

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

B286624214

FACILITY: MAHLE ENGINE COMPONENTS USA, INC.		SRN / ID: B2866
LOCATION: 916 W. State St., SAINT JOHNS		DISTRICT: Lansing
CITY: SAINT JOHNS		COUNTY: CLINTON
CONTACT: Sue Palmer, EHS Coordinator		ACTIVITY DATE: 01/30/2014
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced, scheduled compliance inspection, focusing on anhydrous ammonia tanks, chrome plating, and the HVOF system.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Sue Palmer, Mahle EHS Coordinator (susan.palmer@us.mahle.com)
Terry Pecott, Mahle Chemical Engineer
Jim Baert, Mahle Facilities Engineer
Chuck Tamulis, Allied Ring Senior Process Engineer

Purpose: Conduct an unannounced, scheduled compliance inspection by determining compliance with Mahle's Permits to Install (PTI) Nos. 166-12, 100-12, 384-08, 2-08A; 14-95, 394-94, 746-93, 110-93; 371-85, and 351-83. Particular attention was paid to the 2 anhydrous ammonia tanks and the chrome plating system.

Facility Background/Regulatory Overview: Mahle Engine Components is a minor source subject to 40 CFR 63 Subparts A&N and is required to report to MAERS as a Category III for their chrome (hexavalent chromium) plating operations. Mahle manufactures and coats piston rings for Ford, GM, Chrysler and John Deer. Mahle is responsible for environmental compliance with all equipment permitted, including permitted emission units that are used solely by Allied Ring Components (ARC), which holds a joint venture with Mahle.

Inspection: This was an unannounced compliance inspection. At approximately 9:00 a.m. on January 30, 2014 I met with Sue Palmer, newly-hired EHS Coordinator for Mahle. I explained to S. Palmer what occurs during an inspection and provided her with a DEQ "Environmental Inspections: Rights and Responsibilities" brochure to illustrate a typical inspection procedure, a May 2012 Permit to Install Exemption handbook, and a copy of the 2010 inspection/activity report by Dan McGeen, which included a list of all exempt equipment. I asked S. Palmer that she work on updating their exempt equipment list by comparing her list to the list in 2010 activity report.

PTI No. 166-12 and 100-12 – 2 Anhydrous Ammonia Storage Tanks

There are 2 anhydrous ammonia storage tanks located on Mahle's property: one for Mahle's processes, the other for ARC's processes. According to Jim Baert each tank holds 1000 gallons. T. Pecott said that the anhydrous ammonia is used for a nitrating system where NH_4 dissociates to make chrome nitride, a very hard substance for the piston rings. T. Pecott said that Mahle has not used anhydrous ammonia from their tank yet. C. Tamulis explained that ARC has used their tank periodically throughout 2013, and the tank has been refilled 4 times during the past year by Tanner Industries, although each refill was not a full 1000 gallons. He said that ARC has used approximately 1000 gallons of NH_4 in 2013.

Special Conditions

1.1 T. Pecott said that a link to the "Part 78, Storage and Handling of Anhydrous Ammonia" (MIOSHA 1910.111), is kept on the computer. A copy of this document must be maintained at the facility. The link to the document satisfies this condition. Mahle is in compliance with condition 1.1.

1.2 According to this condition, the permittee must implement and maintain the inspection and maintenance program specified in Appendix A of the permit for the nurse and permanent storage tanks. Permanent storage tanks must be inspected at least twice per year, prior to spring and fall application seasons according to the permit. Mahle does not have any nurse tanks, as their application is not agricultural, but must comply with inspections of tanks per Appendix A's Program for Permanent Ammonia Storage Tanks. I was provided with copies of the inspections conducted on ARC's permanent storage tank (west side of building) by C. Tamulis (see attachment) for 2012 and 2013. Inspections were conducted twice per year on forms created at Mahle. The forms appear to be derived from Appendix A's checklist and contain most of the checks in Appendix A; however, I recommended to S. Palmer that Mahle begin using Appendix A's checklist to conduct inspections, or to add

Appendix A checklist item numbers 9 and 14-17 to Mahle's inspection checklist. I also asked that the checklist identify on the form which tank is being inspected. According to S. Palmer, Mahle's anhydrous ammonia tank was just recently filled (late 2013) and so has not needed to be inspected prior to this time. Mahle is in compliance with condition 1.2.

1.3 S. Palmer said that the last time the St. John's Fire Chief, Dean Mazzolini, was out to visit Mahle was around February or March 2013, when they last reviewed the Emergency Response Plan. Mahle has an "Annual Familiarization Tour: For Local Emergency Response Agencies" presentation (see attachment) that is used during these visits. There are former employees (Buffie Burns, the last EHS staffperson) listed as emergency coordinators, which indicates that this plan has not been updated since B. Burns left. I told S. Palmer that these need to be updated annually and that there must be a way for Mahle to document that the Fire Department reviewed the plan, and a way to show exactly what has been reviewed by the Fire Department. For now, the presentation and approximate date the Fire Department last visited Mahle is sufficient for meeting this condition. Mahle is in compliance with condition 1.3

1.4 This condition requires that all transfer operations and transport deliveries be performed by a reliable person properly trained for compliance with applicable procedures. J. Baert said Tanner Industries, a company specializing in the supply of anhydrous ammonia and storage tanks, is responsible for the filling of the tanks. According to Tanner's website they also offer safety training covering ammonia properties & first aid, types of releases, response recommendations, packaging (bulk & non-bulk), transportation, and live release and response. Tanner Industries also has their own delivery procedures which also address some of the checklist items in the permanent storage tank inspection checklist in Appendix A of the permit (see attached) and also do their own inspection of the tank prior to refill (see attachment). Mahle is in compliance with condition 1.4.

Conditions 1.5-1.6 do not apply to Mahle, as they have no nurse tanks onsite.

1.7 This condition requires that the permanent storage tanks not be filled greater than a range of 82-87.5% volume for uninsulated tanks. J. Baert said that the maximum fill of the tank is 85%, but there is a bleed-off valve if the tank exceeds 85%. Tanner Industries also have the 85% volume in their delivery procedures as the maximum they are allowed to fill the tank. Mahle is in compliance with condition 1.7.

1.8 This condition requires vapor return lines to be employed when necessary. According to Tanner Industries' delivery procedures, vapor return lines are required when using the "Standard Pump Method" (item 6.2 in the procedure). Mahle is in compliance with condition 1.8.

1.9 This condition requires that nitrogen stabilizers not be added to any of the storage or transport tanks. J. Baert explained that nitrogen stabilizers are not added, especially because their processes require the reactive form of anhydrous ammonia. Mahle is in compliance with condition 1.9.

1.10 This condition requires tanks to have safety relief valves that are stamped with the date manufactured and which need to be replaced every 5 years, or more often if there are signs of damage. According to Tanner Industries' inspection check list they check the pressure relief valves and the hydrostatic relief valves and record the manufacture and/or expiration date of the valves. A January 2013 inspection shows expiration dates on the pressure relief and hydrostatic relief valves 8/2015 and 9/2014, respectively, and a manufacture date on the pressure relief valve of 8/2010. Tanner's procedures also require that the tanks not be filled if the valves are expired. Mahle is in compliance with condition 1.10.

1.11 I did not verify during the inspection whether the 2 tanks had remotely operated emergency shut-off valves. This will be checked during a future inspection later this year.

1.12 I did not verify the presence of a bulkhead on the tank that would create a predictable break. This will be checked during a future inspection later this year.

1.13 I did not verify the presence of back pressure check valves or excess flow valves near the predictable break point of the bulkhead. This will be checked during a future inspection.

1.14 This condition does not apply to Mahle. There are no hoses associated with the two tanks.

1.15 C. Tamulis said that Tanner Industries carries a 5 gallon water trap on their truck that they use for venting of the lines after transfer. I verified with Tanner Industries that this was true. They explained that they only have room on their truck for 5 gallons, but also it is not practicable for Tanner staff to carry the weight of 55 gallons of

water from the truck in order to vent the lines. This permit condition requires a minimum of 55 gallons. Mahle/ARC using anhydrous ammonia year-round and it would therefore not be practical to keep 55 gallons on site, year round (given freezing during winter time). I will be working with Mahle to get a permit modification for keeping a 55 gallon drum present onsite for Tanner Industries to use only during the spring, summer and fall months. The 5 gallon drum from Tanner Industries will be allowed for the winter months.

1.16 A sign is required to be conspicuously placed at the facility entrance with emergency phone numbers. Mahle currently has a sign posted directly onto the cage surrounding the anhydrous ammonia tank on the west side of the building. The tank on the north side of the building did not have a sign, nor was there a sign posted "conspicuously" at the facility entrance. I strongly recommended to S. Palmer that a sign be placed on the north tank (the tank that is not currently being used) in addition to a sign placed out at Mahle's gate near the road in order to be completely in compliance with this condition. Mahle is in compliance with condition 1.6.

1.17 Anhydrous ammonia tanks are required to be at least 50' from the property line, 300' from residences or places of private/public assembly, 500' from schools, apartments, or institutions, and at least 1000' from hospitals or nursing homes. Attached is a map of the facility with anhydrous ammonia tanks highlighted. The closest residence is 300' away according to the Google distance scale on the map. I also plotted locations of schools, apartments, hospitals and nursing homes and all are outside the distance minimums provided in the permit. Mahle is in compliance with 1.17.

1.18 J. Baert said that the only time Mahle had a "release" was when Tanner Industries forgot to shut the pressure release valve after they had filled the tank in late summer, 2013. Mahle called Tanner Industries as soon as they noticed and Tanner came back to shut the valve within an hour of filling the tank. Mahle is in compliance with condition 1.18.

PTI No. 2-08A – Hard Chrome Electroplating Tanks

There are 6 hard chrome electroplating tanks permitted under this permit within two flexible groups: FGCRHOME1 (EUCHROME 1-4/tanks3-6) and FGCRHOME2 (tanks EUCHROME 5-6/tanks 1-2). T. Pecott gave a tour of the chrome plating tanks/lines. Attention was paid to all duct work and the external surfaces of the CMP systems to look for signs of leaks. All ducts and external surfaces appeared to be free of leaks and stains. T. Pecott said the pits below the tanks, used to capture any drips from the chrome tanks, were sandblasted, re-cemented and recoated last spring, because they had observed moisture in the pits. T. Pecott had explained the moisture was either coming up from underneath the pit or forming and condensing within the pit.

Tank 2 (EUCHROME6) was the only tank being operated that day and was in the process of cooling down. J. Baert said that they operate the chrome plating lines 8 p.m. – 10:30 a.m. to save on electricity. T. Pecott said Tank 6 (EUCHROME 4) has been removed.

Process/Operational Restrictions

S. Palmer verified that the O&M plan provided to AQD on March 23, 2009 is the same one that is used at Mahle currently.

1a. Within the O&M plan are the operating pressure drop ranges for all chrome plating tanks and their associated HEPA filters. There are also attached standardized checklists for inspection of the chrome plating tanks, the mesh pads associated with each, the HEPA filters for each set of tanks, and weekly opacity readings. The checklists provide the operating ranges for each system. These items are sufficient for Mahle's compliance with condition 1a.

1b. The O&M plan also includes "work practice standards" which specify quarterly inspections that address conditions 1a-d of the "Monitoring/Recordkeeping" section of the permit. The O&M plan also requires weekly opacity readings. Mahle provided me with two separate days that opacity readings were taken (see attachment). Mahle is in compliance with condition 1b.

1c&d. The O&M plan includes a "Corrective Action" table that specifies the issues the tanks or CMP may encounter, the possible cause for each and the corrective actions that can be taken to address each issue. Daily inspections along with the corrective actions taken when a problem is solved would constitute preventative measures taken to insure process malfunctions do not occur. Mahle is in compliance with conditions 1c&d.

Design/Equipment Parameters

1&2 – The composite mesh pad systems for FGCHROME1 or FGCHROME2 were installed, maintained and operating properly, as verified through Mahle's pressure drop readings (see table 1). The associated HEPA filter pressure drops will be verified in a future inspection this fiscal year.

3. I verified that all CMP systems for FGCHROME1 and FGCHROME2 were equipped with a differential pressure monitoring device; however, I did not verify their pressure drops during the inspection and will follow-up on this in a future inspection. Mahle is in compliance with condition 3.

Monitoring/Recordkeeping

1a. Mahle is required to determine the pressure drop across the composite mesh pad (CMP) system on a daily basis. S. Palmer provided me with a few snapshot pressure drop readings for all tanks throughout 2013: July 18, October 28 and November 4. (see attachment) All pressure drop readings are within their respective operating ranges. See Table 1 for a concise version of the pressure drop reading document. Mahle is in compliance with condition 1a.

Table 1. Pressure Drop Readings for 2013 and permissible pressure drop ranges

	Pressure Drop Operating Range ("H ₂ O)	July 18, 2013	October 28, 2013	November 4, 2013
Tank 1 (EUCHROME5)	0.0 – 3.8	1.4	1.4	1.4
Tank 2 (EUCHROME6)	1.2 – 5.2	1.5	1.7	1.7
Tank 3 (EUCHROME1)	0.5 – 6.0	2.9	3.0	3.0
Tank 4 (EUCHROME2)	1.0 – 7.1	5.0	3.0	3.0
Tank 5 (EUCHROME3)	0.5 – 6.4	Not operating	3.1	3.2
Tank 6 (EUCHROME4)	NA	NA	NA	NA

1b-d. These conditions require that visual inspection of the CMP system be conducted on a quarterly basis for breakthrough of chromic acid mist, proper drainage, no chromic acid build-up on the pads, no evidence of attack on the structure integrity of the control device, and no leaks from ductwork from the tanks.

S. Palmer provided me with a visual inspections checklist that encompasses permit conditions 1b-d. From this inspection checklist those staff required to do the quarterly inspection electronically record their inspections results. Mahle is in compliance with conditions 1b-d (see attachment).

1e. T. Pecott explained that washdowns of the CMPs are computer-programmed; the chrome fumes hit the pads and water is sprayed on the pads, rinsing the chrome back into the tank. Mahle has a closed-loop system that T. Pecott said prevents water from the chrome plating from getting into the waste water. Mahle is in compliance with condition 1e.

2. NESHAP Subpart N requires that "small facilities" (those having a cumulative potential rectifier capacity less than 60 million ampere-hours/year) emit no more than 0.015 mg/dscm (as permitted). According to the AQD files, on October 21 and 22, 2008 stack tests were performed on all 6 chrome plating tanks. In addition to the stack tests, Mahle is required to keep record of source emissions via reporting annually to MAERS. Mahle is therefore in compliance with this condition.

3. Mahle is required to maintain records of inspections to comply with the work practice standards as written in the O&M plan (quarterly inspections). The inspection record should contain the device inspected, the date and time of inspection, brief description of the working condition of the device and record any actions taken to correct the deficiencies found during the inspection.

I was provided with a copy of all quarterly inspections for 2013 for chrome tank 1 (EUCHROME5) (see attachment). Inspections were conducted on 12/18/2012, 3/19/2013, 6/17/2013, and 9/17/2013. All information required by this condition were provided, except for recording the actions taken to correct the deficiencies found during the inspection. I told S. Palmer that in the future, corrective actions should also be documented in these inspection records.

Reporting

Mahle is required to submit Ongoing Compliance Status Reports semi-annually. Mahle is in compliance with this condition. The most recent report was July 1, 2013 – December 31, 2013. All reported differential pressures are within their appropriate pressure differential ranges – for the tanks' CMP and for the HEPA filters

PTI No. 384-08 – 2 High Velocity Oxygen Fuel (HVOF) processes
Process/Operational Restrictions

1. This condition requires that the pressure drop for the associated dust collectors be maintained according to the operation and maintenance plan for the HVOF. I did not verify pressure drops of the HVOFs during the inspection but will do so in a follow-up inspection this fiscal year.
2. The O&M plan for the HVOF processes is in the AQD file with a Revision Date of 5/1/2009. S. Palmer said this is the O&M plan that is currently being used. Mahle is in compliance with condition 2.

Design/Equipment Parameters

1&2. I did not verify compliance with these conditions for the proper installation, maintenance and operation of the dust collector nor to verify the presence of the pressure drop continuous monitor. This will be inspected in a future inspection this fiscal year.

Monitoring/Recordkeeping

1. S. Palmer provided me with a daily pressure drop record for the HVOF system – from January 22 – February 7th (see attachment). According to Mahle's O&M plan for the HVOF, pressure drops for tank #927 should be between 0.1 and 5.0 "H₂O. All recorded pressure drops are within this range. Mahle is in compliance with this condition.
2. Mahle is required to keep monthly and 12-month rolling records of ceramic coating used. S. Palmer provided me with the "Plasma Usage" record (see attachment). The 12-month rolling total usage through February 2014 is 30,734 lb/year. The limit is 284,746 lb/year. Per discussion with Andrew Drury, material usage limits are proportional to emission rates, assuming that deposition efficiency and dust collector efficiency have remained consistent. A. Drury also said that 43 lb/hr would be a maximum emission rate. The Plasma Usage record also shows lbs/hr averaged over a month. Mahle is in compliance with emission limits, material use limits and condition 2 of this section.

The manganese phosphate and zinc phosphate coating lines, plasma spray stations, piston ring machines and chromium stripping tank (PTI No's 14-95, 394-94, 746-93, 429-93, 110-93, 371-85, and 351-83) processes were not inspected at this time and will be inspected in a follow-up inspection later this fiscal year.

NAME

M. Williams

DATE

3-25-14

SUPERVISOR

M. Williams