

DEPARTMENT OF ENVIRONMENTAL QUALITY  
 AIR QUALITY DIVISION  
 ACTIVITY REPORT: Self Initiated Inspection

A161430273

FACILITY: Barnes Aerospace		SRN / ID: A1614
LOCATION: 5300 AURELIUS RD, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: INGHAM
CONTACT: David Swearinger , HSE Manager, Lansing Division		ACTIVITY DATE: 07/20/2015
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Self-initiated inspection, and meeting with company, along with OWMRP staff.		
RESOLVED COMPLAINTS:		

On 7/20/2015, the Department of Environmental Quality (DEQ), Air Quality Division (AQD) conducted a self-initiated inspection of Barnes Aerospace, while meeting at the facility with company representatives, and staff of the DEQ Office of Waste management & Radiological Protection (OWMRP), to discuss the installation of potentially exempt equipment.

Facility environmental contact:

David Swearinger; HSE Manager, Lansing Division; 517-394-9727 [dswearinger@barnesaero.com](mailto:dswearinger@barnesaero.com)

Facility description:

Barnes Aerospace is primarily engaged in the manufacturing of components for the aviation industry. Metal blanks are heated and formed in presses. A spray coating is applied to the part prior to forming so that it will release from the mold. The formed parts go through caustic and acid dip processes, to clean and treat the metal.

Emission units:

Emission unit and flexible group	Description	Permit to Install (PTI) or rule	Compliance status
New tooling cells 1-6	Metal machining processes with hand held pneumatic tools, controlled by wet collection system, which exhausts into the general, in-plant environment	Rule 285(l)(vi) (B)	Compliance
Miscellaneous metal machining processes	Miscellaneous metal machining processes, including band saw, tool cell, and NC machine	Rule 285(l)(vi) (B)	Compliance
EUALKSCRBR	Metal parts alkaline cleaning process consisting of six tanks and a packed bed scrubber system for control	PTI No. 495-85B; Rule 301	Compliance
EUACIDSCRBR	Metal parts acid cleaning process consisting of six tanks and a packed bed scrubber system for control	PTI No. 495-85B; Rule 301	Compliance
FGALKACIDSCRBS	Flexible group for EUALKSCRBR and EUACIDSCRBR	PTI No. 495-85B; Rule 301	Compliance
SPRAYCOATLINE	Spray booths used to apply a mold release agent	Rule 287(c)	Compliance
FORMINGOVENS	Several natural gas-fired ovens and associated dies or forms	Rule 282(a)(i)	Compliance
SHOTBLASTING	Several shot blasting units, some of which share an in-plant filter device	285(l)(vi)(B)	Not operating
Welding	Welding processes	285(l)	Compliance

Regulatory overview:

This facility is considered a true minor 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, lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns. It 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. VOC and HAPs, specifically toluene, are the pollutants of greatest concern, for this facility.

Because Barnes Aerospace is not considered a major source, they are not subject to 40 CFR Partt 63, Subpart GG, National Emissions Standards for Aerospace Manufacturing and Rework Facilities. Because Barnes Aerospace is a minor source of HAPs they are considered to be an area source, and could be subject to 40 CFR Part 63 Subparts, including Subpart XXXXXX, Nine Metal Fabrication and Finishing Area Source categories and HHHHHH, Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources. Presently, the AQD does not have administrative authority for either of these two area source subparts. However, the NAICS codes for Barnes Aerospace is 336412, and this codes is not one of those subject to 40 CFR Part 63, Subpart XXXXXX.

**Fee status:**

This facility is not considered fee-subject, for the following reasons. Because it is not a major source for criteria pollutants, it is not classified as Category I. Additionally, because it is not a major source for Hazardous Air Pollutants (HAPs), and is not subject to federal New Source Performance Standards, it is not classified as Category II. Finally, because it is not subject to federal Maximum Achievable Control Technology standards, it is not classified as Category III. The facility is not required to submit an annual air emissions report via the Michigan Air Emissions Reporting System (MAERS).

**Location:**

Barnes Aerospace is located south of Lansing on Aurelius Road near Holt. Sycamore Creek flows adjacent to Aurelius Road opposite the plant. The surrounding area is light industrial and commercial, with the nearest residences being approximately 1,500 feet to the northeast.

**Recent history:**

The facility was previously known as Jet Die. Between 2007 and 2010 it became known as Barnes Aerospace. In 2010, the company was cited for not properly monitoring pressure drop across the alkaline scrubber. The deficiency was corrected, and the 2/14/2014 inspection of the facility by AQD's Brian Culham found the facility to be in compliance.

**Arrival:**

I had been invited by OWMRP's Bill Yocum and Emily Freeman to join them today, for a meeting with Barnes Aerospace, to discuss water treatment equipment the company recently installed, which might be potentially exempt from needing an air use permit. We arrived, and met with Mr. David Swearinger, Health, Safety & Environmental (HSE) Manager, Lansing Division. I provided my identification/credentials, and provided a copy of the DEQ brochure *Environmental Inspections: Rights and Responsibilities*, per AQD procedures. I also provided a copy of the OEA Boiler MACT card.

We discussed a recirculation system which the company had recently installed for filter waste acid liquids. The waste acid, a mixture of nitric acid and hydrofluoric acid, with dissolved solids containing titanium, is getting filtered by a resin bed. This is expected to extend the life of the acid solution, and produce less waste acid. The company felt that this equipment does not need a permit to install, because it does not increase emissions beyond the level allowed by a permit to install. AQD does not grant or approve exemptions, but allows the regulated facilities to decide if they feel they meet the exemption criteria.

We were joined later in the inspection by Mr. Awwen Tyrsson, Special Process Engineer; MTL & Chemical Process, from Barnes Aerospace Fabrications, in Ogden, Utah, whose business card identifies him as a certified green Manufacturing Specialist. He provided additional details on how the recirculation system for reducing waste acid operates.

**Inspection:**

We were informed that they manufacture high grade titanium or mostly titanium components, for the

aviation industry, and operate as a custom fabrication shop.

**New tooling cells 1-6, with wet collection system; Rule 285(l)(vi)(B):**

We first observed a new tooling cell for machining titanium metal parts with hand held pneumatic tools. It utilizes a wet collection system, which exhausts back into the general, in-plant environment. The system is rated at 78,000 cubic feet per minute (cfm). I could not see any opacity from the exhaust outlets. This appears to meet the exemption criteria of Rule 285(l)(vi)(B), for metal machining processes which exhaust into the general, in-plant environment. We were informed that titanium dust is flammable, and so control of this dust is very important.

**Miscellaneous metal machining processes; Rule 285(l)(vi)(B):**

A number of metal working processes are utilized in the plant, including a titanium band saw, a tool cell, and an NC machine. These exhaust into the general, in-plant environment, and therefore appear to meet the exemption criteria for Rule 285(l)(vi)(B).

**EUALKSCRBR and flexible group FGALKACIDSCRBS; PTI No. 495-85B, and Rule 301:**

EUALKSCRBR is an alkaline process for treating metal parts, comprised of 6 tanks, 5 of which exhaust to a packed bed scrubber. This scrubber was stated in the permit evaluation notes to have a 96-99% control efficiency and exceeds requirements for Best Available Control Technology for Toxics (T-BACT). The scrubber solution is water. This scrubber is located to the west of the acid line's scrubber.

PTI No. 495-85B requires that pressure drop and liquid flow rate for EUALKSCRBR be monitored and recorded on a daily basis. Flow rate and pH are monitored continuously and can be accessed remotely through a local area network.

**Pressure drop:**

We were informed that the pressure drop gauge is brought out and connected to the scrubbers each morning, to take the daily required pressure drop reading. We reviewed scrubber pressure drop records for EUALKSCRBR, and I was informed that the maximum allowed value for the scrubber is 1.25", water column. In June, 2015, the daily values ranged from 0.3 to 0.6", w.c. In May, the values ranged from 0.5 to 0.75" w.c. In April, the values ranged from 0.2" to 1.0" , w.c.

**Flow rate:**

I was informed that the flow rate is updated electronically every minute, and that electronic records go back as far as 2008. I was informed that B. Culham's 4/14/2014 inspection report is still accurate, in stating the scrubber flow rate as ranging from 43 to 53 gallons per minute (gpm) for the alkaline line's scrubber.

Opacity is limited to 20% by Rule 301, which is General Condition No. 11 of the PTI. No visible emissions were detected from the EUALKSCRBR scrubber exhaust stack. Weather conditions were sunny and 80 degrees F, with moderate humidity, and winds out of the west at 5-10 mph. We were initially adjacent to the scrubbers, and eventually walked 100 or more feet east of the scrubbers, but detected no odors.

**EUACIDSCRBR and flexible group FGALKACIDSCRBS; PTI No. 495-85B, and Rule 301:**

EUACIDSCRBR is an acidic process for etching metal parts. It uses nitric acid and hydrofluoric acid, and consists of 6 tanks, 5 of which are exhausted to a packed bed scrubber. This is an entirely different scrubber than the one which EUALKSCRBR exhausts to. This scrubber was stated in the permit evaluation notes to have a 96-99% control efficiency and exceeds requirements for Best Available Control Technology for Toxics (T-BACT). The scrubber solution is water and sodium

hydroxide (NAOH). This scrubber is located to the east of the alkaline line's scrubber.

Nitric acid and hydrofluoric acid are mixed together onsite, for the etching fluid, we were told. We were shown the recently installed recirculation system, to reuse acid rather than sending right to their outdoor storage tank for acids. It includes a water tank, resin bed, and an acid tank. The system filters dissolved solids out of the waste acid. Company representatives indicated that it should not require a revision to the current air use permit. I did not find any areas of disagreement on this point.

PTI No. 495-85B requires that pressure drop, liquid flow rate, and pH level for EUACIDSCRBR be monitored and recorded on a daily basis.

#### Pressure drop:

As mentioned above, we were informed that the pressure drop gauge is brought out and connected to the scrubbers each morning, to take the daily required pressure drop reading.

We reviewed records of the EUACIDSCRBR pressure drop. The maximum allowable range for the scrubber pressure drop is 2.0", water column. In June 2015, daily values ranged generally from 0.3" to 0.5", w.c., with a reading of 0.6", w.c. on 6/19. In May 2015, values were generally 0.5", w.c., with a couple readings of 0.3", w.c. In April, values ranged from 0.1" to 0.5", w.c.

#### Flow rate:

I was informed that the flow rate is updated electronically each minute, going back as far as 2008. I was also informed that B. Culham's 2/14/2014 inspection report is still accurate, in stating the flow rate as 165 to 230 gpm for the acid line's scrubber.

#### pH level:

I was informed that they are staying within the pH range of 5.5 -10.5.

Opacity is limited to 20% by Rule 301, which is General Condition No. 11 of the PTI. No visible emissions were detected from the EUACIDSRBR scrubber exhaust stack. We detected no odors, downwind of the scrubber by about 100 feet.

Note: there is an old scrubber stack outside the building, which, we were informed, is no longer in use.

#### SPRAYCOATLINE; Rule 287(c):

The facility has a coating line consisting of two spray booths equipped with mat/panel filters. The coating line was not running, at the time I observed it. The company keeps records of coating use on a monthly basis, to meet the recordkeeping requirements of Rule 287(c).

I reviewed facility recordkeeping for the coating line, and they appeared to be around 100 gallons per month of coating use, below the 200 gallons per month allowed by Rule 287(c). They monitor pressure drop for the spray booths, to determine when to change filters. Filters were replaced on 7/7 and 7/17, I noted. The pressure drop was currently 0.1", w.c., on the first spray booth.

The company applies the coating Formkote T-50. A Materials Safety Data Sheet (MSDS) was supplied to B. Culham, during the 2014 air inspection. The coating is primarily toluene, but also contains ethyl benzene, and other compounds.

As discussed in B. Culham's 2/14/2014 inspection activity report, the PTE for toluene for SPRAYCOATLINE is 7.0 TPY, because toluene is 75% by weight of the coating Formkote T-50. This coating is a mold release agent. He noted that if the PTE reached 10 TPY, then Barnes Aerospace would be a major source, and need to obtain a Renewable Operating Permit (ROP), and advised the company

that a second exempt coating line could put them over 10 TPY. He was informed that the company did not anticipate ever needing to apply more than the 200 gallons per month of coating which their exemptions allows for their current coating line.

B. Culham reviewed the MSDS for Formkote T-50 in the 2/14/2014 activity report. He noted that the Maximum Achievable Control Technology (MACT) Subpart HHHHHH, Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources, restricts the use of certain target HAPs in coatings applied at an area source. The target HAPs are compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), and cadmium (Cd). The MSDS did not list any of these compounds, and he therefore believed that they were not subject to this Subpart.

**FORMING OVENS; Rule 282(a)(i):**

Metal blanks coated with the molding release agent Formkote T-50 are placed in dies which are associated with a forming oven. The ovens heat the metal to a softened, but not molten, state, so that the metal will follow the form. Pressure or vacuum is applied to draw the metal to the desired form. Because the parts are not molten, nor quenched, and the ovens are fired by sweet natural gas at a rate of <10 million Btu/hr, they are exempt from the Rule 201 requirement to obtain a permit to install.

I did not see any visible emissions from the plant roofline and exhaust stacks, nor inside the plant itself, from the hot form area/ovens. They also have a heat treat area, and I did not see any visible emissions from these processes, either inside or outside of the plant.

**SHOTBLASTING; Rule 285(l)(vi)(B):**

Four shot blasting units are located in a room within the plant. All four are exhausted to a baghouse which exhausts into the general, in-plant environment. Therefore, they appear to meet the criteria for the Rule 285(l)(vi)(B) exemption. None of the shot blasting units were running, at this moment.

**Welding; Rule 285(i):**


There are welding processes within the plant. Welding is considered exempt under Rule 285(i).

OWMRP staff and I left the plant, at 12:40 PM. I could not detect visible emissions, nor odors from the plant.

**Conclusion:**

I could not find any instances of noncompliance, nor any areas of concern. The proposed equipment the facility intends to install did not appear to require a permit to install from AQD.

NAME



DATE

9/28/2015

SUPERVISOR

B. M. I.

