P0955
MANILA

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

P095546036

FACILITY: Thermal Solutions Manufacturing, Inc.		**SRN / ID:** P0955
LOCATION: 35255 Glendale Street, LIVONIA		**DISTRICT:** Detroit
CITY: LIVONIA		**COUNTY:** WAYNE
CONTACT: Roger Smith , Quality Manager		**ACTIVITY DATE:** 08/15/2018
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** Minor
SUBJECT: Compliance inspection of the Thermal Solutions Manufacturing, Inc. facility on Glendale Street in Livonia. The facility is scheduled for inspection in FY 2018.		
RESOLVED COMPLAINTS:		

Location:
R&D Enterprises
A Division of Thermal Solutions Manufacturing
(SRN P0955)
35255 Glendale Street
Livonia 48150

Date of Activity:
Wednesday, August 15, 2018

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Joseph Call, R&D Enterprises
Roger Smith, Quality Manager, R&D Enterprises

Purpose of Activity

A self-initiated inspection of the R&D Enterprises/Thermal Solutions Manufacturing facility (hereinafter "R&D") in Livonia was conducted on Wednesday, August 15, 2018. The R&D facility was on my list of sources targeted for an inspection during FY 2018. The purpose of this inspection was to determine compliance of operations at the R&D facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and with applicable Federal standards. The facility is not currently subject to the terms and conditions of any DEQ-AQD Permits to Install (PTI).

Facility Site Description

The R&D facility is located on parcel around 2 acres in size on the south side of Glendale Street, just before Glendale ends as it runs west from Wayne Road just north of the CSX railroad tracks. The facility is located at the south end of a continuous commercial and light industrial area that extends from the south side of Schoolcraft Road to the CSX railroad right-of-way, and from Levan Road on the west to Stark Road on the east. On the south side of the railroad right-of-way from the facility are the Ford Livonia Transmission Plant facility (SRN A8645) and New Product Center facility (SRN M4734), as well as another area of commercial and light industrial properties along Belden Court.

The area on the north side of Schoolcraft Road is primarily residential, with some office and retail properties mixed in near Stark and Farmington Roads. The area to the southeast of the R&D facility, on the south side of the railroad right-of-way and east of Belden Court, is also a residential area. The closest residential property is located approximately ¼ mile to the southeast of the facility.

Facility Operations

The R&D Enterprises facility in Livonia designs and manufactures heat exchangers and oil coolers for use

primarily in the marine industry. According to the company website (www.rdent.net), R&D supplies oil coolers and heat exchangers worldwide for recreational boats, commercial marine vessels, industrial usage, automotive and truck applications, and for agricultural equipment. R&D Enterprises was acquired by Thermal Solutions Manufacturing, Inc., a Nashville, TN based aftermarket manufacturer of heavy duty and light truck heat exchange products, in September of 2012. R&D Enterprises, which now operates as a division of Thermal Solutions Manufacturing, was formed in 1974. The company operated in Plymouth for many years, even after R&D was acquired by Thermal Solutions. The company was located and operated at 46900 Port Street in Plymouth Township until August of 2017, when operations were moved to the current location on Glendale in Livonia.

R&D purchases material - raw cast iron castings, and drawn aluminum, copper and brass tubing – which is used to craft the heat exchangers and oil coolers that are produced at the facility. Facility staff start the production process by brazing metal to create the heat exchanger and oil cooler products. For background, Wikipedia defines brazing as "...a metal-joining process in which two or more metal items are joined together by melting and flowing a filler metal into the joint." Metal and metal alloys are brazed using braze welding to produce the heat exchangers, and the oil coolers that are produced at the facility are brazed using a vacuum furnace.

The heat exchanger products that are made using braze welding are cleaned using a 5-tank cleaning process. The first three tanks contain solutions that are used to clean and brighten the parts that are produced, the fourth tank provides a fresh water rinse, and the fifth tank provides a protective rinse for the parts. The company provided me with a description of each of the five cleaning tanks that includes the purpose of each tank in the cleaning process, and the type of product/solution that is used in each tank. A copy of this information is attached to this report. I was also provided with the Safety Data Sheets for the cleaning and brightening products that are used in the first three tanks in the cleaning process, and the procedure for creating the protective rinse that is used in the fifth tank. This information is also attached to this report.

The material (cleaning and rinsing products and residue) from the last three tanks in the 5-tank cleaning process is run through a heated tank evaporative system. This is done to evaporate the water from the material in the cleaning tanks in order to lessen the amount of waste that needs to be handled from the use of the cleaning tanks. The evaporative equipment is manufactured by Poly Products, Inc. from Cleveland, OH; R&D purchased the ET-III-W-1-MINI model Mini-Heated Tank Evaporative System. The evaporation equipment has 3 electric heaters, one of which is used during an evaporative cycle. Facility staff told me that when the unit is used, around 100 gallons of material from the last three tanks of the cleaning operation is placed in the evaporative tank, which runs overnight. Emissions from the evaporative unit are controlled by a mist eliminator.

The facility also utilizes another cleaning operation for a limited production part. This operation utilizes a piece of equipment that is referred to as a Cummins Flush Station in which the insides of the limited production part are flushed with a material to remove residual particles and materials from the brazing process. I was told that this cleaning process is used for one product that is produced for one of the company's customers, and that the Flush Station processes 50 pieces once per year. I was provided with the Safety Data Sheet for the material that is used in the Flush Station, Isopar L Fluid, which is attached to this report.

After cleaning, the parts are inspected and tested prior to shipment to customers.

As mentioned previously, the oil coolers are brazed in a vacuum furnace. R&D utilizes a Centorr Vacuum Industries Series 3500 furnace. I was provided with some information specific to the furnace that is used at the R&D facility by Centorr via an e-mail message, which is attached to this report. The furnace is heated electrically, and operates at a temperature ranging from 2150°-2235° F. The furnace flashes copper, which is vacuum-drawn into gaps to braze metals to produce oil coolers.

I was told during my visit to the facility that R&D operates one shift from Monday through Friday, and that the facility currently employs 35 people. I was also told that there are no boilers or emergency engines/generators at the facility.

Inspection Narrative

I initially went to the facility unannounced to perform a site visit on August 9, 2018. I was met by Joseph Call. He told me that he was the only person in the office at that time, and that he had a meeting starting later that morning. He also stated that it would be helpful if one of his co-workers was involved in the site visit as he would have more background regarding the environmental aspects of the facility's operations. He and I arranged for me to come back and perform my site visit on August 15.

On August 15, I arrived at the facility at 9:55am. I was met by Joseph and Roger Smith, Quality Manager for R&D. We proceeded to a conference room in the office portion of the facility, where we began our discussion.

We began by discussing the facility's background. I was told that R&D moved to this location in August 2017 from their former location in Plymouth, and that TSM purchased R&D in October of 2012. Roger and Joseph described the heat exchangers and oil coolers that are produced at the facility, and that the primary customer base for their products uses them in marine engines. Roger and Joseph briefly described the production process, providing that the facility purchases raw cast iron castings, and drawn aluminum, copper and brass tubing, and that the metal raw materials are brazed to craft heat exchangers and oil coolers. I was provided the facility's current operation/production schedule (one shift, Monday through Friday). I asked Roger and Joseph if the facility has any boilers or emergency engines, and they replied that the R&D facility does not have this type of equipment.

We left the conference room and toured the production area of the facility. We started in the area where the braze welding occurs. The 5-tank cleaning process, the limited used Cummins Flush Station, and the Poly Products Mini-Heated Tank Evaporative System are located adjacent to the braze welding area process. Roger described the 5-tank cleaning process, explaining that the first two tanks serve to clean parts, the third contains a material to brighten the parts, and the last two tanks rinse the parts, with the last one also providing a protective rinse. The Cummins tank was not in operation during the time of my visit, and it was closed to the ambient air. I was told that the Cummins unit is used to flush the insides of a limited production heat exchanger product to remove residual particles and materials from the brazing process. Roger said that the unit is filtered so that the fluid can be recirculated, and that the unit is only used to clean one product that is produced for one of R&D's customers; production is typically 50 pieces, once per year.

We then looked at the evaporative system, which was also not in use at the time of my visit. I was told that the evaporative system is used to evaporate water from the material in the last three tanks of the 5-tank cleaning process. Roger told me that the unit typically runs during the overnight period, and that around 100 gallons are run through the process at a time. Roger and Joseph wanted to know how I viewed the evaporative system process from the perspective of air regulations. They told me that they would provide me with manufacturer's information relating to the Poly-Products evaporative system to help me in determining what, if any, regulations apply to the operation of the evaporative system.

We then took a look at the Centorr vacuum furnace, which is located in the west portion of the manufacturing portion of the facility between the braze welding/5-tank cleaning operation and the office area. The unit was not in operation at the time of my visit. I was told that the Centorr unit is electrically heated, and it is used to produce oil coolers. Roger and Joseph explained that the unit operates at temperatures ranging from 2150°-2235° F, and that an operating cycle lasts approximately 8 hours. The furnace works to braze the product by flashing the copper, and vacuum drawing it into the gaps in the metal substrate.

After completing our tour of the production area of the facility, we returned to the facility's offices. After some conversation to summarize the site visit and the information relating to the facility's process equipment and operations that I would need, I left the facility at 10:50am.

Permits/Regulations/Orders/Other

Permits

There are currently no DEQ-AQD Permits to Install (PTI) associated with the R&D facility. There were no PTIs associated with R&D's facility at 46900 Port Street in Plymouth.

From a permitting perspective, the 5-tank cleaning process appears to be exempt from DEQ-AQD permitting requirements per the provisions of Michigan Administrative Rule 285(r). Rule 285(r) exempts equipment from which emissions are released into the general in-plant environment that is used for metal treatment processes involving cleaning ((r)(iv)), and even acid dipping ((r)(iii)). The Cummins Flush Station, the limited use cleaning process, also appears to be exempt from permitting requirements per the provisions of Rule 285(r).

The Poly Products ET-III-W-1-MINI model Mini-Heated Tank Evaporative System appears to be exempt per the provisions of Rule 290, which addresses emission units with limited emissions. As described in the last couple of sections of this report, the evaporative system is used to evaporate water from the material in the last three tanks of the 5-tank cleaning process. Cleaning Tank #3 contains a low concentration of Brite Dip Conditioner (2-3% of total volume) in water, Cleaning Tank #4 contains fresh water to rinse products, and Cleaning Tank #5 contains a protectant rinse that applies a corrosion protection film on the products. The Brite Dip Conditioner that

is used in Tank #3 contains sulfuric acid as an ingredient (at less than 5% by weight, according to the product's Safety Data Sheet). Sulfuric acid is included in DEQ-AQD's "Table 2. List of Screening Levels" document as a state-designated toxic air contaminant. Sulfuric acid does not have an IRSL or a SRSL associated with it, but it has an annual ITSL of 1 $\mu g/m^3$, and a one-hour ITSL of 120 $\mu g/m^3$. Footnote 13 to the "Table 2" document, which applies to sulfuric acid, states that "This chemical has two ITSLs with different averaging times. Ambient air impacts cannot exceed either ITSL. Both ITSLs also apply for determination of permit to install exemptions under R336.1290 (Rule 290)". Using the lower of the two ITSLs, the exemption criteria in Rule 290(2)(a)(ii)(A) applies to R&D's evaporative system. This provision exempts emission units for which the total uncontrolled or controlled emissions of toxic air contaminants having an ITSL greater than or equal to 0.04 $\mu g/m^3$ and less than 2.0 $\mu g/m^3$ are less than 20 or 10 pounds per month, respectively.

The facility is currently not tracking the emissions from the evaporative system, and Roger told me that R&D would start tracking and logging the use of the evaporative system. In addition, Rule 290(c) requires that that company maintain a description of the evaporative system emission unit; Rule 290(d) requires that records be kept of material usage and emission calculations to demonstrate that the emissions from this emission unit meet the Rule 290 exemption limits; and Rule 290(e) requires that that records be maintained for the most recent two-year period. I plan to send correspondence to R&D that summarizes my regulatory analysis of the use of the evaporative system, and that includes guidance as to the types of records that will need to be kept in order for the facility to demonstrate compliance with the applicable provisions of Rule 290. Based on information that was sent to me by Poly-Products, as well as information that I found via the internet, emissions from the evaporative system are expected to be low.

Rule 285(i) addresses the brazing operations at the facility, putting forth that brazing equipment is exempt from permitting requirements. This exemption appears to the weld braze operations at the facility, as well as to the Centorr Vacuum Industries Series 3500 furnace, which is electrically heated. The Centorr unit also appears to be exempt from permitting requirements per the provisions in Rule 282(2)(a)(i), which exempts electrically heated furnaces that are used for heat treating or forging glass or metals.

Regulations
Potential emissions from the R&D facility should classify the facility as a true minor source of emissions. The lack of fossil fuel-fired equipment at the facility limits the amount of combustion-related emissions, and particulate emissions (potential and actual) should be minimal. The facility does not currently have any boilers, engines, or cold cleaners.

- **Federal**

There are no New Source Performance Standards, as put forth in 40 CFR Part 60, the apply to the equipment and operations at the R&D facility.

Based on facility operations, R&D should be classified as a minor, or area source of HAP emissions. 40 CFR Part 63 puts forth some National Emission Standards for Hazardous Air Pollutants for area sources of HAPs. 40 CFR Part 63 Subpart WWWWWW (National Emission Standards for Hazardous Air Pollutants: Area Sources for Plating and Polishing Operations) applies to areas sources of plating and polishing, more specifically to sources that use cadmium, chromium, lead, manganese and/or nickel. This Subpart does not apply to the R&D facility, as no plating of any kind currently takes place at the facility.

The R&D facility does appear to meet a portion of the applicability criteria for 40 CFR Part 63 Subpart XXXXXX (National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories). Table 1 to Subpart XXXXXX describes the source categories that are affected by this subpart. Among the source categories is one referred to as Fabricated Metal Products, which is described as entailing "establishments primarily engaged in manufacturing fabricated metal products", and another referred to as Fabricated Plate Work (Boiler Shops) for which the description includes "Establishments primarily engaged in manufacturing…heat exchangers…and similar products." The applicability criteria put forth in 63.11514(a) states that a facility is subject to Subpart XXXXXX if it is an area source "…that is primarily engaged in the operations in one of the none source categories listed in paragraphs (a)(1) through (9) of this section"; Fabricated Metal Products (2) and Fabricated Plate Work (Boiler Shops) (3) are listed. However, 63.11514(b) continues to outline the applicability criteria for this subpart by providing that "The provisions of this subpart apply to each new and existing affected source listed and defined in paragraphs (b)(1) through (5) of this section if you use materials that contain or have the potential to emit metal fabrication or finishing metal HAP (MFHAP), defined to be the compounds of cadmium, chromium, lead, manganese, and nickel, or any of these metals in the elemental form with the exception of lead." While the R&D facility does perform welding, which is

an activity/process that is listed and defined in 63.11514(b)(5), the facility does not use or process any materials that contain MFHAP. As such, the specific provisions of Subpart XXXXXX do not appear to apply to the operations at the R&D facility.

Compliance Determination

Based upon the results of the August 15, 2018 site visit, and a review of information relating to the process equipment and operations at the facility, the R&D Enterprises facility in Livonia appears to be **in compliance** with applicable rules and regulations. At this time, the process equipment and operations at the facility do not appear to be subject to DEQ-AQD permitting requirements.

Attachments to this report: a description of each tank in the 5-tank cleaning process that include the purpose of each tank, and the type of material used in each tank; the Safety Data Sheets (SDS) for the non-water materials used in the 5-tank cleaning process; the SDS for the Isopar L Fluid that is used in the Cummins Flush Station; information that was e-mailed to me about the Centorr furnace; information that was e-mailed to me regarding the Poly Products ET-III-W-1-MINI model Mini-Heated Tank Evaporative System.

NAME Steve Weiss DATE 1/10/19 SUPERVISOR JK