

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

H278130835

FACILITY: Motor Products - A Division of Allied Motion Tech.		SRN / ID: H2781
LOCATION: 201 S Delaney Rd, OWOSSO		DISTRICT: Lansing
CITY: OWOSSO		COUNTY: SHIAWASSEE
CONTACT: Dan Noonan, Process Engineer		ACTIVITY DATE: 08/27/2015
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Partial Compliance Evaluation (PCE) activities, conducted as part of a Full Compliance Evaluation (FCE): 1.) scheduled inspection, and 2.) review of recordkeeping and operational logs.		
RESOLVED COMPLAINTS:		

On 8/27/2015, the Department of Environmental Quality (DEQ), Air Quality Division (AQD) conducted a scheduled inspection of Motor Products, a Division of Allied Motion Tech. We also conducted a review of facility recordkeeping. These were Partial Compliance Evaluation (PCE) activities, conducted as part of a Full Compliance Evaluation (FCE). Synthetic minor facilities are periodically required by the AQD to undergo a FCE.

Environmental contact:

Dan Noonan, Process Engineer; 989-725-4820; dan.noonan@alliedmotion.com

Facility description:

This facility designs and manufactures custom electric motors.

Emission units:

Emission unit	Description	Flexible group	Permit no. or rule	Federal regulation	Compliance status
EU-DEGREASER	Detrex VS2000 model batch vapor degreaser, with an electric chiller coil and a no exhaust system; uses trichloroethylene	FG-FACILITY	552-81C	40 CFR Part 63, Subpart T	Compliance
EU-COLDCLEANER	Custom-built cold cleaner using a solvent containing methylene chloride	FG-FACILITY	552-81C	40 CFR Part 63, Subpart T	Compliance
EU-ZINC FURNACE	A furnace once used for melting zinc; removed from site	FG-FACILITY	552-81C	NA	Removed from site
EU-VARNISHDIP	Varnish dip system used to coat motor shells prior to assembly	FG-COATING SYSTEMS, FG-FACILITY	552-81C	NA	Not operating, at time
EU-SHWFRAMEPAINT	Spray paint booth with filters and natural gas-fired oven; removed from site	FG-COATING SYSTEMS, FG-FACILITY	552-81C	NA	Removed from site
EU-TRICKELVARNISH	Trickle varnish and epoxy resin varnish system used to apply varnish to armatures of motors	FG-COATING SYSTEMS, FG-FACILITY	552-82C	NA	Not operating, at time
Hot melt gluing process	Hot melt adhesive application	FG-FACILITY	287(i)	NA	Compliance
Water-based parts washer	Water-based parts washer, exhausting to in-plant environment	FG-FACILITY	Rule 284 (r)(iv)	NA	Compliance

Regulatory overview:

This facility has a synthetic minor or opt-out permit, Permit to Install (PTI) No. 552-81C, which restricts the facility's potential to emit for Hazardous Air Pollutants (HAPs), to keep it from becoming a major source of air emissions. The facility is considered a minor source for Volatile Organic Compounds (VOCs). It is subject to 40 CFR Part 63, Subpart T, National Emissions Standards for Halogenated Solvent Cleaning, because of their vapor degreaser and cold cleaner.

Fee status:

This facility is considered a category III fee source, because it has processes which are subject to the NESHAP for halogenated solvent cleaning. It reports annually to the Michigan Air Emissions Reporting System (MAERS).

Location:

The facility is located in the north end of an industrial park, on the west side of Owosso. The nearest residences are about 1,200 feet to the northeast. The closest nearby structure appears to be a storage building, roughly 75 feet to the south, followed by a number of industries further south. A factory is about 700 feet to the west, and to the east is undeveloped land, for 500 feet.

Recent history:

This facility was built in the early 1950s, I was informed. It is my understanding that it has moved away from mass production of motors, as they have found it is not feasible to compete with operations overseas, where mass production costs are much cheaper. They have found a niche in manufacturing custom motors in smaller quantities; a typical order for them might be a few hundred units. They also specialize in designing new or prototype motors, I was told.

There are no records of the AQD having received air pollution complaints of this facility from August of 1995, through the present. Files prior to August, 1995 have been seen to the Record Center for storage.

Arrival:

I drove around the block on which Motor Products is located, and detected no odors from the plant. I arrived at the site at 9:25 AM. There were no odors or visible emissions detected from the facility parking lot. Weather conditions were cloudy, jhmid, 60 degrees F, and calm.

The date for the this inspection had been arranged in advance, as I had previously visited the site on a day when Mr. Dan Noonan, Process Engineer, was not available. Mr. Noon is the new environmental contact, now that the previous one, Mr. Rick Morrice, has retired. Upon my arrival today, I provided Mr. Noonan with a copy of the DEQ's "Environmental Inspections: Rights and Responsibilities" brochure, and the boiler NESHAP card.

Inspection:

EU-DEGREASER, PTI No. 552-81C, 40 CFR Part 63, Subpart T:

The Detrex VS2000 model batch vapor degreaser will probably be gone in one year, Mr. Noonan informed me. They have a water-based, ultrasonic cleaner which they purchased from China, which he pointed out to me. He explained that are trying to rework the electrical system so that it will function in an American setting. I observed the water-based ultra-sonic cleaner, which appears as if it would exhaust to the indoor plant atmosphere, and so could qualify for the Rule 285(r)(iv) exemption. If it were to exhaust to the outside plant environment, it might satisfy the exemption criteria of Rules 281(e) and/or Rule 285(l)(iii).

The TCE degreaser is electrically heated, uses an electric chiller coil, as well an air conditioned cooling system, I was told. It exhausts to the general, in-plant environment. Because it uses trichloroethylene (TCE), it is subject to Subpart T. The chiller coil contains a lockout to prevent use of the unit if the coil temperature is not maintained. They have a distiller which cleans the solvents, and is run every couple of weeks. An acid is added to the TCE as needed, to stabilize it, and is checked weekly. If acid levels get too high, the solvent would not be as effective. Freeboard temperature and water temperature are also checked weekly. If the water temperature gets too high, a monitor alerts them. I was informed that the degreaser's capacity is about 240 gallons of TCE.

A room was built around the degreaser, with walls most of the way to the ceiling. Creating a partial or complete enclosure around a degreaser is one of the techniques that may be used under the NESHAP to reduce room draft, or air flow, across the top of the freeboard area. .

From atop an elevated access platform, it was possible to look down into the degreaser. There was a TCE solvent odor present, when looking down over the unit. Mr. Noonan pointed out the free board, then the upper coils, which are refrigerated, and next the lower coils, which are chilled with glycol. Vapors from the heated TCE solvent were visible further down inside the degreaser, but no visible emissions could be seen leaving the degreaser. Mr. Noonan explained that the heated vapors condense onto the cold metal parts that are being treated in the degreaser. The condensed solvent drains back into the solvent bath, cleaning the parts, he said, and the condensing stops when the parts warm up to the temperature of the vapors.

We observed baskets of parts being lowered into, and raised out of, the degreaser. Mr. Noonan explained that they comply with the NESHAP requirement to raise parts out of the degreaser at a rate of no more than 11 feet per minute, by having a special crane made that can not ever exceed that speed. This appears to comply with the NESHAP equipment standard requirement. I checked the removed parts baskets for dripping, and it appeared that dripping had stopped, before the units were removed from the degreaser, in accordance with the NESHAP work standard requirement.

Mr. Noonan showed me the temperature probe that they utilize to monitor freeboard temperature. This is done every day, at the end of each shift. He informed me that under the NESHAP, they have a maximum allowable temperature of 54 degrees F (the NESHAP requires that the chilled air blanket temperature for a freeboard device can be no greater than 30% of the solvent's boiling point). It is my understanding that they use 50 degrees F as their reference point, to give them an additional buffer zone. He showed me their recordkeeping form for the temperature, and the large recordkeeping board it is posted on, near the degreaser. The temperature for the most recent four days of operation was 40 degrees F, except for one day measured at 38 degrees F.

The temperature of the chiller coils which are filled with water are tracked daily, I was told, and these values recorded on a form on the large recordkeeping board. In recent days, the water chiller temperature appeared to have been just below 60 degrees F.

Mr. Noonan also showed me the acid acceptance chart on the recordkeeping board. Humidity contributes to the formation of acid in the TCE, he explained, and an additive, which is itself an acid, is added to the TCE to stabilize it. He added that for vapor degreasing, the TCE must be very stable. Over the most recent 11 days of operation, he pointed out a sudden drop in the acid acceptance level on the chart, and explained that this is because a supply of TCE had been purchased from China, and turned out not to be pure. In order to make this TCE more suitable for vapor degreasing, an additive was mixed in, I was informed.

The TCE distiller is located to the left of the degreaser itself. Mr. Noonan explained that it is used in order to remove water from the condensed TCE.

EU-COLDCLEANER: PTI No. 552-81C, 40 CFR Part 63, Subpart T:

This is a custom built cold cleaner which uses a RAP (brand name) solvent that includes methylene chloride, to strip hardened varnish from metal part hooks. The hardened varnish crystallizes after exposure to the solvent, and can then be brushed off the metal hooks. The unit is a built like a tall metal cabinet, with front doors which swing open to reveal a horizontal tank with a closed lid. As soon as the front doors are swung open, an automated exhaust fan kicks on, drawing air away from any employee standing there. The lid to the horizontal tank can be lifted open, and a hook is used to keep it open. A rack for metal part hooks is suspended just above the RAP solvent, and the hooks themselves are immersed in the solvent. The RAP solvent is covered with a layer of water.

For batch cold solvent cleaning machines (immersion cold solvent cleaning machines) the NESHAP requires:

1. Tight fitting cover that must always be closed except for entry and removal of parts [63.462(a)]
2. Water layer at least 2.5 centimeters (1.0 inch) on the surface of the solvent within the machine or a freeboard ratio of at least 0.75 [63.462(a)].

The cover for the solvent cleaning tank which I saw during the inspection appears to have met the requirement to be tight fitting.

The water layer was the chosen control option. **VERIFY THE DEPTH OF THE WATER LAYER.**

EU-ZINCFURNACE; PTI No. 552-81C:

This zinc furnace was removed from the facility, prior to the 9/22/2011 inspection by AQD's Brad Myott.

EU-VARNISHDIP; PTI No. 552-81C:

The varnish dip process was running, at the time of the inspection. It is used as needed, rather than on a daily basis. Magnets are held in place by clips in the motor shells. The entire assembly is then dipped in a coating bath, which contains varnish and xylene. This lacquer coating provides a painted surface to the outside of the motor shell, and it secures the magnets in place. The droplets from dripping parts travel down a sloped surface, back to the coating bath. It takes about half an hour for coated parts to travel through the natural gas-fired curing oven, or "shell oven." The dip tank and the shell oven each exhaust through the ceiling.

EU-SHWFRAMEPAINT; PTI No. 552-81C:

This spray paint booth, with particulate filters and a natural gas-fired curing oven, was removed from the facility, as of 1/24/2012. The PTI will not be voided, however, as other emission units covered by the permit are still in use.

EU-TRICKELVARNISH; PTI No. 552-81C:

The trickle varnish process was not running, at the time of the inspection. It operates on an as needed basis. The varnish secures wire armatures in place on the motors, and provides protection against corrosion. The cleaning medium for the trickle varnish process is soapy water. Coated parts are cured in a pre-heat oven and a curing oven, both electrically powered. The curing process exhausts through the roof, as does a hood for a work table. Employees would use the work table, if they were applying coatings by hand.

Gluing process; Rule 287(l):

They have a small induction bonding process, which applies an epoxy adhesive to a shell, and applies heat, curing the adhesive instantly. Hot melt adhesives are exempted by Rule 287(i). If this adhesive did not qualify as a hot melt adhesive, the Rule 290 exemption for processes with limited emissions could potentially apply.

Water-based parts cleaner, Rule 285(r)(iv):

I observed a new, water-based parts washer, which exhausts to the in-plant environment. Mr. Noonan explained that it is replacing a solvent based parts washer that Safety Klean had serviced. I was informed that the cleaning solution is heated to 140-160 degrees F, and that the plant employees greatly prefer the water-based cleaner over the solvent-based one. This unit appears to satisfy the exemption criteria of Rule 285(r)(iv), for equipment used for cleaning metal, where the process emissions are only released into the general in-plant environment. It is possible that the unit might also satisfy the criteria for additional exemptions for cleaning processes, such as Rules 281(e) or 285(l)(iii).

Rule 287(a) adhesive process:

They are currently applying a 3M adhesive glue, which is thinned for them by a different manufacturer, Mr. Noonan informed me. This glue is thinned with acetone, toluene, and MEK, and is applied by hand, from a squeeze bottle, I was told. I was informed that they use a few quarts each month, and that the work stations vent to the in-plant atmosphere, a distance above employees' heads. In the future, they may choose to vent this to the outdoors, Mr. Noonan explained, and I pointed out that they might wish to consider utilizing Rule 290. We discussed the use of this exemption, as we reviewed the *Permit to Install Exemption Handbook* I had brought along.

Review of records and operational logs:

Mr. Noonan e-mailed spreadsheets on 8/28, which covered a number of years of operation, some as far back as 2012, and some as far back as 2005. The 2015 records demonstrated compliance, as discussed below. Records the 2015 year to date were printed, and attached to this activity report.

For the TCE vapor degreaser, the code MSDS 64 represents TCE, and MSDS 104 is the stabilizer (acid). Virgin TCE rarely needs the stabilizer. New TCE is added as needed, to replace what's evaporated. Additions do not typically happen every month. Mr. Noonan explained that they recently cleaned out sediment from their batch vapor degreaser, for the first time in 2 years, and had to add more TCE to the unit, to compensate for the reduced volume. Therefore, they added more TCE to the unit than they normally would have, he said, but they were still below the limit specified in the PTI. For July 2015, 53.84 gallons were added, according to the spreadsheet, which was below the limit of 65.5 gallons per month.

VOC emissions are limited by the permit to 800 lbs/month, based on a 3-month rolling average. The company recordkeeping showed the 3-month rolling averages for VOC emissions were below 800 lbs in 2015, with the highest value being 356.26 lbs, at the end of July.

Each year, the facility submits an annual report required by 40 CFR Part 63, Subpart T, for their halogenated solvent cleaning processes (see district files). Their annual report for the 2014 calendar year was received before the due date, and demonstrates compliance. Their semi-annual report for July 2015 shows compliance. However, a review of AQD files weeks before the inspection showed that in July 2014, a semi-annual report was not received. Mr. Noonan investigated this, as it pre-dated his time with the company. He informed me that FTC&H had no record of having sent the report to Motor Products, and it appeared to have been an oversight. I was informed that they were keeping the required data at the time onsite, and this is verified by the spreadsheets for the vapor degreaser, which show data for 2014 (attached).

For the cold cleaner, the spreadsheet has been printed out in hard copy form, please see attached. It demonstrates that records were being kept at the plant during the first half of 2014, the period for which a semi-annual NESHAP report had not been submitted in July, 2014. The permitted emission limit is 2.6 TPY VOC, based on a 12 month rolling average. For 2015 year to date, the highest 12 month rolling average was 0.39 tons VOC, well below the limit.

For FGCOATINGS, the permitted VOC limit is 10 TPY, based on a 12-month rolling average. In 2015, year to date, the highest 12-month rolling average for VOC for FGCOATINGS was July, with a 12-month rolling average of 0.23 tons. This is far below the 10 TPY limit. For EU-TRICKELVARNISH alone, the 12-month rolling total at the end of July was 0.02 TPY, and for EU-VARNISHDIP alone, the 12-month rolling total was 2.71 TPY. For the dip tank, EU-VARNISH DIP, they track how much coatings and solvents they purchase, and use that data to project daily usage, Mr. Noonan explained. He indicated that they are well under their limit at all times.

A HAPs spreadsheet which Mr. Noonan e-mailed shows that in December 2014, the rolling 12-month total for total HAPs was 3.95 tons, below the limits for individual and total HAPs, of <9 TPY and <22.5 TPY.

Michigan Air Emissions Reporting System (MAERS) status:

This facility reports each year to MAERS. It is classified as a Category III facility, because of the halogenated solvent vapor degreaser and cold cleaner. The MAERS report for the 2014 operating year was audited on 5/27/2015. The audit found them to be in compliance with their PTI, as detailed below.

The vapor degreaser had a 2014 throughput of 237.64 gallons of TCE, and 5 gallons of a pH stabilizer. The permit limits throughput to 65.5 gallons per month of solvent containing TCE, based on a 3-month rolling average. VOC emissions from the vapor degreaser were 2,877.8 lbs for 2014. The permit limits VOC emissions from this process to 800 lbs/month, based on a 3-month rolling average. Because the MAERS report is based on a calendar year, it was necessary to determine compliance with the 3-month rolling average VOC limit by checking the company's spreadsheets, discussed above.

The MAERS report for the 2014 operating year showed that the cold cleaner, with a 2014 throughput of 101.44 gallons of methylene chloride, was below the permitted limit of 550 gallons per year of solvent containing methylene chloride. VOC emissions from the cold cleaner during 2014 were 1,113.81 lbs, or 0.56 tons, well below the permitted 2.6 tons per year VOC limit for that process.

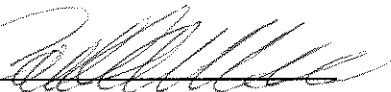
The varnish dip system used 385 gallons of black insulating varnish in 2014, with 496 gallons of solvents, well below the permitted 1,540 gallons of varnish including reducer which is allowed by the PTI. The trickle varnish system used 20 gallons of polyester resin coating in 2014, far below the permitted 230 gallons per year.

For 2014, HAP emissions were below the permitted limits of 9.0 TPY for any individual HAP, and 22.5 TPY for total HAPs, according to the MAERS submittal. The AQD calculated HAP emissions were methylene chloride at 1,113.8 lbs, or 0.56 tons, and trichloroethylene (TCE) at 2,938.8 lbs, or 1.47 tons, well below the limits for individual and total HAPs.

Conclusion:

Following the inspection, I left the facility at 11:18 AM. I could not identify any instances of noncompliance with PTI No. 552-81C, the Michigan Air Pollution Control Rules, or 40 CFR Part 63, Subpart T. I could not identify any areas of concern during the inspection, or the subsequent review of recordkeeping and reporting. The facility was clean, neat, and orderly, and facility staff were very helpful.

NAME



DATE

9/18/2015

SUPERVISOR

