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manila  
Livingston

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

A293152318

FACILITY: DIAMOND CHROME PLATING INC		SRN / ID: A2931
LOCATION: 604 S MICHIGAN, HOWELL		DISTRICT: Lansing
CITY: HOWELL		COUNTY: LIVINGSTON
CONTACT: Scott Wright , Environmental Manager		ACTIVITY DATE: 02/04/2020
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced inspection of vapor degreaser using NEXT 5408 solvent, followed by inspection of chrome plating scrubbers #3, 4, and 5.		
RESOLVED COMPLAINTS:		

On 2/4/2020, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) conducted an unannounced, scheduled inspection of Diamond Chrome Plating, Inc. (DCP), focusing primarily on the current batch vapor degreaser. Also examined were the chrome plating scrubbers #3 and 4, for the east side of the plant, and chrome plating scrubber #5, for the west side of the plant.

Environmental contact:

Scott Wright, Environmental Manager; 517-546-0150; [env@diamondchromeplating.com](mailto:env@diamondchromeplating.com)

Facility description:

DCP is a *large hard chromium electroplater*, as defined in 40 CFR Part 63 Subpart N, and they also conduct cadmium and nickel plating. They are a job shop, and plate aircraft landing gear, commercial hydraulics, industrial dies, and miscellaneous parts.

Emission units:

Emission unit* description	Regulatory requirements	Control devices and/or operating practices	Compliance status
Open-top batch vapor degreaser	Michigan Air Pollution Control Rules 285(r)(2)(iv), 290, and 708	Dwell time, freeboard refrigeration device, reduced room draft, hoist speed, working mode and idling mode/downtime mode covers	Compliance
Open surface chrome plating tank Nos. 9, 11, and 12, aka Dept. 2	PTI No. 367-83B; First Amended Consent Decree (FACD), Case No. 03-1862-CE; 40 CFR Part 63, Subpart N	Scrubber system #3 (south scrubber), a Viron vertical composite mesh pad (CMP) scrubber	Compliance
Open surface chrome plating tank Nos. 1-4, 6, and 8*, aka Dept. 1  *Tank 8 now exhausts to scrubber #3	PTI No. 367-83B; FACD, Case No. 03-1862-CE; 40 CFR Part 63, Subpart N	Scrubber system #4 (north scrubber), a Ceilcote vertical CMP scrubber	Compliance
Open surface chrome plating tank Nos. 5, 7, 15, and 17, aka Dept. 3 (west plant)	PTI No. 386-85A; FACD, Case No. 03-1862-CE; 40 CFR Part 63, Subpart N	Scrubber #5 (west scrubber), a Ceilcote vertical packed bed scrubber (PBS) with kimre mesh pad, fume suppressant	Compliance
Not in use; open surface chrome plating tank Nos. 19-21, aka Dept. 3 (west plant)	PTI No. 386-85A; FACD, Case No. 03-1862-CE; 40 CFR Part 63, Subpart N	Not in use: scrubber #6, a Ceilcote packed bed scrubber with kimre mesh pad	Not in use

\*An *emission unit* is any part of a stationary source which emits or has the potential to emit an air contaminant.

Regulatory overview:

The original 2006 multi-media Joint Consent Decree (JCD) for multi-media issues at DCP was replaced, as of 7/28/2015, by a First Amended Consent Decree (FACD), Case No. 03-1862-CE. The purpose of the JCD was to address not only air issues, but also contamination of soil, stormwater, and groundwater. The FACD is an updated document, reflecting changes in circumstances and regulations, since the JCD was written. AQD is just one of the EGLE divisions which use the FACD as a regulatory tool. Vapor degreasing is not referenced in the FACD, as violations of air requirements for vapor degreasing were not known to exist at that time it was written.

DCP is considered to be a true minor source, rather than a major source, of air emissions. A *major source* has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns. DCP is also considered a minor, or *area source*, for Hazardous Air Pollutants (HAPs), because it is not known to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

The chrome plating processes are subject to 40 CFR Part 63 Subpart A, *General Provisions*, and Subpart N, *National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*. This is one of the federal National Emission Standards for Hazardous Air Pollutant (NESHAP) regulations, and is frequently referred to as the Chrome NESHAP. DCP considers their facility to be a *large hard chromium electroplating facility*, under Subpart N, and they plate in open surface chrome tanks.

In addition, DCP has six active air use permits, and various state and federal air regulations apply to a number of emission units. The regulations checked during the degreaser inspection today are only a fraction of the air pollution regulatory requirements which apply to DCP, because the batch vapor degreaser and chrome plating scrubbers were the focus of this activity report. For the state and federal air pollution regulations applicable to the entire plant, please see AQD's 4/30/2019 inspection report.

Michigan Air Pollution Control (MAPC) Rule 115 defines open top vapor degreaser as:

(c) "Open top vapor degreaser" means a tank that contains organic solvent that is heated to its boiling point for the purpose of cleaning or degreasing metallic objects through the condensation of the hot solvent vapor on the colder object.

Note: Although classified as an open top vapor degreaser, DCP's BACT-72A unit has lids that cover the unit except when parts are either being lowered into, or removed from, the degreaser.

The current vapor degreaser is a Vapor Engineering model BACT-72A unit. It was considered by DCP to be exempt from permitting when it was installed on 11/20/2018, under EGLE's MAPC Rule 285(2)(r)(iv). This rule exempts metal cleaning processes which exhaust only into the general, in-plant environment from the requirement of EGLE's MAPC Rule 201 to obtain a permit to install. However, it was determined in October 2019 that the degreaser can no longer satisfy that exemption criteria, based on ambient air sampling data which showed elevated levels of TCE detected offsite. It was therefore found to be in violation of MAPC Rule 201, which requires a permit to install. The vapor degreaser is now using the MAPC Rule 290 permit exemption, for equipment with limited emissions, as demonstrated by monthly raw material usage and subsequent emission calculations.

MAPC Rule 278 would preclude an emission unit that is a major HAP source from using one of the AQD permit exemptions. Because the vapor degreaser is not classified as a major source of HAPs, it has been considered eligible to use an exemption, as long as it has met the relevant exemption criteria.

MAPC Rule 708 applies to new, open top batch vapor degreasers, and contains requirements for operational practices. A "new source" is defined in the AQD Part 7 Rules as any process or process equipment which is placed into operation on or after 7/1/1979, or for which PTI application is made on or after 7/1/1979, except for any process or process equipment defined as an "existing source." However, the BACT-72A was not considered to be subject to Rule 708, at the time of installation on

**11/20/2018, because Rule 708(6) states:**

(6) The provisions of this rule do not apply to a new open top vapor degreaser that is subject to the provisions of the halogenated solvent cleaner national emission standards for hazardous air pollutants (1995), which are adopted by reference in R 336.1651.

The BACT-72A, while it used trichloroethylene from 11/20/2018 to 11/25/2019, was subject to 40 CFR Part 63, Subpart T, *National Emissions Standards for Halogenated Solvent Cleaning*, also known as the halogenated solvent cleaning NESHAP. It was therefore specifically excluded from Rule 708. However, removal of TCE from the BACT-72A on 11/25 made the unit no longer subject to Subpart T. Rule 708 now applies to the unit.

**Fee status:**

Because it is subject to the area source Maximum Achievable Control Technology (MACT) standard 40 CFR Part 63, Subpart N, *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*, DCP has been classified as a Category III fee source, and has paid an annual fee to the AQD. This is not a fee to conduct chrome plating, but a fee for being subject to an area source MACT regulation which AQD has been delegated authority to implement. The AQD fee program has recently been restructured, however, and the Category III designation has now been replaced by a "Category F" designation. The facility is required to report each year to the Michigan Air Emission Reporting System (MAERS).

**Location:**

DCP is located south of downtown Howell. Immediately north of the plant are a small DCP parking lot, and a residential neighborhood. To the immediate east is another residential neighborhood. To the west is a community park, and a residential neighborhood. To the south is the CSX Transportation railroad line, with industrial and commercial facilities to the south and southeast.

**Recent chrome plating stack tests:**

Stack testing has been required of chrome plating processes at DCP, over the years. The most recent required stack test was on 9/10 and 9/11/2014, when DCP stack tested scrubbers #3 and 4. Total chromium emissions from each scrubber were less than 10% of the regulatory limit. In addition, chromic acid emissions from scrubbers #3 and 4 were each less than 5% of the permitted limit in their Michigan air use permit, or Permit to Install (PTI) No. 367-83B.

In January 2019, AQD was informed of a 5/25/2016 stack test which DCP had voluntarily conducted on scrubber #5 (the chrome plating scrubber for the west side of the plant), for their own research. The test results were 2.5% of the total chromium lb/hr emission limit, and 2.9% of the total chromium ton per year limit in their PTI No. 386-85A. AQD was not aware of the test, and so was not present to observe either the stack test methodology or the plant operations, at that time.

**Site history, regarding past and current use of vapor degreasers:**

DCP was established on 11/23/1953, according to the company's website. The earliest documentation AQD has on solvent cleaning at DCP is from a 4/17/1980 inspection report, which referenced a "degreaser." It is not clear if that was an actual vapor degreaser, which heats solvent to the boiling point, or simply a cold cleaner, which does not heat solvent to the boiling point. A 4/23/1980 letter from AQD to the company referenced dichloroethane being used in the degreaser. On 3/11/1981, AQD first documented use of TCE in a degreaser at DCP. On 7/1/1981, an AQD inspection first specifically noted a "vapor degreaser" onsite. Since that time, vapor degreasers at DCP have used TCE, and sometimes 1,1,1-trichloroethane, also known as methyl chloroform. There is a history of TCE contamination in the soil and groundwater at the site.

The new Vapor Engineering BACT-72A batch vapor degreaser was reported to be installed on

11/20/2018, replacing a used Autosonic batch vapor degreaser which DCP had operated since 1998. The BACT-72A was said to have been brand new when it arrived onsite, in July, 2018. The unit was said to have arrived with a damaged chiller, but this was reportedly replaced, before the unit was installed and operated. This is at least the fifth vapor degreaser which has operated at this site.

#### Odor evaluation:

At 9:52 AM, I drove south on S. Michigan Avenue, past DCP, to Mason Road, to S. Walnut Avenue, and then to Brooks Street. I was not able to detect any odors. At 9:55 AM, I repeated this route, although I ended with Livingston Street instead of Brooks Street. Again, I detected no odors. Weather conditions were overcast and 34 degrees F, with winds 5-10 miles per hour out of the north.

#### Arrival:

I arrived in the north parking lot at DCP, at 9:57 AM. I could not see any visible emissions coming from the scrubber or cooling tower stacks, nor could I detect any odors. I had noted a steam plume from the nickel scrubber during the odor evaluation, but uncombined water vapor is not a regulated air contaminant. I entered the facility lobby, and provided my identification/credentials. I met with Mr. Scott Wright, Environmental Manager, and with Ms. April Smith, Vice President - Human Resources.

#### Inspection:

I explained that my objectives for the inspection were to inspect the vapor degreaser, and to examine chrome plating scrubbers #3, 4, and 5. The reason for examining the chrome plating scrubbers was that I had detected a distinct and definite acidic odor, one block north of DCP, on 12/23/2019, when I was downwind. Ms. Smith accompanied me to the degreaser, while Mr. Wright accompanied me throughout the entire visit today.

We first went to the degreaser. There are 3 modes for running the degreaser, to my understanding:

- *Operating mode*; when the solvent in the degreaser is boiling, the chiller system is in use to control emissions, and the degreaser is cleaning parts.
- *Idling mode*; when the solvent is boiling, and the chiller system is in use to control emissions, but no parts are being cleaned.
- *Chill mode*; when the solvent is not being heated, and the chiller system is in use, to control emissions.

To reduce emissions from vapor degreasing with the NEXT® 5408 solvent, it is my understanding that DCP has recently instituted a daily operating schedule for the degreaser, where there are just two relatively narrow windows in which parts can be cleaned:

1. 6:00 AM to 10:30 AM, and
2. 3:30 PM to 5:30 PM.

During these two operating windows, which add up to 6.5 hours per day, the vapor degreaser can be used for up to 3.5 hours to actually clean parts. In these windows, the unit is said to be in either operating mode, when cleaning parts, or in idling mode. For the rest of the day, the degreaser is in chill mode; that is, the solvent is unheated, and the chiller system is in use, to control emissions.

#### BACT-72A vapor degreaser using NEXT® 5408 solvent; Rules 708 and 290

At 10:13 AM, I was taken to see the degreaser. It was about to finish cleaning a batch of parts. The parts basket was in the degreaser, and the black flashing around the edge of the parts basket roof formed a seal with the upper edges of the degreaser itself. When I stepped inside the tarped enclosure around the degreaser, made by the hanging of PVC plastic sheets coated with vinyl, I noticed a barely detectable solvent odor. It did not have a sweet solvent smell to it, like TCE, or like FluoSolv AP. It appeared to me to be more like isopropyl alcohol in character.

When the cleaning of the parts was done, the parts basket was raised up out of the vapor zone, and allowed to drip dry, while still within the freeboard zone of the degreaser. This time period is known as the *dwel time*. I did not detect an increase in odors while the parts were drying and I was standing on the catwalk ,next to the degreaser. Looking at the parts, I saw no pooling of solvent on them. I could not see any dripping of solvent from the parts or the parts basket. Once the parts basket had been removed from the degreaser, the bi-parting doors closed swiftly, forming what appeared to be a tight seal.

I counted 17 small metal parts in the parts basket. It was not immediately known if they were military in nature. I did not take photos of them, as military parts are subject to certain restrictions under the *International Traffic in Arms Regulations* (ITAR). I requested that the bi-parting sliding doors be reopened, so I could photograph the interior of the BACT-72A vapor degreaser. The NEXT® 5408 solvent could be seen boiling, down in the solvent sump. Please see attached photo 001. A slight fog of vapor is visible, down in the vapor zone. Photo 002 shows the condensing coils running along the back interior wall of the vapor degreaser.

The sump temperature gauge was at the low end of the gauge, at 40 degrees Celsius, which equates to 104 degrees Fahrenheit. The temperature gauge was due to be calibrated next on 2/18/2020. Please see attached photo 003.

Chiller system data, collected at approximately 10:30 AM:

- Chiller inlet line leading to the degreaser: 29-30 degrees F
- Chiller outlet of upper level condensing coils: 26 degrees F
- Chiller outlet of lower level condensing coils: 30 degrees F

The chiller inlet and outlet lines were cold enough that ice crystals had built up on them, where they were not covered with foam insulation. Please see attached photos as follows: photo 004 (chiller inlet temperature gauge), photo 005 (chiller outlet to upper level condensing coils), photo 006 (chiller outlet to lower level condensing coils), and photo 007 (distant view of lower level).

Compliance with EGLE MAPC Rule 708 was checked, please see discussion below.

*R 336.1708 New open top vapor degreasers.*

*Rule 708.*

*Rule 708(1):*

*(1) It is unlawful for a person to operate a new open top vapor degreaser unless all of the provisions of the following subrules are met or unless an equivalent control method is approved by the department.*

**AQD comment #1: The BACT-72A appeared to be complying with all applicable provisions of Rule 708, please see discussion below. There was not currently an equivalent control method approved by the department (EGLE).**

*Rule 708(2):*

*(2) It is unlawful for a person to operate a new open top vapor degreaser unless at least 1 of the following conditions is met:*

**AQD comment # 2: DCP was meeting more than the minimum requirement of one of the following conditions, as discussed below.**

*Rule 708(2)(a):*

*(a) The degreaser is designed such that the ratio of the freeboard height to the width of the degreaser is equal to or greater than 0.75. And if the degreaser opening is more than 10 square feet, the degreaser shall be designed with a powered or mechanically assisted cover.*

**AQD comment #3:** As indicated by the manufacturer's literature, the BACT-72A had 125% freeboard. This indicates that the ratio of the freeboard height to the width of the BACT-72A vapor degreaser was 1.25, above the required minimum of 0.75. The surface area of the vapor degreaser opening is more than 10 square feet, at 18 square feet., which equates to 1.67 square meters. DCP uses a mechanically assisted working mode cover, and a powered idling mode cover, as I understand it. The above requirements have therefore been met.

*Rule 708(2)(b):*

*(b) The degreaser is equipped with a refrigerated freeboard device.*

**AQD comment #4:** The vapor degreaser is equipped with a freeboard refrigeration device (FRD), meeting the Rule 708(2)(b) requirement. AQD observed that the chiller system for the FRD was in use today, and appeared to be operating properly. Rule 708 does not set a specific temperature limit, but the chiller system was cold enough that ice crystals were forming on chiller lines where there was no foam insulation. DCP's efforts in autumn of 2019 to improve the performance of the FRD allowed the chiller system to reach lower temperatures than it was capable of when it was delivered from the manufacturer. DCP is continuing to keep records of the chilled air blanket temperature, even though Subpart T, which required it, no longer applies, following removal of TCE from the degreaser. There is no longer a temperature limit for the chilled air blanket, but the records demonstrate that refrigeration of the air blanket is being done, as follows:

- December 20, 2019 (date NEXT® 5408 was added to the vapor degreaser): The chilled air blanket temperature was 57.6 degrees F. Rule 708(2)(b) appears to be met.
- January, 2020: The chilled air blanket temperature ranged from 51.3 to 55.7 degrees F. Rule 708(2)(b) appears to be met.
- February, 2020: The chilled air blanket temperature ranged from 48.8 to 53.9 degrees F. Rule 708(2)(b) appears to be met.

*Rule 708(2)(c):*

*(c) The degreaser is controlled by a carbon adsorption system with ventilation of more than 50 cubic feet per minute of air/vapor area when the cover is open and with exhaust of less than 25 parts of organic vapor per million parts of air averaged over 1 complete adsorption cycle.*

**AQD comment #5:** The above is one of the Rule 708(2) requirements which a subject facility may choose to comply with. DCP has not chosen this particular compliance option, as they are already complying with Rule 708(2)(a) and (b). Therefore, Rule 708(2)(c) is nonapplicable.

*Rule 708(2)(d):*

*(d) The degreaser is controlled by an equivalent control method approved by the department.*

**AQD comment #6:** An equivalent control method is one of the Rule 708(2) requirements which a subject facility may choose to comply with. DCP has not chosen this particular compliance option, as they are already complying with Rule 708(2)(a) and (b). Therefore, Rule 708(2)(d) is nonapplicable.

*Rule 708(3):*

*(3) It is unlawful for a person to operate a new open top vapor degreaser unless all of the following conditions are met:*

**AQD comment #7:** DCP appears to be complying with all of the Rule 708(3) requirements, please see discussion below.

*Rule 708(3)(a):*

*(a) A cover shall be installed that is designed to be opened and closed easily without disturbing the vapor*

zone. The cover shall be closed at all times, except when processing workloads through the degreaser.

**AQD comment #8: The BACT-72A has a built-in idling mode cover consisting of bi-parting sliding doors. They cover the unit when it is in chill mode and idling mode. It is my understanding that they are opened to allow for the parts basket to be lowered into the degreaser, whereupon the parts basket roof forms a working mode cover for the degreaser. Upon removal of the parts basket from the degreaser, the idling mode cover can again be closed. DCP appears to be complying with the above requirement. I was emailed copies of the *EWI-008-B Working Cover (or Basket Cover) Recordkeeping Form*, please see attached. These records were required by 40 CFR Part 63, Subpart T. Although Subpart T no longer applies, following removal of TCE from the degreaser, DCP is voluntarily keeping these records. The records indicate the following:**

- December, 20 2019 (date NEXT® 5408 was added to the vapor degreaser): Working mode cover was opening and closing properly, completely covering openings, and was free of cracks, holes, and other defects.
- January 2020: Working mode cover was opening and closing properly, completely covering openings, and was free of cracks, holes, and other defects.
- February 2020: Working mode cover was opening and closing properly, completely covering openings, and was free of cracks, holes, and other defects.

*Rule 708(3)(b)(i):*

*(b) A procedure shall be developed to minimize solvent carryout by doing all of the following:*

*(i) Racking parts to allow complete drainage.*

**AQD comment #9: I was able to observe parts in the parts basket today, as the freshly cleaned parts were being removed from the degreaser. It was evident that the parts were situated within the basket so as to allow for complete drainage, complying with the above requirement.**

*Rule 708(3)(b)(ii):*

*(ii) Moving parts in and out of the degreaser at a vertical speed of less than 11 feet per minute when a powered hoist is used to raise or lower the parts.*

**AQD comment #10: I inquired as to the speed of the powered hoist. I was advised that the speed is below 11 feet per minute, complying with the above requirement. DCP is continuing to keep the hoist speed records which were required by 40 CFR Part 63, Subpart T, even though Subpart T no longer applies, since the removal of TCE from the degreaser. I was emailed copies of their *EWI-008D Automated Parts Handling- Hoist Speed Record Form*, please see attached. The records indicate the following:**

- December 20, 2019 (date NEXT® 5408 was added to the vapor degreaser): 2.58 feet per minute, well below the allowed maximum of less than 11 feet per minute.
- January 2020: The maximum speed was 2.69 feet per minute, well below the allowed maximum of less than 11 feet per minute.
- February 2020: The maximum speed was 2.61 feet per minute, well below the allowed maximum of less than 11 feet per minute.

*Rule 708(3)(b)(iii):*

*(iii) Holding parts in the vapor zone not less than 30 seconds or until condensation ceases.*

**AQD comment #11: I was advised that with the NEXT 5408, parts are being held in the sump area, or vapor zone, for 2 minutes, above the minimum required 30 seconds. I had arrived near the end of a parts cleaning cycle, so did not have the opportunity to time the cycle. AQD will attempt to time a cleaning cycle, in the future.**

*Rule 708(3)(b)(iv):*

(iv) *Tipping or tumbling parts in a manner such that no pools of organic solvent remain on the cleaned parts before removal.*

**AQD comment #12:** As the parts basket was being removed from the degreaser, I saw the parts had been tipped or oriented so that no pools of organic solvent remained on them, complying with the above requirement.

*Rule 708(3)(b)(v):*

(v) *Allowing parts to dry within the degreaser for not less than 15 seconds or until visually dry.*

**AQD comment #13:** The time period in which parts are allowed to dry within the degreaser freeboard area is sometimes known as *dwelt time*. I asked how long parts were allowed to dry, and was informed that 1 minute and 20 seconds is allowed. This dwell time is consistent with the recorded dwell time of 85.6 seconds I had observed in October 2019, when TCE was being used. I was emailed copies of the *EWI-008C Halogenated Solvent Cleaner NESHAP Dwell Measurement Test Recordkeeping Form*, please see attached. These records were required by 40 CFR Part 63, Subpart T. Subpart T no longer applies, following removal of TCE from the degreaser, but DCP is voluntarily keeping these records. The records indicated the following:

- December 20, 2019 (date NEXT® 5408 was added to the vapor degreaser): The recorded dwell time was 114 seconds, far above the minimum required 15 seconds.
- January 2020: The shortest dwell time recorded was 111 seconds, far above the minimum required 15 seconds.
- January 2020: The shortest dwell time recorded was 113 seconds, far above the minimum required 15 seconds.

*Rule 708(3)(c)(i):*

(c) *The following control devices shall be installed:*

(i) *A condenser flow switch and thermostat that shut off the sump heat if the condenser coolant is either not circulating or is too warm.*

**AQD comment #14:** I was informed that the degreaser has the appropriate controls, which were identified in the manual for the BACT-72A. A condenser flow switch and thermostat which shut off the sump heat if the condenser coolant is either not circulating or is too warm are described in the attached *Process Work Instruction, Vapor Degrease, PWI-03 Rev. L* document. As described, this complies with Rule 708(3)(c)(i).

*Rule 708(3)(c)(ii):*

(ii) *If equipped with spray, a spray safety switch that shuts off the spray pump if the vapor level drops excessively.*

**AQD comment #15:** I was informed that there is a spray safety switch that shuts off the spray pump if the vapor level drops excessively. The *Process Work Instruction: Vapor Degrease, PWI-03, Rev. L* document attached to this activity report also documents this. As a safety feature, I was told that the spray wand only operates when a spray trigger and a foot pedal are depressed at the same time. As described, this complies with Rule 708(3)(c)(ii).

*Rule 708(3)(c)(iii):*

(iii) *A vapor level control device that shuts off the sump heat if the solvent vapor level rises above the normal design level.*

**AQD comment #16:** The DCP *Process Work Instruction: Vapor Degrease, PWI-03, Rev. L* document, attached for reference, indicates that the vapor degrease is equipped with a vapor level control device that shuts off the sump heat if the solvent vapor rises above the normal design/operational level. As

described, this complies with Rule 708(3)(c)(iii).

Rule 708(3)(d):

*(d) The total workload shall not occupy more than 1/2 of the degreaser's open top area.*

**AQD comment #17:** Today I observed that the freshly cleaned parts in the parts basket occupied considerably less than 1/2 of the degreaser's open top area. The above requirement was being met at this time.

Rule 708(3)(e):

*(e) Solvent shall not be sprayed above the vapor level.*

**AQD comment #18:** I was informed that solvent is not sprayed above the vapor level within the vapor degreaser. The attached DCP Process Work Instruction: Vapor Degrease, PWI-03, Rev. L document states that the hand-held spray wand is only to be used within the confines of the degreaser itself, and always below the vapor level of degreaser solvent. As described, this complies with Rule 708(3)(e).

Rule 708(3)(f):

*(f) Solvent leaks shall be repaired immediately.*

**AQD comment #19:** I could not detect any solvent leaks from the degreaser, at this time. The attached DCP Process Work Instruction: Vapor Degrease, PWI-03, Rev. L document indicates that solvent leaks must be repaired immediately. As described, this complies with Rule 708(3)(f).

Rule 708(3)(g):

*(g) The degreaser shall be operated in such a manner that no water is visibly detectable in solvent exiting the water separator.*

**AQD comment #20:** I was shown the water separator for the degreaser, which is a large metal box on the left end of the degreaser. It was sealed shut, and my understanding is that opening it would be a complex process. I was told that there was no reason that water should be detectable in the solvent exiting the water separator. The water should simply rise to the top, I was advised.

Rule 708(3)(h):

*(h) Exhaust ventilation shall not exceed 65 cubic feet per minute per square foot of degreaser open area, unless necessary to meet OSHA requirements.*

**AQD comment #21:** The BACT-72A vapor degreaser does not have exhaust ventilation, so this requirement is nonapplicable. However, DCP tracks indoor wind speed inside the plant, in the vicinity of the degreaser. Recording indoor windspeed is a requirement of 40 CFR Part 63, Subpart T, and DCP continues to do this, even though Subpart T no longer applies. The attached copies of the *EWI-008-A Reduced Room Draft Windspeed Measurements Recordkeeping Form* for December 2019, and January and February 2020 recorded the indoor windspeed, as follows.

- December 20, 2019 (date NEXT® 5408 was added to the vapor degreaser): top indoor windspeed was 10 feet per minute.
- January 2020: top indoor windspeed was 10 feet per minute.
- February 2020: top indoor windspeed was 10 feet per minute.

Rule 708(3)(i):

*(i) Waste solvent shall be stored only in closed containers, unless demonstrated to be a safety hazard and disposed of in a manner such that not more than 20% by weight is allowed to evaporate into the atmosphere.*

**AQD comment #22:** No waste solvent has yet been generated from the use of NEXT® 5408 solvent, as I understand it. Mr. Wright showed me that there were four 55-gallon drums of NEXTX® 5408 which were closed/sealed, on the opposite side of a curtain or wall behind the degreaser. A pump appeared to be securely attached to one of these drums, with a threaded fitting and possibly a compression seal. It was explained that with the pump, solvent could be added to the degreaser, as needed. There was no evidence of any leakage from the drums or the pump, nor did they appear to be emitting any odors. Nearby, were three 55-gallon drums of FluoSolv AP. They were closed/sealed, and there was no evidence of any leakage, nor of any odor of FluoSolv AP. There were no violations of Rule 708(3)(i).

*Rule 708(4):*

*(4) A person responsible for the provisions of this rule shall develop written procedures for the operation of all such provisions, and such procedures shall be posted in an accessible, conspicuous location near the vapor degreaser.*

**AQD comment #23:** I observed that DCP had posted, near the hoist controls, multi-page, laminated documents, which provided instructions on proper start up and operation of the degreaser. Subsequent to the date of the inspection, I requested copies of these documents. I was emailed three documents, which are attached for reference. These are summarized below:

- *Vapor Degreaser Set-Up & Operation:* This document provides instructions on proper start up and operation of the vapor degreaser.
- *Process Work Instruction: Vapor Degrease, PWI-03, Rev. L, dated 16/2020:* This document provided detailed instructions for processing parts in the vapor degreaser, and these lined up with numerous work practice and control requirements of Rule 708. One applicable requirement of Rule 708 which was not covered by this document appeared in the Environmental Work Instruction: Vapor Degreaser Management, EWI-008, Rev. B, which is discussed below. The requirement of Rule 708(4) appeared to be met.
- *Environmental Work Instruction: Vapor Degreaser Management, EWI-008, Rev. B, dated 12/20/2019.* This covered the remaining applicable requirement of Rule 708 which was not discussed in the above document, the *Process Work Instruction: Vapor Degrease, PWI-03, Rev. L.* The requirement of Rule 708 (4) appeared to be met.

*Rule 708(5):*

*(5) The provisions of this rule shall not apply to an open top vapor degreaser having an air/vapor interface of less than 10 square feet, if the degreaser complies with the provisions of subrules (3) and (4) of this rule.*

**AQD comment #24:** The BACT-72A vapor degreaser has an air/vapor interface of 18 square feet, so Rule 708(5) is nonapplicable.

*Rule 708(6):*

*(6) The provisions of this rule do not apply to a new open top vapor degreaser that is subject to the provisions of the halogenated solvent cleaner national emission standards for hazardous air pollutants (1995), which are adopted by reference in R 336.1651.*

**AQD comment #25:** Rule 708(6) excludes any open top vapor degreaser which is subject to 40 CFR Part 63, Subpart T. because the BACT-72A no longer uses TCE, it is not subject to Subpart T. Therefore, Rule 708 is nonapplicable.

Following removal of the parts basket from the degreaser, the bi-parting sliding doors which comprise the idling mode cover were closed. The degreaser went into idling mode, and the digital sump temperature gauge process value (PV) or actual value was at 96 degrees F. Mr. Wright advised that the temperature in the sump was now decreasing from what it had been earlier, since they were done cleaning parts for this operational window. The degreaser was now starting to enter chill mode, where the boiling of the solvent in the sump would cease, but the condensing coils or chiller system would continue to operate.

**Rule 290 recordkeeping review for vapor degreaser utilizing NEXT® 5408 solvent:**

On 2/20/2020, I emailed DCP and BB&E, to request copies of Rule 290 recordkeeping for the first two months that NEXT® 5408 was used in the degreaser. That afternoon, Ms. Celeste Holtz of BB&E emailed to me their Rule 290 recordkeeping for the months of December 2019, and January 2020. This included usage of solvent and calculated emissions. The recordkeeping noted that NEXT® 5408 was first added to the degreaser on 12/9/2019. The recordkeeping also tracked addition of solvent to the degreaser during this time frame, to replace solvent which had evaporated. Emissions were calculated for each month, based on a mass balance. For each month, total uncontrolled emissions from the degreaser were below 1,000 lbs/month. The Rule 290 exemption criteria appeared to be satisfied, for December 2019 and January 2020. This is summarized in the tables below.

**Rule 290 checklist:**

Rule 290 subrule	Summary of requirement	Compliance status	Comments
290(1)	Rule 290 does not apply if prohibited by Rule 278 and unless requirements of Rule 278a have been met	Compliance	BACT-72A is not a major HAPs source
290(2)	Rule 201 does not apply to emission units in 290(a) if conditions listed in 290(b), (c), (d), and (e) are met	Compliance	Conditions listed in 290 (b), (c), (d), and (e) are met
290(2)(a)(i)	Emission unit emitting only noncarcinogenic VOCs or noncarcinogenic materials listed in Rule 122(f) as not contributing appreciably to the formation of ozone, if total uncontrolled emissions are not more than 1,000 lbs/month	Compliance	Emissions less than 1,000 lbs/month of Pentafluorobutane
290(2)(a)(ii)	Emission unit must have CO2 equivalent (CO2e) emissions less than 6,250 tons/month, and uncontrolled emissions of all other air contaminants are less than 1,000 lbs/month	Compliance	Unit does not burn fossil fuel, and CO2e emissions expected to be below 6,250 tons/month; Trans-DCE and Tetrafluoroethyl trifluoroethyl ether below 1,000 lbs/month
290(2)(a)(ii)(A)	TACs, excluding noncarcinogenic VOCs and noncarcinogenic materials listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with ITSL greater than or equal to 0.04 ug/m3 and less than 2.0 ug/m3, are limited to 20 lbs/month uncontrolled emissions	NA	No TACs in NEXT® 5408 with ITSL greater than or equal to 0.04 ug/m3 and less than 2.0 ug/m3
290(2)(a)(ii)(B)	TACs with IRSLS greater than or equal to 0.04 ug/m3, uncontrolled emissions must be below 20 lbs/month	NA	Neither Trans-DCE nor Tetrafluoroethyl trifluoroethyl ether have IRSLS
290(2)(a)(ii)(C)	No emissions allowed of TACs, excluding noncarcinogenic VOCs and noncarcinogenic materials listed in Rule 122(f) as not contributing appreciably to the formation of ozone with an ITSL or IRSL less than 0.04 ug/m3	NA	None of the compounds in NEXT® 5408 have an ITSL or IRSL less than 0.04 ug/m3
290(2)(a)(ii)(D)	For total mercury, emissions shall not exceed 0.01 lbs/month	NA	No mercury is known to be in NEXT® 5408
290(2)(a)(ii)(E)	For lead, emissions shall not exceed 16.7 lbs/month	NA	No lead is known to be in NEXT® 5408
290(2)(a)(iii)(A) through (C)	Any emission unit emitting only particulates without IRSLS and other air contaminants exempted under Rule 290(2)(a)(i) or (ii) must comply with subrules (A) through (C)	NA	NEXT® 5408 not expected to be a source of particulate emissions
290(2)(b)(i) through (ii)	290(2)(b) requirements apply to emission units utilizing control equipment	NA	BACT-72A does not have add-on control equipment
290(2)(c)	Description of emission unit must be maintained through life of equipment	Compliance	DCP maintaining description of emission unit including manufacturer's literature, and documentations of enhancements to degreaser
290(2)(d)	Records of material use and calculations identifying quality, nature, and quantity of air emissions to demonstrate emissions limits in Rule 290 are met	Compliance	Records show compliance with emission limit of less than 1,000 lbs/month
290(2)(e)	Records shall be maintained on file for most recent 2-year period	Compliance	Records have been maintained since switch to NEXT® 5408

**December 2019 emissions summary:**

Compound	Relevant portion of Rule 290	Monthly emissions, in lbs	Rule 290 emission limit, in lbs	Exemption criteria met?
Pentafluorobutane	290(2)(a)(i)	107.32	1,000	Yes
Trans-DCE	290(2)(a)(ii)	95.28	1,000	Yes
Tetrafluoroethyl trifluoroethyl ether	290(2)(1)(ii)	6.81	1,000	Yes
Total	290(2)	209.40	1,000	Yes

December 2019 solvent throughput: 20 gallons

**January 2020 emissions summary:**

Compound	Relevant portion of Rule 290	Monthly emissions, in lbs	Rule 290 emission limit, in lbs	Exemption criteria met?
Pentafluorobutane	290(2)(a)(i)	393.86	1,000	Yes
Trans-DCE	290(2)(a)(ii)	349.67	1,000	Yes
Tetrafluoroethyl trifluoroethyl ether	290(2)(1)(ii)	24.98	1,000	Yes
Total	290(2)	768.50	1,000	Yes

January 2020 solvent throughput: 73.4 gallons

**Examination of chrome plating scrubbers:**

During the 12/23/2019 complaint investigation I conducted of DCP, when odors in a residential neighborhood were attributed by two separate complainants to DCP, I identified the most likely source being a coating operation in an industrial park west of here, rather than DCP. During the investigation, however, I detected an acidic odor a block downwind of DCP. I determined that a future inspection of the chrome plating scrubbers would be appropriate.

**Chrome plating CMP scrubbers #3 and 4, PTI No. 367-83B:**

Mr. Wright and DCP maintenance employees accompanied me onto the east plant roof, for the purpose of looking at the interior of composite mesh pad (CMP) scrubbers #3 and 4. These scrubbers are subject to the requirements of the chrome NESHAP, 40 CFR Part 60, Subpart N, as well as Michigan permit to install (PTI) No. 367-83B.

Note: Scrubber #3 has been described by me in recent AQD activity reports as a Ceilcote vertical CMP scrubber, like scrubber #4. However, file research indicates that scrubber #3 was actually manufactured by Viron, and not Ceilcote.

As we walked out on the east roof, there were no visible emissions from either the scrubber #3 or 4 exhaust stacks. Scrubber #3 is the southernmost of the two units. Scrubber operating data was collected at 10:56 AM, as follows:

- Scrubber #3 pressure drop: 4.1 inches, water column (w.c.)
- Scrubber #4 pressure drop 2.7-2.8 inches, w.c.

During the 9/10/2014 stack testing for scrubber #3, the site-specific operating range for the scrubber under 40 CFR Part 63, Subpart N was determined to be a pressure drop of 3.20 + or - 2.0 inches. As long as the scrubber operates within that operating range, it is pconsidered to be compliant with the chrome NESHAP. Today's operating value of 4.1 inches, w.c. for scrubber #3 falls within the compliant range.

During the 9/11/2014 stack testing for scrubber #4, the site-specific operating range for the scrubber under 40 CFR Part 63, Subpart N was determined to be a pressure drop of 3.5 + or - 2.0 inches. As long as the scrubber operates within that operating range, it is considered to be compliant with the chrome NESHAP. Today's operating value of 2.7 or 2.8 inches, w.c. for scrubber #4 falls within the compliant range.

A viewport on the side of each scrubber was opened, and I was able to look into each scrubber. Please see attached photos 008 and 009. The CMP pads appear as the "floors" and "ceilings" in the photos. The pads looked to be clean, and there were no signs of the spiral-shaped spray heads being damaged. It is my understanding that the water sprays are activated when the CMP pads undergo cleaning, and that this takes place on a preset schedule, every 4, 6, and 12 hours. I have been advised that the spray washing lasts for 50 seconds, and uses approximately 120 gallons of water. The water sprays were not in a washing cycle, at this moment.

It is my understanding that the airflow is vertical in the scrubbers, and the dirty air is passed up through three horizontal layers of mesh pads. The cleanest mesh pad is said to always be the one on top, and that is washed with sprays of clean, reverse osmosis water. The two mesh pads below are reported to be washed with water that has already been through a mesh pad, as a way of recycling the wash water. There is a drawdown which captures the collected chromic acid for recycling, as I understand it.

Note: I was advised that when scrubber viewports are open, there is so much vacuum in the system, that it can suck the safety glasses right off of someone's face. I found this to be an accurate description. It was necessary to keep a hand on my safety glasses, to avoid losing them.

The ductwork was labeled, and the ductwork which I saw appeared to be free of leaks. Due to other field work which I needed to do today, I did not have the time to examine all the ductwork on the east roof, but that will be addressed, during future inspections here.

Chrome plating PBS scrubber #5, 40 CFR Part 63, Subpart N; PTI No. 386-85A; FACD Case No. 03-1862-CE

Chrome plating PBS scrubber #5 is subject to the requirements of the chrome NESHAP, 40 CFR Part 60, Subpart N, as well as Michigan permit to install (PTI) No. 386-85A, and the FACD. The chrome plating lines in the west side of the plant comply with the chrome NESHAP by use of fume suppressants, I have been told, and the use of scrubber #5 provides an additional level of control, to reduce the exposure to chrome plating fumes that workers would otherwise receive.

I was taken to chrome plating scrubber #5, which serves the chrome plating lines in the west side of the plant. The pressure drop gauge read 0.9-1.0 inches, w.c. Because scrubber #5 has in the past taken the compliance path under the chromium NESHAP of using surfactants as fume suppressants, it has not been required to have a scrubber pressure drop range set for compliance purposes. However, once DCP has determined that surfactants have been depleted from the west plant chrome plating tanks, their stated intent is to conduct stack testing of scrubber #5, as the sole compliance method for the west plant chrome plating tanks. This pending stack test will set a pressure drop range for the scrubber to operate within.

I asked if it would be possible to look inside the scrubber, through some kind of viewing port. I was informed that this scrubber is an older unit, and had been built without a viewport. A large door panel is bolted on to the scrubber, but I was advised that it could not be opened while the unit was running.

We went up to the small platform on the west roof where the scrubber #5 ductwork and exhaust stack are. There were no visible emissions from the exhaust stack. The ductwork appeared to be free of leaks. The individual duct segments were labeled, as required by Paragraph 5.3(a) of the FACD. I was told that larger ductwork ID labels will replace the small ones, which are temporary. Scrubber #5 appeared to be operating properly. The requirements of the FACD appeared to be met, for the west roof ductwork.

As mentioned above, it is my understanding that DCP intends to conduct stack testing of the west plant

chrome plating tanks while using scrubber #5, once all the surfactant has been depleted from the west plant chrome plating tanks. For some years, DCP used surfactants as the control option for the west plant, with scrubber #5 providing additional control, for protection of plant employees. During 2019, BB&E advised AQD that DCP 's goal in the near future is to move completely away from the use of surfactants in the west plant, because these surfactants contain PFAS. Subpart N allows for a facility to use a scrubber as the compliance option instead of surfactants, and this is the stated option which DCP will be following.

Note: Control of chrome plating emissions without use of surfactants is already is being done at DCP, with the east plant and scrubbers #3 and 4. Stack testing in 2014 showed that scrubbers #3 and 4 were well under the federal regulatory emission limit for total chromium emissions, and well under the AQD permitted limit for chromic acid emissions.

Chrome plating scrubber #6, 40 CFR Part 63, Subpart N; PTI No. 386-85A; FACD Case No. 03-1862-CE:

Chrome plating scrubber #6 is subject to the requirements of the chrome NESHAP, 40 CFR Part 60, Subpart N, as well as Michigan permit to install (PTI) No. 386-85A, and the FACD. However, it has not been used in a number of years, and the chrome plating tanks which would exhaust to it have also not been used in a number of years.

Departure:

I left the plant at 11:18 AM, for other field work. I detected neither odors nor visible emissions from the plant, as I left.

Conclusion:

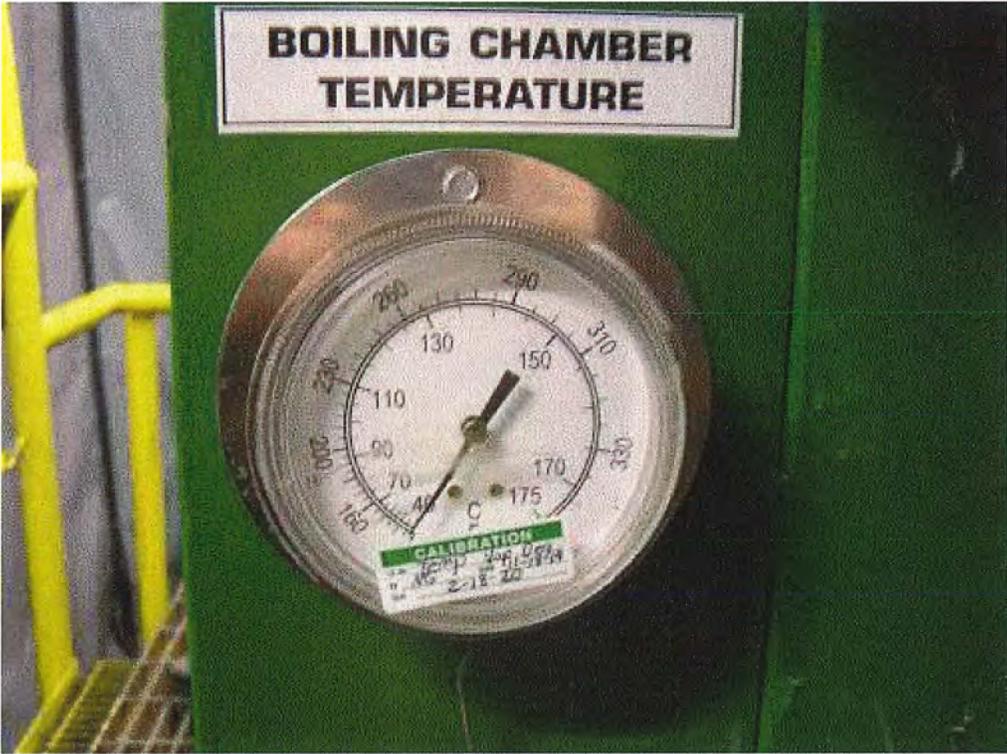
No instances of noncompliance were identified. The BACT-72A vapor degreaser appeared to satisfy the requirements of EGLE MAPC Rules 290 and 708, at this time. The chrome plating scrubbers #3, 4, and 5 appeared to be working properly, at this time.



Image 1(001) : NEXT 5408 boiling in solvent sump.



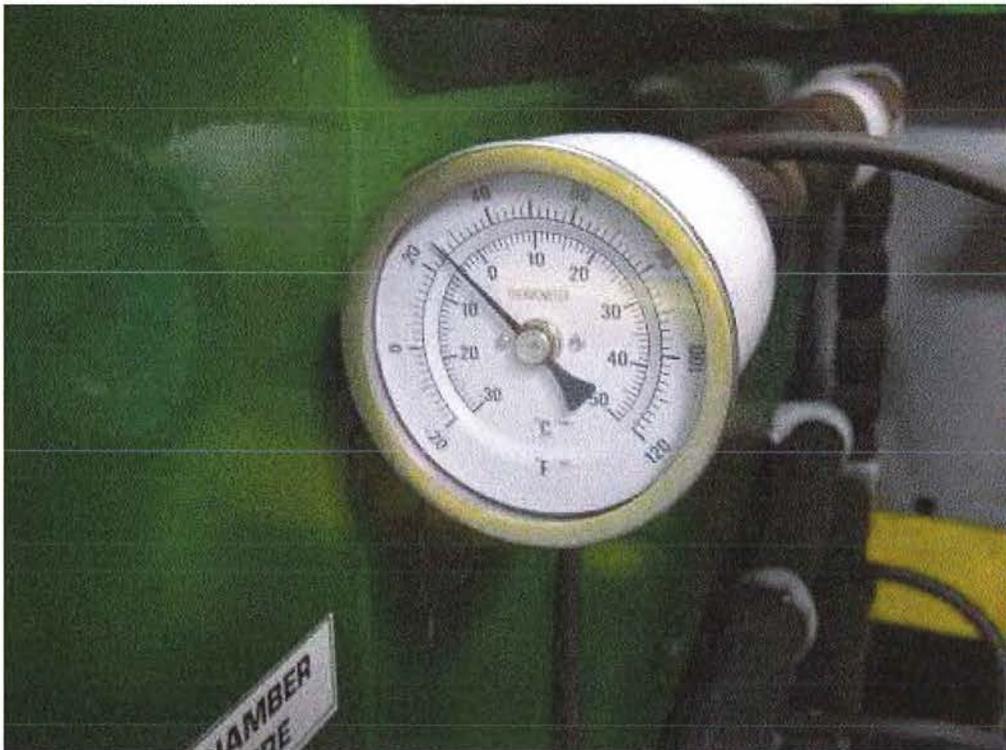
**Image 2(002) :** Condensing coils.



**Image 3(003) :** Sump temperature gauge.



Image 4(004) : Chiller inlet temperature gauge.



**Image 5(005) :** Chiller outlet for upper level coils.



**Image 6(006) :** Chiller outlet for lower level coils.



**Image 7(007)** : Distant view, lower level of degreaser.



**Image 8(008)** : Scrubber #3 interior.



**Image 9(009) :** Scrubber #4 interior.

NAME *[Signature]*

DATE *4/15/2020*

SUPERVISOR *B.M.*

