

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

B8709
 FY/2018 Insp-

B870943526

FACILITY: American Axle Manufacturing, LLC. (B8709)		SRN / ID: B8709
LOCATION: 2727 W FOURTEEN MILE RD, ROYAL OAK		DISTRICT: Southeast Michigan
CITY: ROYAL OAK		COUNTY: OAKLAND
CONTACT:		ACTIVITY DATE: 02/01/2018
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: FY 2018 inspection of American Axle Manufacturing, LLC ("AAM" or "American Axle"), Royal Oak Manufacturing Division		
RESOLVED COMPLAINTS:		

American Axle Manufacturing, LLC. (B8709)
Royal Oak Manufacturing Division
2727 West 14 Mile Road
Royal Oak, MI 48073-1712

Name Change: Forming Technology, Inc. (about 2000) → Form Tech Industries, LLC. → American Axle Manufacturing (changed because AAM purchased MPG), Royal Oak Manufacturing Division (2017). AAM used the name "Metal Forming" as well before finalizing this name.

PTI No. 486-89 dated August 23, 1989, for four (4) Whelabrator shotblasting / sandblasting machines (1 of 4 permitted machines removed). Now, the sandblasting machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285 (2)(I).

Rules 281 and 285

Not Subject to: NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. HAPs are not used.

On December 05, 2017, and February 01, 2018, I conducted a level 2 self-initiated **FY 2018 inspection** of American Axle Manufacturing, LLC ("AAM" or "American Axle"), formerly known as Form Tech Industries, LLC. ("Form Tech"), located at 2727 West 14 Mile Road, Royal Oak, Michigan 48073-1712. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 (PA 451); and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules.

The purpose of this inspection was to follow up on the October 2017 complaints regarding natural gas odor. American Axle operates a system of tanks, sump, pit, etc. to separate lube oil from oil water mixture via gravity settling separation with assistance of heat to reduce lube oil viscosity. Local residents (especially Royal Oak, Birmingham) and others alleged natural gas odors were from AAM.

During the inspection, Mr. Allen Beasley (Phone: 248-284-2598; Fax: 248-549-4823; Cell: 586-634-6922; E-mail: Allen.Beasley@AAM.com), Director of Human Resources, Mr. Dale Ochs (Phone: NA; Fax: 248-549-4908; Cell: 313-215-8986; E-mail: Dale.Ochs@AAM.com), Maintenance Supervisor, and Mr. Terry Cornell (Phone: 248-597-3887; Fax: 248-597-3855; Cell: 586-246-9412; E-mail: Terry.Cornell@AAM.com), Plant Manager, assisted me.

About 2017, Ms. Linda Jarbo (Phone: 248-577-8986; Fax: 248-549-4823; Cell: 248-933-3933; E-mail: LJarbo@HHIHoldings.net), Director of Human Resources, moved to the Southfield corporate office. Mr. Beasley replaced Ms. Jarbo. About March 31, 2015, Mr. Perry Williams (Phone: 248-597-3809; Fax: 248-597-7553; Cell: 313-779-1295; E-mail: perrywilliams@formtech2.com), Corporate Human Resources Manager, separated. Ms. Linda Jarbo replaced him.

MPG (NYS: MPG, Metaldyne Performance Group) owns HHI Holdings, Metaldyne and Gredy Foundries. MPG went public about December 2014. About April 6, 2017, AAM (American Axle Manufacturing) purchased MPG. As of February 2018, all entities (HHI Holdings, MPG, AAM, etc.) still exist; may change in future if reorganized. About January 2018, Form Tech Industries, LLC changed its name to American Axle Manufacturing, LLC. Royal Oak Manufacturing Division; in interim, Metal Forming was used.

Form Tech was owned by HHI Holdings, Inc., a Hedge Fund Investor Holdings Company. Form Tech / AAM makes transmission parts for automotive industry; all OEMs. About April 6, 2017, AAM (American Axle Manufacturing) purchased MPG and this facility is now known as AAM Royal Oak Manufacturing. Neither heat-treating nor coating process is present. Water-based cleaners are used. Also, solvents for degreasing are used (two cold-cleaners). Lubricating oils are used in forming machines. Cooling water is used to cool tools. The mixture of cooling water and lubricating oils is collected; oil is separated as explained below.

In addition to AAM Royal Oak, AAM operates other facilities in Fraser (in 2017, this plant was involved in litigation due to particulate fall-out), Troy, Michigan (Shutdown: Detroit, Michigan; Canal Fulton, Minerva, Ohio. Sold: Fort Wayne, Indiana, to American Axle, which now [April 2016] purchased MPG).

Form Tech's bankruptcy was resolved in 2009. HHI bought Form Tech in bankruptcy.

PTI No. 486-89 Wheelbrator shot-blast machines

Three permitted (1 of 4 removed about December 2015) Wheelabrator shotblasting / sandblasting machines are present. In addition to three (1 of 4 removed) permitted machines, about 2013, one small machine (Bronco) was installed using Rule 285 exemption. In all, there are three (1 removed) permitted machines and one Rule 285 machine. Each machine is equipped with one dedicated Cartridge Filter (2,500 cfm each) for metallic dust control. Four filter systems with cartridges, with pulse-jet air cleaning, are present. Air pulse frequency for cleaning is based upon pressure differential (ΔP). Magneheilig device measures ΔP . Four hoppers in all for four filter systems are present; one hopper for each filter system. The filters are inspected on a quarterly basis. The filters are changed about annually, as needed. The hoppers are emptied once per day. The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(2)(l).

Donaldson cartridge filters are used in all dust collectors including Whelabrator dust collector. Metallic S-330 steel shot is used for sandblasting. Exhaust gases from the machines, upon filtration using cartridge filter systems, are discharged to outside ambient air.

No. 1 and No. 3 machines were removed about 2013 and 2014, respectively. No. 6 machine replaced No. 1 (2013). Hence, Machine Nos. 2, 4, 5 and 6 are present (4 machines in all). No. 2 machine is equipped with Donaldson filter system using four Donaldson cartridges. No. 4 machine is equipped with Donaldson filter system using six (6) Donaldson cartridges. No. 5 machine is equipped with Torit (Donaldson purchased Torit) filter system using six (6) Donaldson cartridges. No. 6 machine is equipped with Whelabrator filter system using twelve (12) Donaldson cartridges. Hence, all filter systems use Donaldson cartridges.

The PTI No. 486-89 limits are: 0.01 lbs. PM / 1000 lbs. exhaust (PTI No. 486-89, SC 10), no VE (PTI No. 486-89, SC 11), install and operate cartridge filters properly (PTI No. 486-89, SC 11), etc. AAM complies with these permit conditions using cartridge filter systems.

Hot and cold forging

8 Hatebur hot forging (of 8, 1 is in storage), and 6 cold forging (of 6, 3 are in storage) machines are present. Into hot forging (6 70-amp, 1 30-amp & 1 50-amp) machines, steel rods are fed and the rods are heated by induction heat (electric) to 1600-2200 °F. Heated bars are cut to desired size. The parts are beaten to achieve desired form. Water based coolant is used to cool the parts upon forming. The parts are checked for dimensions and defects at Cabi Nos. 1 & 2.

One additional Kurimoto C2F-30 machine (vertical forge) performs same tasks as Hatebur machine (horizontal forge). Kurimoto machines is equipped with an air filtration device.

Water spray is used to cool and protect the tools.

No exhaust. The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285.

Tool room

11 CNC lathes and 5 CNC mills make tools. 3 grinders, 2 hones and 2 manual lathes are also present. Each machine is equipped with a Mistbuster Filter for mist control. All exhaust gases are released in-plant.

The machines are exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285

Cold-cleaners (2).

One 3 ft. * 5 ft. Safety-Kleen (installed in 2005) tank-type and one 3 ft. * 4 ft. sink-on-a-drum (40-gallon drum) type Crystal Clean (Model No.: 54097, S/L No. 8065123, installed 2009) parts- / cold-cleaners with spray brush are present. The cold-cleaners are subject rule 336.1611 or 336.1707 depending on if it is existing or new (Rule 707). A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979. All cold-cleaners are new (Rule 707).

No halogenated solvent is used. Hence, the cold-cleaners are not subject to: NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T)

The lids are either electrically / power (Safety-Kleen) or mechanically (Crystal Clean) assisted. The tank-type (Safety-Kleen) cold-cleaner is electrically operated: simultaneously lid is closed and parts are immersed in the solvent with an operation of a switch. In addition, Safety-Kleen device is equipped with a filter system to remove particulate matter from solvent. Both cold-cleaners are serviced by Crystal Clean. Solvent is replaced once about two months. I gave on June 28, 2011, work-practice decals for posting. I gave decal again during the FY 2017 inspection, as previously issued decals were soiled.

Exxon-Mobil Chemical Co. (281-870-6000) supplies the degreasing solvent: Mineral Spirits known as Synthetic Isoparaffin Hydrocarbons. Solvent distributor is by PVS Nolwood Chemicals, Inc. (313-925-0300) of Detroit.

Flash Point (FP) = 120 °F TCC ASTM D56 closed cup. Specific gravity (SG) = 0.76. Density (ρ) = 6.33 pounds / gallon (0.76 kg /L) at 60 °F. Flammability range = 0.7%v (LEL) & 5.5%v (UEL). Auto Ignition = 689 °F. Vapor Pressure (VP) = 0.78 mm Hg @ 68 °F. Boiling Point (BP) = 354-369 °F. Viscosity (μ) = 1.8-77 centistokes.

Lubricating oil recovery

The machines use water-based coolant for cooling tools and high viscosity lubricating oils (630 gear and bearing lube oils). Assisted by viscosity reduction via heating, gravity settling separation, of lubricating oils and water in two-stage operation takes place using a system of tanks:

1. Tank 1: 6,000-gallon electrically heated tank. Oil from this tank is never processed for cleaning but transferred to Tank 2 or Tank 3. Hence, Tank 1 deemed to participate in first stage separation of oil and water.
2. Tank 2: 3,000-gallon electrically heated tank. Tanks 2-3 are part of second stage separation of oil and water.
3. Tank 3: 3,000-gallon electrically heated tank. Tanks 2-3 are part of second stage separation of oil and water.
4. Tank 4: 6,000-gallon transfer tank (not heated). From Tank 4, oil used to be transferred to virgin oil tank until its removal. Cleaned oil by the truck used to be held in this tank as well for transfer to virgin oil tank. This tank was removed about January 2018. Virgin oil tank and Tank 4 together will be replaced by new tank in oil room.
5. Tank 5: 1,200-gallon waste oil tank in oil room. This tank was never a part of oil and water separation. The tank was for waste oil storage and has not been used since ≈2012. This tank was removed about January 2018.
6. Sump: ≈2,500-gallon sump located in oil room at below ground level to drop using gravity decanted water from Tanks 1-3. Water is decanted, upon gravity settling,

assisted by reduction of lube oil viscosity due to heating, from Tanks 1- 3 into the sump (below ground level) by gravity flow of water from tank bottom until an operator notices oil using valves. Upon noticing oil, an operator closes the valve.

7. Pit: 12,000-gallon holding pit. Upon gravity settling separation, wastewater is discharged to sewer and oil is transferred to Tank 1. Oil is pumped to Tank 1 and water is discharged to GLWA sewer system. The pit receives its water from the sump.
8. Virgin oil tank: 8,000-gallon virgin oil tank located in the machines area. The machines use lubricating oils from this tank. This virgin oil tank will be removed and merged (its functions) with a tank that will replace Tank 4 in oil room. The tank removal is likely to be completed by September 2018, upon installation of the new tank in oil room that will replace Tank 4 and the virgin oil tank.

While 12,000 gallon holding pit and 8,000-gallon virgin oil tank are located in machines area, rest of the tanks including sump are located in oil room. 8,000-gallon virgin oil tank and 6,000-gallon transfer tank (Tank 4) will be merged into one tank in oil room.

All lube oil contaminated with water due to machining (tool cooling water and lubricating oil get mixed) including oil decanted from the pit is transferred to Tank 1. Tank 1 (stage-1) is heated to assist gravity separation of oil (top layer as specific gravity of oil is lower). Water is allowed to flow into the sump using a valve until oil is noticed by the operator. Thus separated oil from Tank 1 is pumped to Tank 2 or Tank 3. The stage-2 separation process (heating for viscosity reduction, allowing water to settle to the tank bottom, decanting water from tank bottom) is repeated for Tank 2 and Tank 3 and water is decanted to sump.

Dirty oil from Tank 2 and Tank 3 (never Tank 1) is processed either on-site truck (until January 2018) or off-site facility. On-site truck (off-site experiment is going on) separates oil, water and sludge and returns cleaned oil to Tank 4 (until January 2018) or virgin oil tank (new tank will replace this tank and such replacement will merge Tank 4 & virgin oil tank functions). Truck hauls away sludge. Truck processes dirty oil on as needed basis (about once per month). Filtration to remove sludge and water separation takes about two hours. Cleaned oil is returned to AAM for reuse (Transfer Tank 4 or its replacement tank).

Valicor (734-426-9015) of Dexter, Michigan, processed oil on site. One such processing occurred on August 2, 2017: 2,865 gallons of dirty oil with some water.

Water from the holding pit, upon gravity separation, is discharged to sewer and oil is transferred to Tank 1. First oil is pumped out to Tank 1 ensuring no oil is discharged to sewer.

It is unlikely that small amount of lube oil discharged can cause massive natural gas odor problem in the neighborhood (Royal Oak, Troy, Birmingham).

I could barely detect lube oil odor in the oil room. No exhaust to outside ambient air.

Great Lakes Water Authority (Tom Tom) per Pretreatment Program samples water discharge on a quarterly basis and conducts annual inspection.

Conclusion:

Sandblasting machines and cold-cleaners are in compliance with the exemption Rules 285 & 281 and the permit. It is unlikely that AAM caused natural gas odor in the neighborhood.

NAME B McManis DATE 03/06/2018 SUPERVISOR Joyce B