currently no Material Limits, Process/Operational Restrictions, Testing/Sampling, Monitoring/Recordkeeping or Reporting requirements for EUMELT/POUR.

Emission Limits

Emissions from the dust collector associated with this process are limited to 0.01 lb/1000 lbs exhaust gases and 0.21 lb/hr for PM, and 0.01 lb/hr each for PM₁₀ and PM_{2.5}. At this time it is my professional judgment that emissions testing is not necessary to determine compliance with these limits: during the inspection I saw no signs of opacity being emitted from this unit's stack.

Design/Equipment Parameters

EUMELT/POUR's dust collector is required to be installed, maintained, and operated in a satisfactory manner, and the dust collector is required to be equipped and maintained with a bag leak detector and an alarm system.

The dust collector is equipped with a photohelic gauge for pressure drop with a proper operating range of 0.5 in. H₂O – 4.0" H₂O labeled on the monitor gauge, which D. Fedo said was established by the manufacturer, Donaldson Torit. The pressure drop was within the specified range during the inspection, at 2.9" H₂O. D. Fedo said that if there is a hole in the baghouse bag or any other malfunction that causes a drop in pressure below the specified range, the alarm horn sounds and a visual alarm will light up. He said the audible and visual alarms are checked on a weekly basis to ensure that they are working in the event of a baghouse malfunction. He said that if the pressure drop exceeds the specified range, the bags are pulsed with air to relieve the pressure build-up associated with excessive particulate on the bags.

D. Fedo said maintenance checks are conducted on the baghouse every 18 – 24 months to determine the condition of the bags. If they find there is a need to replace any of the bags, all bags in the baghouse are replaced. He stated that

maintenance staff check the pressure drop on the unit a minimum of 5 times per day to ensure proper operation. Based on purchase orders, he also stated that the filters for the EUMELT/POUR collector were replaced in May 2014. A new dust collector was installed in late 2017 for EUMELT/POUR. The emissions from EUMELT/POUR were then shifted over to the collector for EUCORESHAKER in June 2018, after PTI 72-06B was issued for control of EUCORESHAKER emissions.

EUSHAKEOUT (Return Sand)

EUSHAKEOUT consists of a drum shakeout and casting separation system (separates residual sand of sand molds from brass castings). Superior internally refers to this process as "Return Sand." Emissions from both processes are controlled by a cartridge dust collector. The sand removed from this process is conveyed to EURECLAIM where the used sand gets bentonite added to maintain the proper composition for the sand molds.

There are currently no Material Limits, Process/Operational Restrictions, Testing/Sampling, Monitoring/Recordkeeping or Reporting requirements for EUMELT/POUR.

Emission Limits

Emissions from the dust collector associated with this process are limited to 0.01 lb/1000 lbs exhaust gases, 0.6 lb/hr, and 0.28 tpy for PM. There is also a visible emission limit of 5% opacity over a 6-minute average. At this time it is my professional judgment that emissions testing is not necessary to determine compliance with these limits: during the inspection I saw no signs of opacity being emitted from this unit's stack.

Design/Equipment Parameters

EUSHAKEOUT's dust collector is required to be installed, maintained, and operated in a satisfactory manner, and the dust collector is required to be equipped and maintained with a bag leak detector and an alarm system.

The dust collector is equipped with a photohelic gauge for pressure drop with a proper operating range of 0.5 in. H₂O – 4.0" H₂O labeled on the monitor gauge, which D. Fedo said was established by the manufacturer, Donaldson Torit. The pressure drop was within the specified range during the inspection, at 2.9" H₂O. D. Fedo said that if there is a hole in the baghouse bag or any other malfunction that causes a drop in pressure below the specified range, the alarm horn sounds and a visual alarm will light up. He said the audible and visual alarms are checked on a weekly basis to ensure that they are working in the event of a baghouse malfunction. He said that if the pressure drop exceeds the specified range, the bags are pulsed with air to relieve the pressure build-up associated with excessive particulate on the bags.

D. Fedo said maintenance checks are conducted on the baghouse every 18 – 24 months to determine the condition of the bags. If they find there is a need to replace any of the bags, all bags in the baghouse are replaced. He stated that maintenance staff check the pressure drop on the unit a minimum of 5 times per day to ensure proper operation. Based on purchase orders, he also stated that the filters for the EUSHAKEOUT collector were replaced in May 2014, and again in late 2017.

EUCORESHAKE

EUCORESHAKE was newly permitted under PTI 72-06B and consists of core making (using 2 core machines) and core shakeout processes, both controlled by a cartridge dust collector. "Cores" are used in conjunction with the sand molds to create interior portions of a brass alloy part. Not all parts are created using core molds. During the permitting process of PTI 72-06B, Superior was still utilizing the core sand containing respirable silica (at 90-100% by weight), CC E-Series Superior 65L-2.5, (see attached for SDS). In July 2018, Superior switched to AGC-SFR 260-G Resin-coated Sand, which contains much less silica (in the form of Quartz at <0.3% by weight). The PTI for EUCORESHAKE was issued in July 2018. EUCORESHAKE began operating in July 2018.

D. Fedo supplied me with a technical memo explaining how this change in the materials used is exempt from obtaining a permit to install. I will provide a report under "Regulatory Analysis" in the MACES database that evaluates Superior's position that the change in core sands does not cause a meaningful change in the quality and nature of toxic air contaminants, to demonstrate the change meets Rule 285(2)(b).

Emission Limits

Emissions from the dust collector associated with this process are limited to 0.01 lb/1000 lbs exhaust gases for PM and 0.08 lb.hr each for PM₁₀ and PM_{2.5}. At this time, it is my professional judgment that emissions testing is not necessary to determine compliance with these limits: during the inspection I saw no signs of opacity being emitted from this unit's stack.

Material Limits & Monitoring/Recordkeeping

Superior uses Nix - Stix HC LVOC as their Core Release agent, and is limited to 73 lb of release used per 12-month rolling year. Superior required to monitor and record the amount of core released used on a monthly and 12-month rolling period basis. Per my request, D. Fedo provided me with July 2018 – April 2019 core release usage records (attached). The total amount of core release used during this period was 32.2 lbs, less than half of the limit.

Superior is also limited to 146 tpy of core sand per 12-month rolling period. Monitoring and recordkeeping of this usage on a monthly and 12-month period is required to be kept. Per my request, D. Fedo provided me with core sand usage records from July 2018 – April 2019 (attached). Total core sand used through April 2019 is 106.9 tons, within the established limit.

There are currently no Process/Operational Restrictions, Testing/Sampling or Reporting requirements for EUCORESHAKE.

Design/Equipment Parameters

EUCORESHAKE's dust collector is required to be installed, maintained, and operated in a satisfactory manner, and is also required to be equipped and maintained with a bag leak detector, and an alarm system.

The dust collector is equipped with a monitor for pressure drop with a proper operating range of 0.5 in. H₂O – 4.0" H₂O labeled on the monitor gauge, which D. Fedo said was established by the manufacturer, Donaldson Torit. The pressure drop was within the specified range during the inspection. D. Fedo said that if there is a hole in the baghouse bag or any other malfunction that causes a drop in pressure below the specified range, the alarm horn sounds and a visual alarm will light up. He said the audible and visual alarms are checked on a weekly basis to ensure that they are working in the event of a baghouse malfunction. He said that if the pressure drop exceeds the specified range, the bags are pulsed with air to relieve the pressure build-up associated with excessive particulate on the bags.

D. Fedo said maintenance checks are conducted on the baghouse every 18 – 24 months to determine the condition of the bags. If they find there is a need to replace any of the bags, all bags in the baghouse are replaced. He stated that maintenance staff check the pressure drop on the unit a minimum of 5 times per day to ensure proper operation. Upon startup of EUCORESHAKE's dust collector, D. Fedo noted that the belts were squealing and were immediately replaced. He noted that there were no visible emissions being discharged from the stack while the belts were squealing. D. Fedo acknowledges in his memo that Superior will take better care in recording all inspections and replacements. This statement is sufficient for meeting the maintenance requirements with the caveat that improved records will be provided at future inspections.

FGMACT6Z

This flexible group includes all melting operations located at an aluminum, copper, or other nonferrous foundry, which includes Superior's brass alloy melting operations. Superior uses 2 different suppliers for the preformulated brass alloy ingots that they use in EUMELT/POUR. The ingots are bought preformulated and are accompanied with certification sheets (produced with each heat they pour), certifying that the ingot meets a certain percentage for each required component, per ASTM standards. Superior does not melt scrap.

There currently are no Emission Limits, Design/Equipment Parameters, Testing/Sampling, or Stack/Vent Restrictions for FGMACT6Z.

Material Limits & Monitoring/Recordkeeping

In order to avoid being subject to the requirements under this MACT associated with large foundries, Superior must remain at or below 6,000 tons of metals melted per calendar year, and keep records to document that this limit is being met. D. Fedo showed me that they keep daily records of the type, number of molds poured with that type, and weight poured per type. He provided me with a 4/29/19 daily sheet, which correlates with the quantities of metal melted on the annual weight reporting records, which he also provided. According to the records, Superior melted 4,209 tons in 2018, and 59 tons of metal in 2019 (January – April).

Process/Operational Restrictions & Monitoring/Recordkeeping

Each melting furnace is required to be covered or enclosed, except when access is needed. The pot furnaces are partially enclosed, with a rim-vent, and hood vent system that sends emissions to a cartridge baghouse, thus meeting the intent of this requirement.

Superior is required to have a written management practices plan that is used to perform monthly inspections. Records of the results of the inspections are required to be kept. Specifically, the plan needs to address whether scrap was melted and the HAP content in the scrap has been depleted, as well as ensuring the melt furnaces remain closed. As previously stated, Superior does not melt scrap and has a capture system for each one of the melt furnaces. D. Fedo said that Superior conducts weekly inspections, and provided me with inspection records from March and April 2019. The furnace collector rim-vents and hoods; flexible hoses; dust collector ductwork; dust collector particulate sensor; and opacity from the dust collector are all inspected (records attached).

Reporting

Superior is required to report deviations of the MACT requirements semi-annually. Based on the information shared by D. Fedo and what I have observed during the inspection, there are no indications that deviations from the MACT requirements have occurred.

Superior is in compliance with PTI 72-06B.

Compliance Statement: Superior Brass and Aluminum is in compliance with all PTI requirements at this time.



Image 1(C



particulate

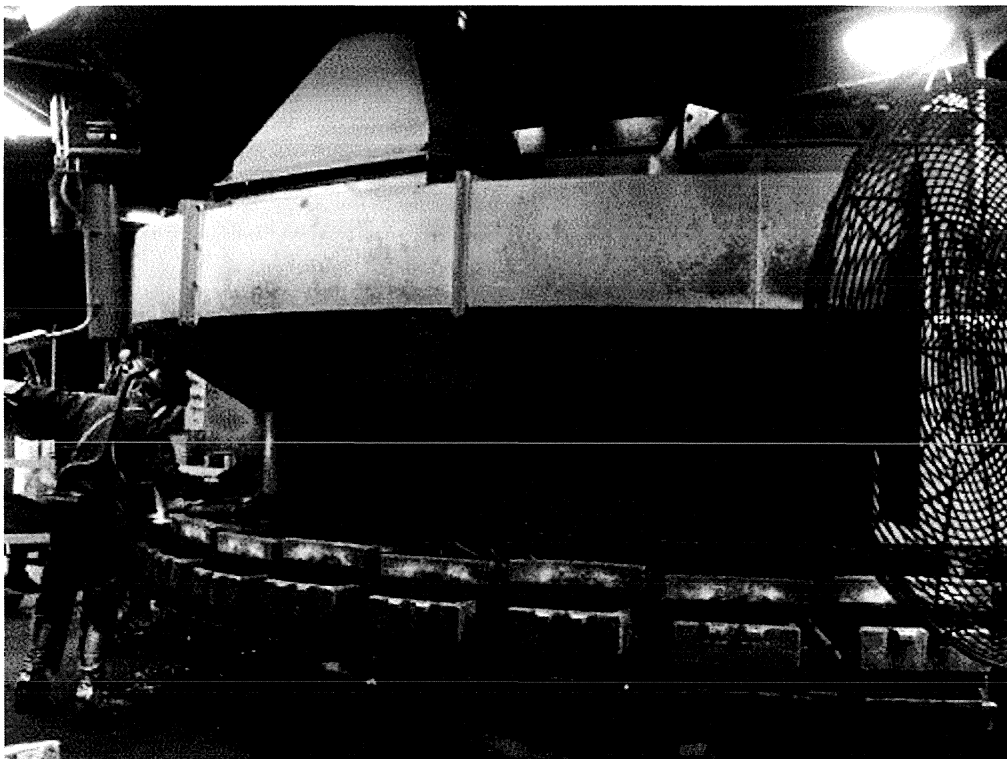


Image 2(EUMELT/POUR) : Pouring the molten metal into molds

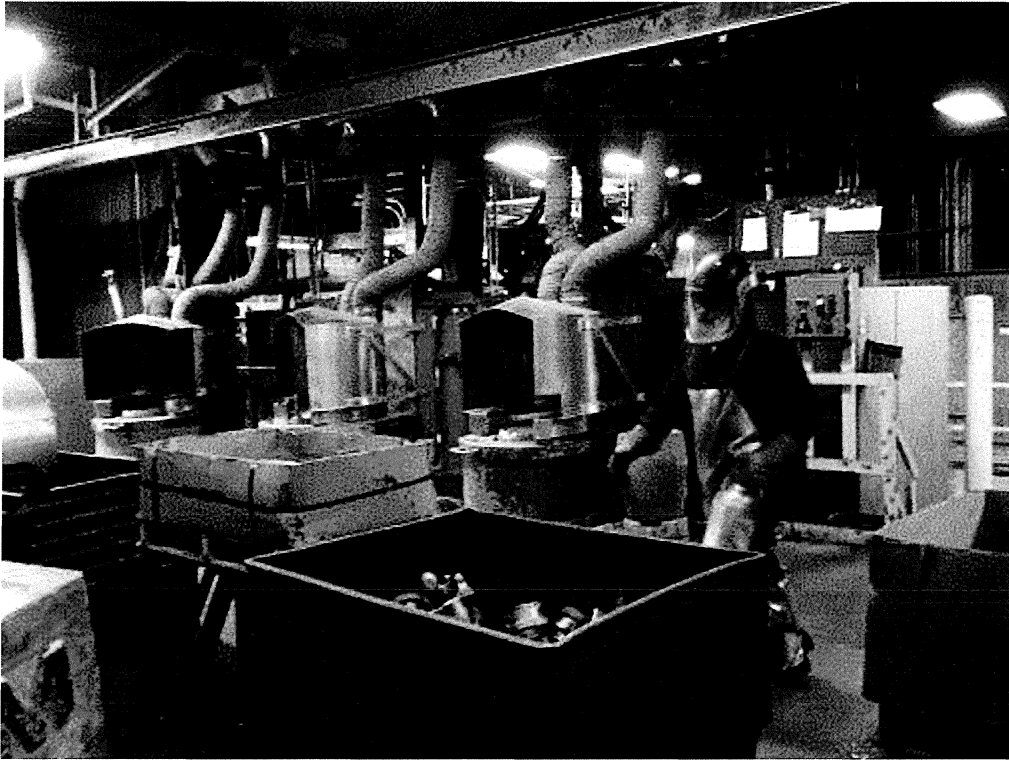


Image 3(EUMELT/POUR) : 4, 400-lb electric melt furnaces. Note the hood. Rim-vents also present near the air/alloys interface.

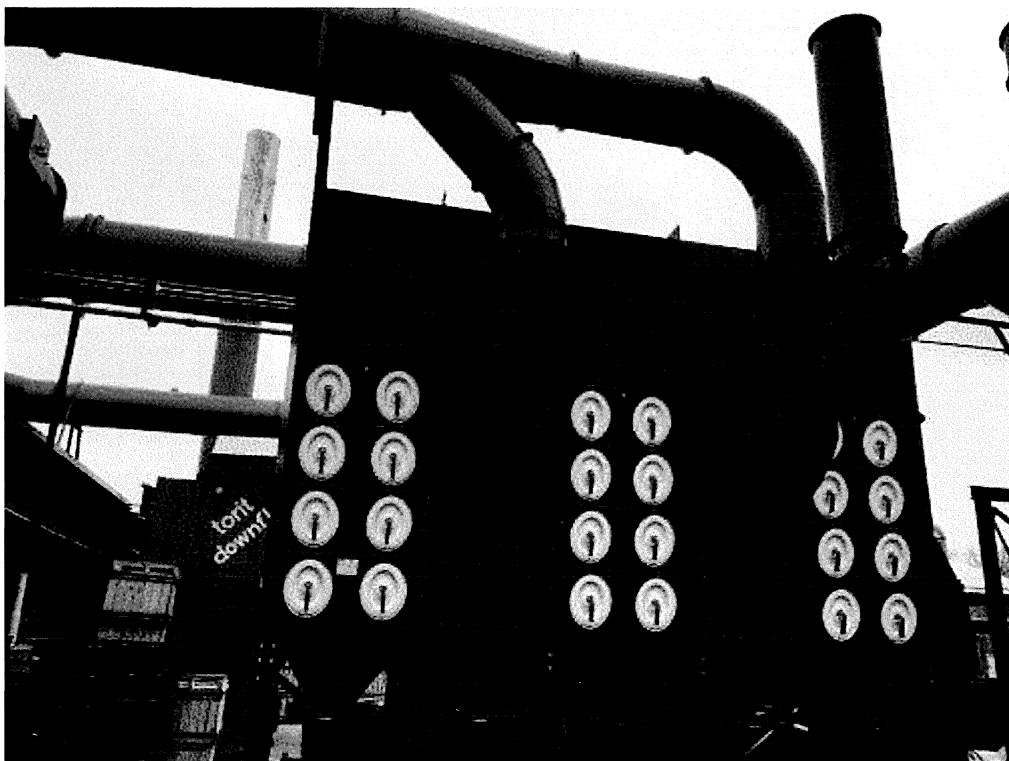


Image 4(Dust collectors) : Multiple cartridge dust collectors present to control emissions from all permitted

equipment. White stack in background is for EUcoreshake. No opacity noted.

NAME M. M. L. L. L.

DATE 5/16/19

SUPERVISOR D. M.