

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

U63161001636023

FACILITY: US Farathane Lake Orion		SRN / ID: U631610016
LOCATION: 4872 S Lapeer Rd, Lake Orion, MI 48359		DISTRICT: Southeast Michigan
CITY: Lake Orion		COUNTY: OAKLAND
CONTACT: Jim Curtis, Corporate EHS Manager		ACTIVITY DATE: 08/02/2016
STAFF: Tyler Salamasick	COMPLIANCE STATUS: Compliance	SOURCE CLASS:
SUBJECT: See staff activity report		
RESOLVED COMPLAINTS:		

Background

US Farathane (USF) is a plastic fabricating facility located at 4872 S Lapeer Road, Lake Orion, Michigan. US Farathane is located in a primarily commercial/industrial area with the nearest residential structure approximately 720 feet West of the facility. The facility was inspected on Tuesday, August 2nd, 2016 by Tyler Salamasick of the Michigan Department of Environmental Quality, Air Quality Division. The intent of the inspecting was to determine compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, and Michigan's Air Pollution Control Rules. US Farathane currently operates under permit exemptions **R336.1278 - R 336.1290**. US Farathane specifically manufactures Santoprene and Polypropylene parts for the automotive industry with both plastic injection molding and plastic extrusion. USF does not perform compounding and does not use powdered resins. All of their plastics fabricated at the facility are thermoplastics. US Farathane has approximately 220 employees and operates 24 hours a day, Monday through Friday. The site contact is Corporate Environmental Health and Safety Manager, Jim Curtis.

Inspection

Site arrival was at 9:18 am Tuesday, August 2nd, 2016. The weather conditions were 77F with a W wind at 3 mph and partly cloudy. I was greeted by Manufacturing Manager, Mike Blair and Maintenance Manager, Frank Pressey. Upon meeting I presented my State of Michigan identification card, informed the facility representative of the intent of my inspection and was permitted on the site. Mike and Frank spoke to me and informed me of the facilities background while we waited for their environmental contact Jim Curtis. Environmental Health and Safety Manager Jim Curtis and Senior Manufacturing Engineer, Jeff Zollweg joined our pre-inspection meeting. During the meeting the USF representatives informed me the facility has been located at the site for four years. They provide plastic parts to all of the major automotive companies. The two plastics they use are thermoplastics, Santoprene and Polypropylene. Santoprene is a thermoplastic vulcanizate which is a light weight rubber like plastic. It is a mixture of synthetic rubber and a polypropylene matrix. Santoprene was originally registered by Monsanto Corporation but has been purchased and is owned by Exxon Mobile. Polypropylene is a very common plastic used for packaging, non-woven fabrics, labeling and electronic insulation. Polypropylene is a plastic regularly used in various aspects of the automotive industry due to its low cost, flexibility and light weight. Of USF's equipment roughly 60% is plastic extrusion and the remaining 40% is used for plastic injection molding. Both the injection molding and the extrusion utilize Santoprene and Polypropylene.

After the pre-inspection meeting Mike and Frank provided a full site tour. USF has four major areas of interest to the AQD. They include the extrusion lines, the plastic injection lines, the adhesive application area and the tool cleaning oven. USF does not have a painting area or a chemical dip/coating area. We first inspected the plastic extrusion lines. This equipment does not vent to the outdoor air and is known to produce negligible amounts of air contaminants. USF has fifteen associated lines with an additional two seat lines. The second area inspected was the tool cleaning area. This consists of a maintenance area with a JCP 1724 Jet Cleaner. The Jet Cleaner is not a burn off oven and does not use solvents. This equipment heats the extrusion dies and melts the plastic off of the equipment. This is done in a low oxygen chamber in order to prevent the oxidization of the plastic. The equipment does vent outside through a small pipe that exits the building approximately 8ft in the air and is exhausted in the downward direction. While looking at the equipment I wrote down the equipment name as well as current operating parameters. After the Jet Cleaner we inspected the third area, the plastic injection mold equipment. USF has eleven injection lines, with four associated polymer storage tanks. The equipment does require a release agent for initial startup, but then uses mechanical separation as a

means to remove the newly molded plastic part. This equipment exhausts to the in plant environment and releases a negligible amount of air contaminants. The release agent is Stoner Rocket Release E302. Jim provided the AQD with the MSDS for the release agent. The associated polymer storage tanks can hold between 40,000 and 60,000lbs raw of material. Our final area of interest was the fourth area, the adhesive area. This equipment is associated with plastic extrusion. USF applies an adhesive promoting solvent mixed with additional toluene as a thinning agent. This allows for the adhesive tape to better bind to the polymer part.

Sources of air emissions and permit exemptions

The extrusion line has associated totes that use a vacuum like system to pull the pre-made plastic beads into the equipment. Once in the extruder the plastic beads are headed via electric coils located in the heating portion of the extruder. This heated plastic is pushed through a die which shapes the hot plastic into the desired shape. The greatest amounts of emissions are released where the hot plastic leaves the die. These fugitive emissions are negligible and are vented to the in plant environment. The extrusion line does appear to be permit exempt according to permit exemption **R 336.1286**. Rule 286 in part states...

Rule 286. The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following:

(a) Plastic extrusion, rotocasting, and pultrusion equipment and associated plastic resin handling, storage, and drying equipment.

...

The extrusion lines can use this exemption so long as they are not a major source of Hazardous Air Pollutants (HAPs) or Volatile Air Contaminants (VOCs). According to emission calculations for Polypropylene the facility would be able to produce approximately 100 million pounds of plastic (rough calculation) before potentially triggering HAP and VOC limit issues. USF has purchased approximately 5,326,819lbs of polypropylene and 2,417,062lbs of Santoprene. The material usage allows (in terms of plastic off gassing from extrusion and injection) the facility to avoid exclusion from the exemption **R 336.1278**.

The JCP 1724 Jet Cleaner was originally described as a burn off oven, which normally do not meet permit exemptions. The equipment that USF uses to clean the dies is actually a plastic melting device (the plastic is not burnt off). It uses a vacuum chamber to pull out the majority of the air in the chamber. According to the manufacturing specifications the equipment operates approximately 120-140 minutes. It is heated to between 800F and 900F with a vacuum strength of 25 inches of mercury. The melted plastic then drips down into a water bath. This is heated electrically and does not require natural gas or diesel fuel. USF provided the AQD with a permit demonstration of exemption **R 336.1290** performed by Dragun Corporation. This demonstration describes the Jet Cleaner as well as the potential by-products of melting polypropylene. The demonstration shows the worst case usage of the equipment (at two runs per day). In an email Jim Curtis informed me that they are using the equipment the same as they were when they had the analysis done. Per the requirements of **R 336.1290** which states in part...

...The emission unit shall not emit any air contaminants, excluding noncarcinogenic volatile organic compounds and noncarcinogenic materials which are listed in R 336.1122(f) as not contributing appreciably to the formation of ozone, with an initial threshold screening level or initial risk screening level less than 0.04 micrograms per cubic meter.

The MDEQ's toxics screening list indicates acrolein as a potential by-product of burning polypropylene. If acrolein is present in the emissions of the Jet Clean unit USF would not be able to use the 290 exemption. The Xaloy Jet Cleaner Emissions Report indicates that the process does not produce acrolein. It appears that Xaloy's testing more accurately describes the emissions from the Jet Clean unit. None of the chemicals detected would put USF out of the permit exemption part **R 336.1290(a)(ii)(D)**. The results also indicate that the facility would have a maximum emission of 6lbs per month, which is significantly less than the 20lb emission required by the permit exemption.

The injection molding equipment has the associated storage silos connected to the equipment lines via overhead pipes. This process does not use significant amounts of release agents. Jim proved the AQD with usage records of the Stoner Mold Release. The year's total to date usage was 25 cases which equates to a total of approximately 190lbs of VOCs. The 190lbs released is far under the 10tons per year condition to consider the process for permitting, assuming worst case scenario as the content to be one single HAP at 100%. All associated process lines appear to be vented to the in plant environment. This process, like the extrusion

process, appears to fall under **R 336.1286** which in part states...

Rule 286. The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following: ...

...(b) Plastic injection, compression, and transfer molding equipment and associated plastic resin handling, storage, and drying equipment....

The final area observed was the adhesive application area. In this area an extruded plastic line had an application of an adhesive promoting compound 3M Adhesion Promotor 4298UV mixed with toluene. The toluene is used to thin the promoting agent because 429UV's formulation is too viscous for USF's application. Jim provided the AQD with the total toluene purchased to date. During the time of the inspection USF had purchased two 55 gallon drums of toluene (totaling 110gal). Jim did not have the exact daily usages but informed the AQD that the process engineer estimates that USF uses approximately 3 gallons per day and the total amount purchased to date totals 267 gal of 4298UV. The usage of 110gal toluene with the 267gal of 4298UV totals 377gal of adhesive use per 162 days (5 operating days a week up to the day of 8/15/16) equates to approximately 2.33 gallons per day. If used evenly between the three lines the usage equates to 0.78 gallons per line. That is assuming the application rate is equivalent per every day. This usage is divided amongst three application areas and appears to meet permit exemption **R 336.1287(a)** which requires an application rate less than 2 gallons per day. It is recommended that USF maintains daily usage records per line with a demonstration of the permit exemption for this process.

Conclusion

It appears that US Farathane is in compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, and Michigan's Air Pollution Control Rules.

NAME



DATE

8/18/16

SUPERVISOR

SK

