

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

B430345742

FACILITY: Honeywell International (Burdick & Jackson)		SRN / ID: B4303
LOCATION: 1953 South Harvey Street, MUSKEGON		DISTRICT: Grand Rapids
CITY: MUSKEGON		COUNTY: MUSKEGON
CONTACT: Margaret Pibuladhanapatana, Health Safety Environmental Leader		ACTIVITY DATE: 08/23/2018
STAFF: Chris Robinson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY '18 on-site inspection to determine the facility's compliance status with PTI No.'s 554-80, 26-88, 833-91, 284-93 and 76-05B and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On August 23, 2018, AQD staff, Chris Robinson (CR) conducted a scheduled unannounced on-site, inspection of Honeywell International (Honeywell) located at 1953 South Harvey Street in Muskegon, Michigan, to determine compliance with Permits to Install (PTI) No's. 554-80, 26-88, 833-91, 284-93 and 76-05B, as well as any other applicable air quality rules and regulations. CR met with Ms. Margaret Pibuladhanapatana, Health and Safety Environmental Leader and Mr. Bob Brenton, Environmental Health and Safety. AQD credentials were provided and CR announced intent to conduct an inspection of the facility. No odors or visible emissions were observed during this inspection.

### I. Facility Description

Honeywell is a chemical processing company that manufactures high-purity solvents. The solvents are made through distillation which utilizes equipment such as reactors and stills. Once complete, the final product is containerized and packaged.

### II. Compliance Evaluation

Honeywell is an op-out Source for emissions of Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs). Most of the processes and equipment at this facility are permitted, however Honeywell does operate some equipment covered under various Rule 201 permitting exemptions. All of which are discussed below.

#### **A) PTI No. 554-80**

This PTI covers six (6) 9,990-gallon storage tanks (tanks 11-16) limiting opacity to 20% (SC12), limiting VOC emissions (SC13) and subjecting the facility to future applicable VOC regulations (SC14), odor nuisance requirements (SC15) and material storage requirements (SC16). During the inspection, no odors or visible emission were observed. Records, through June 30, 2018, were provided and are included in **Attachment A** and summarized in the table below. The materials currently stored in these tanks are consistent with the materials described in the permit application.

VOC Emission Limits	Actual Emissions	Within limit
135.0 lb/hr	24.54 lb/hr	Yes
1.1 tpy	0.12 tpy (12-month rolling)	Yes

Special Condition 15 requires the facility, if an odor nuisance occurs, to not operate the storage tanks for more than 60 days beyond the date of notification unless the applicant has entered into a consent order for the elimination of the odor nuisance. No odor nuisances have occurred; therefore, this is not applicable at this time.

#### **B) PTI No. 26-88**

This PTI covers tanks 17-28 limiting opacity to zero percent (0%) (SC14), VOC emissions (SC15), equipment design requirements (SC16), record keeping requirements (SC17) and material storage requirements (SC18). During the inspection, no odors or visible emission were observed. Records were provided and are included in **Attachment A**.

This equipment is subject to a VOC emission limit of 4tpy. Based on provided records, the June 2018, rolling 12-month VOC emissions for tanks 17-28 was 0.69 tpy, which represents approximately only 17% of the limit. Per discussions with Ms. Pibuladhanapatana and Mr. Brenton, and observations during the inspection, all tanks on-site are equipped with conservation vents. Shipment records are maintained and summarized (**Attachment B**). Some of the materials being stored do not match those in the original permit, however Honeywell has conducted hazard potential assessments on the new materials and shown them to be in compliance.

**C) PTI No. 833-91**

This PTI covers the Bottle washer and the thermo-oxidizer (TO). No visible emissions were observed during the inspection of this equipment. Per discussions with Ms. Pibuladhanapatana and Mr. Brenton, these processes are never operated without the thermo-oxidizer operating properly. Exhaust stacks were observed and appeared to meet the requirements specified in SC16 (max diameter of 24" minimum height of 40-feet from ground). Circle charts were reviewed on-site. Operating temperature was approximately 1,335°F. Ms. Pibuladhanapatana and Mr. Brenton indicated that operating temperature is based on manufacturer's specifications and testing has never been conducted.

Per SC17 this equipment is subject to a VOC emission limit of 0.82 lb/hour & 3.0 tpy. Based on the records provided (**Attachment A**) VOC (Acetone) emissions were approximately 23 lbs/month (0.069tpy). Ms. Pibuladhanapatana indicated that no changes have been made to the material (acetone) used in the bottlwasher since the permit was issued. Honeywell has a preventative maintenance plan, as required by SC19, that is incorporated into their computer system that is based on manufacturer recommendations.

**D) PTI No. 284-93**

This PTI amended PTI No. 554-80 to allow for the replacement of tank no. 16 with a new 8,000-gallon storage tank, becoming a new emission unit and allowing for the storage of hazardous waste. Visible emissions are limited to zero percent (0%). None were observed during this inspection.

**E) PTI No. 76-05B**

Honeywell now processes the following materials, which were not evaluated during the initial permit application or modification process:

- 2-butoxyethanol (CAS# 11-76-2)
- T-butyl alcohol (CAS# 75-65-0)
- Iso-hexane (2-methylpentane (CAS# 107-83-5)
- Methyl benzoate (CAS# 93-58-3)
- Tetradecane (CAS# 629-59-4)

Ms. Pibuladhanapatana provided Rule 285 exemption demonstrations with hazard potentials on September 17, 2018, which were not previously provided to the AQD. Hazard potentials appear to be less than the 10% limit. CR informed Ms. Pibuladhanapatana that, although not required, Honeywell should submit these to the AQD prior to the change as has been done in the past. Rule 285 only requires records to be available upon request, which CR requested and received. These are now included in the site file not this report.

Rule 226 exempts certain materials from the requirements of Rule 225, "Health Based screening level requirements for new or modified sources of air toxics" as long as emission rates are less than 10 lb/month and 0.14 lb/hour and as long as the toxic air contaminant is not a carcinogen or a high concern toxic air contaminant listed on table 20 of the Rule. None of the materials listed above are considered a carcinogen nor listed on table 20. Also, based on the calculations provided with the 285 demonstration, emissions appear to be less than the 10 lb/month and 0.14 lb/hour exemption requirement. Therefore, these materials appear to be exempt from the requirements of Rule 225.

The following general statements apply to all PTI emission unit and flexible group tables.

- Ms. Pibuladhanapatana and Mr. Brenton, indicated that records are maintained for at least five (5) years.
- Exhaust stacks were not explicitly measured but observations appeared to meet PTI requirements.

**EUBLENDING**

Emission unit EUBLENDING is used for High purity (HP) blends I and II. HP I blending occurs in the shipping containers and emissions are vented through the existing snorkel system (part of the existing packaging operations) which vents to stack 33 and the existing waste tank which is vented to stack 37. HP II includes a fixed 300-gallon mix tank that incorporated solids, acids and bases in the mixes. HP II vents to the existing waste tank and to the atmosphere through stack 37. The facility provided the records required by SC EUBLENDING VI.1-4 (**Attachment A**). Emission data and batch records are also summarized in the tables below.

Pollutant	Limit	Time period/Operating Scenerio	Actual MAX Emissions	Within limit	Equipment
VOC	2.6 tpy	12-month rolling	0.01 tons	Yes	EUBLENDING
Chloroform	10 lb/mth	Monthly Basis	0.00 lb	Yes	
1,4 dioxane	10 lb/mth		0.00 lb	Yes	
methylene chloride	10 lb/mth		0.93 lb (Feb. & May 2018)	Yes	

tetrahydrofuran	10 lb/mth	0.00 lb	Yes
trichloroethylene	10 lb/mth	0.00 lb	Yes
trimethylamine	10 lb/mth	0.00 lb	Yes

Material	Limit	Time period/Operating Scenerio	Actual Emissions	Within limit	Equipment
High Purity Blends	150,000 liters/yr	12-month rolling	2180 liters	Yes	HP I (shipping containers)
	300,000 liters/yr		31,548 liters	Yes	HP II (300-gallon mix tank)
Chloroform	12 batches/mth	Monthly Basis	0 batches	Yes	EUBLENDING
1,4 dioxane	31 batches/mth		0 batches	Yes	
methylene chloride	6 batches/mth		1 batch (Feb. & May 2018)	Yes	
tetrahydrofuran	23 batches/mth		0 batches	Yes	
trichloroethylene	28 batches/mth		0 batches	Yes	
trimethylamine	31 batches/mth		0 batches		

**Reactors (EUR-3REACTOR, EUR-7REACTOR, EUR-8REACTOR & EUR-9REACTOR)**

Honeywell operates the following batch treatment reactors under PTI 76-05B, which are used for processing various chemical.

- EUR-3REACTOR – 300 gallons
- EUR-7REACTOR – 750 gallons
- EUR-8REACTOR – 1,000 gallons
- EUR-9REACTOR – 750 gallons

Depending on the emission unit, certain materials such as chloroform, dioxane and ethylene dichloride are prohibited to be processed. The facility has policies and procedures in place to ensure that prohibited materials are not processed, which is noted in the facility's emission records. Emission calculations and batch records, required in Special Condition VI of each of the Emission unit PTI tables were provided (**Attachment A**). Emission data is also summarized in the table below. Email correspondence with Ms. Pibuladhanapatana on September 6, 2018, indicated that "the site no longer processes ethylene dichloride with the last run in Reactor 7 occurring on October 28, 2004".

Pollutant	Limit	Time period/Operating Scenerio	Actual Emissions	Within limit	Equipment
VOC	6.0 lb/batch	Duration of each batch	1.32 lb (May 2018)	Yes	EUR-3REACTOR
	0.05 tpy	12-month rolling	8 lb (0.004 tons)	Yes	
Ethylene Dichloride	133 lb/yr	12-month rolling	--	--	EUR-7REACTOR
1,4-dioxane	30 lb/yr		0.36 lb	Yes	
VOC	0.38 tpy		0.12 tons	Yes	
VOC	18.7 pph	Duration of each batch	*	Yes	EUR-8REACTOR
	0.50 tpy	12-month rolling	0.04 tons	Yes	
1,4-dioxane	30 lb/yr	12-month rolling	0.00 lb	Yes	EUR-9REACTOR
VOC	0.38 tpy		0.01 tons	Yes	

\* Ms. Pibuladhanapatana indicated that compliance with this pph limit is maintained through administrative controls. However, the maximum calculated monthly emissions were 8.87 pounds (February 2018), which is less than the pph limit.

Based on batch records, Emission units EUR-7REACTOR and EUR-9REACTOR have not processed more than four (4) batches per month and 30 batches per 12-month rolling time period for 1,4-dioxane as restricted in SC EUR-7REACTOR III.1 and SC EUR-9REACTOR III.1. From August 2017 through July 2018, EUR-7REACTOR processed 1 batch of 1,4-dioxane in March 2018 and EUR-9REACTOR has not processed any batches of 1,4-dioxane.

Per Discussions with Ms. Pibuladhanapatana Mr. Brenton, and as required by SC EUR-7REACTOR III.4 and SC EUR-9REACTOR III.2, reactors seven (7) and nine (9) both utilize a residual vacuum charging method to ensure no emissions of 1,4-dioxane are released during charging.

EUR-7REACTOR is limited to no more than 20 batches per 12-month rolling time period of ethylene dichloride and Per SC EUR-7REACTOR III.6: "The liquid charging/transfer rates to EUR-7REACTOR for processing steps used during ethylene dichloride processing, when the process is venting, shall not exceed an hourly average of 3.0 gallons per minute nor a total of 180 gallons for each hour of operation". As mentioned above, the site no longer processes ethylene dichloride and the last time ethylene dichloride was processed in EUR-7REACTOR was October 28, 2004. However, Honeywell operates a vapor balance system when material is transferred from a drum during processing and a residual vacuum charging system is utilized.

**FGPACKAGING**

This Flexible Group consists of eight (8) packaging areas (EUBR1, EUBR2, EUBR3, EUCRET, EUCRWHS, EUPRR5, EUPRR3, EUMETERS) where liquid products are charged into various types of containers. The maximum size container charged is 19 liters. Per Mr. Brenton, 1,4-dioxane and pyridine are not packaged in EUMETER as prohibited by SC FGPACKAGING III.1 nor is decahydronaphthalene or trichloroethylene packaged in FGPACKAGING as prohibited by SC FGPACKAGING III.3. Ethylene dichloride is no longer processed at this facility. All waste material is stored in tank No. 16 and eventually disposed of.

Per Mr. Brenton, Manufacturer's Technical Data sheets are used to determine HAP contents of all materials used in FGPACKAGING and a listing of the chemical identity of each material packaged is maintained. The following records were provided as required by SC FGPACKAGING VI.1-3 of the PTI. Provided emission data is summarized in the table below.

**Monthly & Annual Records**

- Identification of and volume (Gallons) of each material packaged.
- Vapor pressure, molecular weight & container size for each material packaged per emission unit.
- VOC plus methylene chloride mass emission calculations
- Gallons of Chloroform, 1, 4-Dioxane, Ethylene Dichloride, Methylene Chloride, and Tetrahydrofuran packaged.
- Chloroform, 1,4-Dioxane, Ethylene Dichloride, Methylene Chloride & Tetrahydrofuran mass emission calculations.

**Daily Records**

- Gallons of tetrahydrofuran and pyridine packaged.
- Tetrahydrofuran and pyridine mass emission calculations.

Pollutant	Limit	Time period/Operating Scenerto	Actual Emissions	Within limit	Equipment
VOC plus methylene chloride#	20.0 tpy	12-month rolling	1.09 tons	Yes	FGPACKAGING
Chloroform	7,567 lb/yr		75.54 lb	Yes	
1,4-Dioxane	1,554 lb/yr		0.44 lb	Yes	
Ethylene Dichloride	614 lb/yr		--	--	
Methylene Chloride	< 18,000 lb/yr		308.27 lb	Yes	
Tetrahydrofuran	375 lb/yr	Calendar Day	47.25 lb	Yes	EUBR1 and EUBR2 Combined
	3,958 lb/yr		157.76 lb	Yes	EUBR3, EUPRR5, EUPRR3, and EUMETERS Combined
	1,979 lb/yr		0.00 lb	Yes	EUCRET and EUCRWHS Combined
	17.29 lb/day	Calendar Day	MAX - 16.93 lb(August 2017)	Yes	FGPACKAGING
Pyridine	1.75 lb/day		MAX - 0.47 lb(January 2018)	Yes	

**FGSTILLS**

This Flexible group consists of ten (10) various size batch distillation units (EUS-5STILL, EUS-6STILL, EUS-7STILL, EUS-8STILL, EUS-9STILL, EUS-10STILL, EUS-11STILL, EUS-12STILL, EUS-13STILL, EUS-14STILL) used for processing various chemicals. Per SC III.2 - 4, benzene, carbon tetrachloride, and ethylene dichloride are not processed in EUS-8STILL, EUS-13STILL EUS-14STILL. Stills EUS-5STILL, EUS-6STILL, EUS-7STILL, EUS-8STILL, EUS-9STILL, EUS-10STILL, EUS-11STILL, EUS-12STILL, EUS-13STILL and EUS-14STILL appear to be operated properly and are equipped with temperature and pressure indicators as required

in SC FGSTILLS IV.1-5 and SC FGSTILLS VI.3. The condensers on Stills EUS-8STILL, EUS13STILL and EUS-14STILL are required to be operated at the following temperatures when venting through the secondary condenser:

- EUS-8STILL: 0°C or less for chloroform and 10°C or less for 1,4-dioxane
- EUS-13STILL: -30°C
- EUS-14STILL: -25°C

Based on observations made during this inspection, discussions with Ms. Pibuladhanapatana and records included in Attachment A, Stills EUS-8STILL, EUS13STILL and EUS-14STILL appear to properly operated per SC FGSTILLS IV.3, IV.4 and IV.5. The materials used in the stills are consistent with the materials described in the permit application.

The following records were provided as required by SC FGSTILLS VI.1-15 of the PTI (**Attachment A**) and summarized in the table below:

- Batch records
- Monthly and annual emissions of VOC, 1,4-dioxane, and chloroform.

Pollutant	Limit	Time Period/Operating Scenario	Actual Emissions	Within limit	Equipment
VOC	1.0 tpy (per still listed under equipment)	12-month rolling	3 lb (0.0015 tons) 0.14 tons 0.22 tons 0.31 tons	Yes	EUS5STILL, EUS6STILL, EUS7STILL EUS9STILL
	1.83 tpy		0.12 tons	Yes	EUS10STILL
	0.8 tpy		0.26 tons	Yes	EUS11STILL
	3.5 tpy		0.02 tons	Yes	EUS12STILL
1,4-dioxane	0.86 lb/batch	Duration of batch	* 0.04 lb/0.15 batches = 0.27 lb/batch (December 2017)	Yes	EUS8STILL
	304 lb/yr	12-month rolling	0.07 lb	Yes	
VOC	1.5 tpy		0.07 tons	Yes	
Chloroform	3.46 lb/batch	Duration of batch	* 6.68 lb/1.98 batches = 3.37 lb/batch (December 2017)	Yes	
	1,414 lb/yr	12-month rolling	24.65 lb	Yes	
Methylene chloride	6.9 lb/batch	Duration of batch	* 39.26 lb/11.17 batches = 3.51 lb/batch (November 2017)	Yes	
Chloroform	2.5 lb/batch	12-month rolling	0.00 lb	Yes	
	858.5 lb/yr		0.00 lb (0.00 tons)	Yes	
VOC (excluding methylene chloride)	12.4 lb/batch	Duration of batch	0.00 lb	Yes	EUS14STILL
Methylene chloride	6.9 lb/batch		0.00 lb	Yes	
VOC (excluding methylene chloride)	12.4 lb/batch		* 34.5 lb/72 batches = 0.48 lb/batch	Yes	

\* This is for review purposes only and represents a monthly average. Ms. Pibuladhanapatana indicated that compliance with these limits is maintained through administrative controls. Charging records were provided which are used to determine the amount of material that can be used to ensure compliance with the lb/batch limits.

**FGFACILITY**

Hazardous waste is stored in tank 16 and eventually disposed of. Per Mr. Brenton, Manufacturers Technical Data sheets are used to determine the HAP contents of all materials used and an outside consultant is used to

track all emissions. Tracking spreadsheets are updated monthly. These spreadsheets were readily available and are included in **Attachment A**.

Honeywell tracks the following monthly and annual data as required in SC FGFACILITY VI.1-3

- Liters, gallons or pounds of each HAP and VOC containing material used.
- Where applicable, liters, gallons or pounds of each HAP and VOC containing material reclaimed.
- HAP & VOC content, in lbs/liter, lbs/gallon or lbs/pound, of each HAP and VOC containing material used.
- VOC emission calculations

Pollutant	Limit (tpy)	Time period/Operating Scenario	Actual Emissions (tons)	Within limit
Each Individual HAP	< 9.0	12-month rolling	0.73 (Methanol)	Yes
Aggregate HAPs	< 22.5		2.51	Yes
VOC	< 89.0		4.13	Yes

Material	Limit (liters/yr)	Time period/Operating Scenario	Actual Material Used(liters)	Within limit
VOC	40,000,000	12-month rolling	3,004,656	Yes
HAP - Level 1: acetone methanol methylene chloride	5,000,000 per chemical in this level		636,909 774,031 508,359	Yes
HAP - Level 2: - Hexane - Toluene	2,000,000 per chemical in this level		282,068 141,817	Yes
HAP - Level 3: All other HAPs	400,000 per chemical in this level		MAX = 32,192 (Chloroform)	Yes

**OTHER REQUIREMENTS**

Honeywell is considered an Area Source for HAP emissions and operates a chemical manufacturing processing unit (CMPU) that utilizes materials listed on Table 1 (Chloroform and Methylene chloride) of the National Emission Standards for Hazardous Air Pollutants (NESHA) 40 CFR Part 63, Subpart VVVVVV for Chemical Manufacturing Area Sources, Therefore the CMPU's are subject to the requirements of this subpart. Ethylene dichloride is also on the list but is no longer processed at this facility. The AQD currently has delegation for this area source MACT and received Honeywell's Initial Notification, as required by 40 CFR Part 63.9(b)(2)(iv), on February 26, 2010. The notification states that the process tanks, CMPU batch vents and transfer operations are subject to this subpart. In order to comply with the requirements of this MACT and opt-out of obtaining a Title V permit, Honeywell accepted throughput limits for the processing of these materials. The uncontrolled HAP emissions from these processes are below the major source threshold.

Material	Annual Emissions (August 2017 through July 2018)		
	Still 8	Still 13	Still 14
Chloroform (lbs.)	24.65	0.00	0.00
Methylene Chloride (lbs.)	0.00	291.78	Not Allowed

**F) Rule 201 Exempt Equipment/Processes**

Honeywell operates two (2) identical 4,000,000 Btu/hr natural gas only boilers and has elected to operate them under Rule 282(2)(b)(i), exempting the equipment from Rule 201 permitting requirements. The boilers are less than 10,000,000 Btus/hr, therefore not subject to New Source Performance Standards, 40 CFR Part 60, Subpart Dc for *Small Industrial-Commercial-Institutional Steam Generating Units*. Emission Records are included in **Attachment A**.

The following equipment/processes are also exempt from Rule 201 permitting requirements under Rule 290 exemptions. Emission records were provided and are included in **Attachment A**. All appear to be within the correct monthly emission limit noted on the records.

- Vacuum Pumps
- R2, R4, & R5
- Tank Farm Hose Dry
- Novpak Puller

- Carbon Treatment
- Acetone Tank (T-A2)

**G) MAERS**

Emissions data for 2017 was submitted by Honeywell on time and complete with no issues noted. CR reviewed and passed the submittal on April 12, 2018. A copy of the 2017 MAERS report is included in **Attachment C** and summarized below.

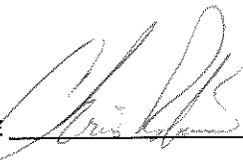
Pollutant	Amount (lb.)
VOC	8,608.59
Acetone	2,923.92
Methylene Cl	1,000.47

**III. Compliance Determination**

Based on the observations made during this inspection and a subsequent records review, Honeywell appears to be in compliance with PTI No's. 554-80, 26-88, 833-91, 76-05B and other applicable air quality rules and regulations.

Attachments

- A - Emission Records
- B - Material Shipment Summary
- C - 2017 MAERS Report
- D - Email Correspondence

NAME 

DATE 9/18/2018

SUPERVISOR 