

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

B577958956

<b>FACILITY:</b> UNITED PAINT & CHEMICAL CORP		<b>SRN / ID:</b> B5779
<b>LOCATION:</b> 24671 TELEGRAPH RD, SOUTHFIELD		<b>DISTRICT:</b> Warren
<b>CITY:</b> SOUTHFIELD		<b>COUNTY:</b> OAKLAND
<b>CONTACT:</b> Carol Shensky , Operations Director		<b>ACTIVITY DATE:</b> 07/19/2021
<b>STAFF:</b> Sebastian Kallumkal	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> Scheduled, announced inspection to verify compliance with PTI No. 273-00.		
<b>RESOLVED COMPLAINTS:</b>		

On May 19, 2021, I, Michigan Department of Environment, Great Lakes & Energy – Air Quality Division (EGLE-AQD) staff, Sebastian Kallumkal, requested information and records pursuant to PTI No. 273-00 from United Paint & Chemical Corporation (SRN: B5779) located at 24671 Telegraph Road, Southfield, Michigan. Due to the Covid 19 pandemic protocols, the records are requested and reviewed prior to conducting inspections to limit the time spent at the site. On May 28th, records were provided via email. The documents provided included United Paint Emissions 2021, Notes from United Paint Emissions 2021, Representative Formulas and HAP content 2014 update, United Paint Air Emissions Tracking Spreadsheet for IE Personnel. The United Paint Emissions 2021 excel spreadsheet includes production throughput, VOC emission calculations (production and cleaning), individual and aggregate HAP emission calculations and PM emissions.

**Special Conditions from PTI No.: 273-00**

**SC.1 -Limits VOC emissions from the stationary source to less than 40 TPY based on 12-month rolling time period.**

In compliance. Total VOC emissions from the facility was 7.30 Tons per year based on a 12-month rolling average as of April 2021 (9.21 TPY as of March 2020).

**SC.2- Limits VOC emissions from EUPAINTPROD and EUCLEANING to 15.6 lb/hr.**

In compliance. Hourly VOC emissions from EUPAINTPROD and EUCLEANING were 6.84 pounds per hour (February 2021).

**SC.3-Limits VOC emissions from EUPAINTPROD to 27 TPY based on a 12-month rolling time period.**

In compliance. VOC emissions from EUPAINTPROD is 5.17 TPY based on a 12-month rolling time period as of April 2021.

**SC.4 Limits VOC emissions from EUCLEANING to 10.2 TPY based on a 12-month rolling time period.**

In compliance. VOC emissions from EUCLEANING is 2.13 TPY based on a 12-month rolling time period as of March 2021. The VOC emissions from the cleaning process is calculated assuming that 20% of the total cleaning solvent used is emitted. Facility assumes all cleaning solvent purchased in a month is used for cleaning in the same month.

**SC.5-Limits HAP emissions to 9 TPY for individual HAP and 22 TPY for any combination of HAPs calculated based on 12-month rolling time period.**

In compliance. Individual HAP emissions from the facility is less than 9 TPY based on a 12-month rolling time period. The single with highest emissions was toluene (1.59 TPY as of April 2021).

In compliance. Total HAP emissions from the facility was 3.53 TPY based on a 12-month rolling time period, as of April 2021.

**SC.6 Limits Particulate Matter emissions from the stationary source to 0.01 pound per 1,000 pounds of exhaust gas and 0.9 pounds per hour**

The calculations showed that the total pounds particulates processed at facility was 165,634.86 pounds and 20% of it was vented to the baghouse. With 99.97% collection efficiency, the emissions were 9.94 pounds for the year.

On Monday, July 19th, I conducted an announced, scheduled inspection at United Paint & Chemical Corporation located at 24671 Telegraph Road, Southfield, Michigan. Due to the Covid-19 pandemic the inspection was announced earlier. The purpose of the inspection was to verify facility's compliance with the federal Clean Air Act, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the conditions of Permits to Install (PTI) No. 273-00.

I arrived at the facility at about 10:15 AM. I met Ms. Carol Shensky, Operations Director. I introduced myself, provided credentials, and stated the purpose of the inspection. During the pre-inspection meeting, we discussed facility's operations and processes.

United Paint and Chemical Corporation is a paint manufacturing facility. It makes water based and solvent based coatings for railroad industry, brake pads, vehicle underbody, and automotive interiors. Volatile Organic Compound (VOC) content of the water-based coatings is approximately 3% by weight. Solvent based coatings typically have about 60% VOC by weight. They did not have any new installations or changes in the process.

Carol told me that their production had gone down significantly due to the pandemic. Currently, they have only 25 employees, operates 1 shift (7 AM to 3 PM), 5 days per week.

The productions are batch type. They have 7 stationary tanks. Not all of them used at the same time. They also have 35 portable tanks of various sizes. They make about 25 batches per week (5 batches per day). They make different colors of coatings. They purchase resins, pigments, etc.

They use BGL Lacquer Thinner LT.R (T43) to clean the mixing tanks (for both water based and solvent based coatings). All totes and tanks are cleaned after each batch. The stationary tanks are cleaned after each batch, but they sandblasted and conditioned annually by an outside company.

The facility has no parts washer or emergency generator. It has two paint booths, one in manufacturing section and another in R&D section.

After the pre-inspection meeting, she accompanied me for an inspection of the facility. I visited the room where kept the portable tanks (<600-gallon capacity). The tanks were kept covered with plastic liners. The small 55 gallons drums and 5 gallons drums were sealed with lids. In the next room, they started a new batch production pouring solvent into the drum. Later, drum was placed in a mixing station. A hose (round, about 8" diameter) was placed on top of the mixing tank to collect vapors.

She told me they were making a white paint. I observed bags of pigment kept nearby. This would be added to the tank later. The dust from this process would also be vented through the hose and collected in a dust collector.

She explained that if the ingredients need to be milled, it would be passed several times through a milling station. They have sand mills, basket mills, and horizontal mills to disperse the ingredients.

Next, I inspected the three dust collectors. The dust/solvent from several mixing tank are collected through hoses placed on tanks and are connected to a common duct. These ducts are vented to either of the three dust collectors. I inspected the external exhaust connection. One of them vented through the wall and other two were vented through the roof. The dust is collected in 55-gal drums attached to the bottom of the hopper. The drums are emptied weekly. (See discussion below)

Next, we entered the room with the stationary storage vessels. The pre-made dispersions are added to these tanks, so no milling is necessary. These tanks are used for blending the coatings. This room

also has a tank which collect waste solvent after cleaning the water-based coating production tanks. I observed three portable tanks which were in the mixing stages. I observed the hoses placed on these tanks. They were not covered because they were in production. She told me that these solvent vapors are also vented to the duct collectors.

Next, we inspected the waste storage area outside the building. The spent cleaning solvents from solvent-based coating production tanks/totes are added to these drums. All the storage drums are marked "hazardous waste". The facility is large quantity generator for waste regulations. They are sent offsite every 2-3 months.

Next, we went outside to look at the stack for the dust collector (identified as #1) which was vented through the wall. The exhaust point for this stack is about 2 feet above the flat roof. The stack has a rain cap on it. I told Carol that for proper discharge of the exhaust air, it should be vented unobstructed, vertically upwards.

Then we went to the other side of the building to look at the exhaust vents for the other two dust collectors. The dust collector (identified as #2) located closer to Dust Collector #1 has goose neck vent. I also observed another goose neck vent nearby. She could not identify what that vent belongs to. The dust collector (identified as #3) located across Dust Collector #2 has a stack which extends probably about 5 feet above the flat roof.

I did not inspect the two paint booths in the manufacturing area and in the R&D area.

During our post-inspection meeting, we discussed the solvent ventilation and the stack orientations. I explained to her if they are trying to reduce the solvent concentration in the room for employee comfort, they may want to install a wider hood around the hose which is situated just above the mixing liquid and rests on the tank.. The hose would only collect vapors from the area comparable to its diameter. She told me that they had considered it and will look further into it.

Regarding stack orientations, I informed her that the exhaust from the dust collectors need to be vented directly upwards, and rain cap needs to be removed and the goose neck vent needs be straight. I also advised her to verify the stack heights and make sure these matches permit requirements. I sent her a copy of the PTI. She told me that due to the pandemic, they have a difficult time finding help in this kind of work. I advised her either to fix the issues by August 31, 2021, or send a written plan to AQD by the same date explaining the date compliance can be achieved. She agreed to do that. I informed her that AQD would not send a violation notice at this time.

On August 26, 2021, Nikki Mckenna, Integrated Environmental, Inc. (Consultant to United Paint & Chemicals) emailed me the stack information that was submitted with the PTI application for PTI No. 273-00. The information included rain protection device information for each stack, SV00001 (connected to dust collector 1) has conical cap, SV00002 (connected to dust collector 2) has elbow and dust collector 3 has no rain protection. Ms. Mckenna explained because this information was submitted during permit review, they don't need to change the stack orientations. She requested not to send a violation notice for this. I agreed that no violation notice would be sent. I explained to her venting the exhaust air directly upwards is better for proper dispersal of the pollutants. I observed discoloration on the wall where the stack (with rain cap) for Dust Collector 1 is exhausted. The solvents (collected from mixing tanks) exhausted through the Dust Collector 2 may be vented directly to the roof materials and may destroy it.

Discussed the issue with Joyce Zhu, AQD District Supervisor. She suggested to talk to the permit engineer to find out whether air quality modeling was conducted during permit review and if the restricted flow was considered during modeling.

Also, talked to Andrew Drury, AQD Permit Engineer, who reviewed this permit. He did not have access to whole file, as he is working from home due to the pandemic. From reviewing files available online, he stated that for the air quality modeling for toxics, they did not consider individual stacks, but considered all emissions are vented through SV00005 which is shorter than all the dust collector stacks and comparable in diameter. The permit does not have specific requirement to exhaust vertically upwards unobstructed.

However, for proper dispersal of the pollutants, “stacks should be vertically directed and uncapped. Stack caps that deflect the exhaust jet have a detrimental effect on exhaust plume rise. Small conical stack caps often do not completely exclude rain, because rain does not always fall straight down; periods of heavy rainfall may be accompanied by high winds that deflect raindrops under the cap and into the stack. Protection from rain and snow should be provided by stack drains, rather than stack caps.

Furthermore, an unobstructed vertical stack is crucial to ensure appropriate upward dispersion of the exhaust, thus minimizing the ground level concentration of air pollutants where individuals may be exposed. Stack obstructions such as rain caps, as well as horizontal stack discharges, restrict upward velocity momentum and reduce potential buoyancy dispersion and can increase ground level exposure to pollutants in the exhaust.

Facility may look into other designs such as “No loss stack head” for proper discharge of the air pollutants and avoid rain getting into the stacks.

#### **Process Description:**

Traditional paint manufacturing process consists of the following steps:

1. Preassembly and premix
2. Pigment grinding/milling/dispersing
3. Product finishing/blending
4. Product filling/packageging

In general, non-pigmented paints manufactured at this facility would only consists of steps 1, 3, and 4. Pigmented coatings depending on the product, will undergo step 2: Pigment grinding, pigment milling, and/or pigment dispersion (through the use of a high-speed disperser). A high-speed disperser may be enough to disperse the mixture. If more dispersion is needed for the formulation, the mixture will be passed through a pigment grinder or pigment mill, as many times as needed. During the mixing/blending/ dispersion process, a flexible vent hose is attached to the mixing tank to “sweep” away solvent vapor from the work area. All paint products are manufactured by batch either in small portable tanks or in large, fixed tanks. All raw materials are brought in the production area and weighed there.

Some formulation uses an intermediate. An intermediate is a large premix batch manufactured for later use. Usually, the size of an intermediate batch is large enough to be used as a premixed raw material for several more batches.

#### **Facility Description:**

There are seven bulk storage tanks for the resin storage. These tanks are not subject to the NSPS Subpart Kb due to the capacity being less than 10,000 gallons. There are no bulk storage tanks for the solvent storage because it comes in 55 gallon drums.

On April 9, 2000, the facility was issued a permit to install (NO. 273-00) for its paint manufacturing process. This permit also serves as a opt-out permit from the CAA Title V requirements and has facility-wide limits for single and aggregate hazardous air pollutants (HAP). This permit includes the following emission units: Paint Production, Container Cleaning, and Exempt Equipment.

The paints produced at United Paint are sorted into production categories based on the type of resin that is used to produce them and similar characteristics of the product formulas. Currently five type of coating products are manufactured here. They are Epoxy, Zinc Primer, Latex, Hydrocarbon, Acrylic, and Alkyd. Carol informed me that Latex products are no longer manufactured here. The facility keeps a record of the monthly and 12-month rolling time period for VOC and individual and aggregate emission rates for hazardous air pollutants (HAP). The facility also keeps the following records for the paint production emission unit: VOC emission rate in pounds/hr, and volume of each product

category produced on a monthly basis.

Emissions from the Container Cleaning Emission unit is from the cleaning of portable tanks, mixers and dispersers. The fixed tanks are dedicated by colors, so they are not cleaned every batch. The fixed tanks are cleaned every year to remove paint solids that accumulate in the tanks. For this emission unit, the facility keeps records of the amount of solvent waste used for each cleaning, monthly cleaning solvent usage, monthly waste solvent disposal, and VOC emission rates (hourly, monthly, and 12-month rolling time period).

Emissions from the exempt equipment emission unit comes from the two paint spray booths. They combinedly used about 50 gallons per month. VOC emissions from these processes are very low.

Special Conditions from PTI No.: 273-00 (Cont'd)

**SC.7-Limits Visible Emissions to from the stationary source to a 6-minute average of 5% opacity**

I conducted visible emission observations for the stacks. I did not observe any visible emissions from the two dust collector stacks. Goose neck stack was not observable.

**SC.8-Requires the stationary source to comply with Michigan Administrative Rule 702(d) which requires compliance with Rule 630.**

**Rule 630(1): Requires all stationary and portable mixing tanks high speed dispersion mills to be equipped with covers.**

- Portable mixing tanks were covered with a polyethylene film with elastic band.

I observed that some of the mixing tanks were not covered. These tanks were preparing water-based paints with very little solvents.

**Rule 630(2): Requires the tanks to be covered at all times**

- All tanks were kept covered.

**Rule 630(3): Restricts the cleaning of paint manufacturing equipment and paint shipping containers by an organic solvent only if the equipment being cleaned is completely covered or enclosed.**

- Facility uses a solvent mixture (DLT blend- 50% Toluene, and the rest made up of petroleum distillates, methyl alcohol, and ethylene glycol) for tank cleaning.

**Rule 630(4): Requires the wash solvent storage to be stored in closed containers.**

- Facility keeps all the wash solvent in closed containers.

**SC.9- Requires installation and proper operation of a baghouse**

- The three dust collector baghouses are installed and were operating properly. The bags are manually shaken and cleaned as necessary.

**SC.10- Limits the annual coating production rate based on the solvent usage in the EUPAINTPROD as specified in the equation. The VOC emissions from the coating production is limited to 54,000 pounds per year.**

$$\sum_{12\text{-months}} \left( \sum_i U_i \cdot 0.034 \right) \leq 54,000 \text{ pounds}$$

$U_i$  = pounds of solvent  $i$  used during the calendar month.

Facility uses an emission factor of 0.034 pounds of solvent emitted per pound of solvent used. This emission factor was taken from The US EPA Publication titled "Preferred and Alternative Methods for

Estimating Air Emissions from Paint and Ink Manufacturing Facilities". VOC emissions from EUPAINTPROD is 10,340 pounds (5.17 TPY) based on a 12-month rolling time period as of April 2021.

**SC.11-Requires keeping records of VOC emission rate, HAP emission rate, cleaning solvent usage rate, waste solvent disposal rate, composition of cleaning solvent, and methods used to calculate emission rates**

- Facility keeps these records electronically and copies were provided on May 19, 2021, when requested. Facility uses the same cleaning solvent as used in the previous years. A copy of the SDS was provided during the visit.
- For calculating emission rates from cleaning solvent usage, facility is using a material balance calculation which includes weight of solvent added and the weight of solvent with the paint materials. I suggested to the consultant that that is not an accurate of way calculating the emissions because some of the emission may be unaccounted for because there is no information about the amount of paint materials cleaned. Then he informed me that he is going to do a study by weighing the dirty drum, weighing after the cleaning solvent is added, followed by weighing the clean drum. The weight of the cleaning solvent is also known. From this information he is planning to deduce an emission factor.

**SC.12-Requires a written record of all equipment installations and modifications made to the EUPAINTPROD and EULCEANING.**

- Carol informed me that facility has not done any modifications or installations at the facility.

**SC.13- Limits the stack dimensions.**

- Stack dimensions were not verified at this time. Please see the discussion above.

**Conclusion: United Paint and Chemicals appears to be in compliance with all applicable air quality requirements and PTI No. 273-00. The facility is advised to change the stack orientation for Dust Collector 1 and Dust Collection 2 for the proper dispersion of pollutants.**

NAME Subanthony Kallunkal

DATE 09/02/2021

SUPERVISOR

Joyce SK