Public Notice

# DEQ Requests Comments on W.R. Grace & Co. – Conn. Proposed Air Quality Permit

The Oregon Department of Environmental Quality invites the public to submit written comments on the conditions of W.R. Grace & Co. – Conn. proposed air quality permit, known officially as a Standard Air Contaminant Discharge Permit.

### Summary

The proposed permit is a renewal of the facility's existing air contaminant discharge permit.

The original proposed permit was issued for public comment on Sept. 13, 2016. Errors were found in the greenhouse gas emission calculations. This revised version replaces the original.

### How do I participate?

To submit your comments for the public record, send them by mail, fax or email:

DEQ Western Region
Patty Hamman – Permit Coordinator
4026 Fairview Industrial Dr. SE
Salem, OR 97302

**Fax:** 503-378-4196
**Email:** hamman.patricia@deq.state.or.us

Written comments are due by 5 p.m. Oct. 31, 2016

### About the facility

W.R. Grace & Co. – Conn. is at 1290 Industrial Way SW in Albany, Oregon.

The permittee manufactures chemicals (e.g., specialty catalyst products and intermediates) used in the pharmaceutical, plastic and other industries. VOC emissions are released during the manufacturing process. In addition, natural gas is combusted in two small boilers to provide steam to the process.

Air emissions from activities at this facility include carbon monoxide, nitrogen oxides and volatile organic compounds.

The proposed permit replaces an existing permit issued in October 2011.

### What air pollutants would the permit regulate?

This permit regulates emissions of the pollutants listed in the table at the end of this document.

### How does DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants and the facility's location, and determines permit requirements according to state and federal regulations.

### What special conditions are in this permit?

There are no special conditions within this permit.

### How does DEQ monitor compliance with the permit requirements?

This permit would require the facility to monitor pollutants using federally approved monitoring practices and standards.

The facility is required to keep records of plant production on a monthly and annual basis, as well as track emissions of volatile organic compounds and hazardous air pollutants.

Formulas to calculate emissions are contained in the permit. The permittee is required to calculate facility-wide emissions and submit an annual emissions report, which is reviewed for Plant Site Emissions Limit compliance. Onsite inspections will be conducted to observe the operation and to review recordkeeping documents as required by the permit.

### What happens after the public comment period ends?

DEQ will consider and provide responses to all comments received by the close of the comment period. DEQ may modify the proposed permit based on the comments received, but DEQ can only modify conditions of the permit in accordance with the rules and statutes under the authority given to the DEQ. If the facility meets all legal requirements, DEQ will issue the facility's air quality permit.

State of Oregon
Department of Environmental Quality

**Western Region**
4026 Fairview Industrial Drive SE
Salem, OR 97302
Phone: 503-378-8240
800-349-7677
Fax: 503-378-4196
Contact:
Suzanne Blackburn

www.oregon.gov/DEQ

*Search for Public Notices – W.R. Grace*

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Please include your full name and mailing address so that we can remove you from our print mailing list.

### Where can I get more information?

Find out more and view the permit documents below or contact Patty Hamman, Permit Coordinator:

**Phone:** 503-378-5305 or 800-349-7677
**Fax:** 503-378-4196
**Email:** hamman.patricia@deq.state.or.us

View the application and related documents in person at the DEQ office in Salem or at the Albany Public Library at 2450 14th Avenue SE. For a review appointment, call Patty Hamman at 503-378-5305.

### Accessibility information

DEQ is committed to accommodating people with disabilities. Please notify DEQ of any special physical or language accommodations or if you need information in large print, Braille or another format.

To make these arrangements, contact DEQ Communications and Outreach in Portland at 503-229-5696 or call toll-free in Oregon at 800-452-4011; fax to 503-229-6762; or email deqinfo@deq.state.or.us.

People with hearing impairments may call 711.

## Emissions limits

**Criteria Pollutants:** Table 1 below presents maximum allowable emissions of criteria pollutants for the facility. The current emission limit reflects maximum emissions the facility can emit under the existing permit. The proposed emission limit reflects maximum emissions the facility would be able to emit under the proposed permit. Typically, a facility's actual emissions are less than maximum limits established in a permit; however, actual emissions can increase up to the permitted limit.

**Table 1**

| Criteria Pollutant | Current Limit (tons/yr) | Proposed Limit (tons/yr) |
|---|---|---|
| Nitrogen oxides (NOx) | 39 | 39 |
| Carbon monoxide (CO) | 99 | 99 |
| Volatile organic compounds (VOC) | 70 | 70 |
| GHG ($CO_2e$) | - - - | 74,000 |
| Single HAP (Hexane) | 9 | 9 |
| Combined HAPs | 24 | 24 |

For more information about criteria pollutants, go to: www.epa.gov/criteria-air-pollutants

GHG emissions have been deemed regulated pollutants by the EPA since the last permit renewal in 2011. The pollutant has existed in the past, but was not been specifically regulated until recently

**Hazardous air pollutants:** The facility is not a major source of hazardous air pollutants, however EPA has determined that businesses similar to this facility, as a group, emit enough hazardous air pollutants to warrant regulation.

Therefore, this source is subject to the following National Emission Standard for Hazardous Air Pollutants: 6V - Chemical Manufacturing Area Sources. Table 2 summarizes the hazardous air pollutant emissions. More detailed information can be found in the review report.

**Table 2**

| Hazardous Air Pollutants | Potential Emissions (tons/yr) |
|---|---|
| Hexane | 4.6 |
| Methyl t-Butyl Ether | 3.3 |
| Methylene Chloride | 0.3 |
| Chloroform | 0.3 |
| All other HAPs | 3.4 |
| **HAPs Total** | **11.9** |

For more information about hazardous air pollutants, go to: www.epa.gov/ttn/atw/hlthef/hapindex.html

State of Oregon
Department of
Environmental
Quality

# STANDARD
# AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
Western Region
4026 Fairview Industrial Drive SE
Salem, OR 97302

This permit is being issued in accordance with the provisions of ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

W.R. Grace & Co. - Conn.
7500 Grace Dr.
Columbia, MD 21044

INFORMATION RELIED UPON:

Application No.: 28512
Date Received: 2/1/16
Additional Information Received: 5/27/16, 6/3/16, 6/9/16, 7/15/16, 8/4/16, 8/8/16, 8/10/16 and 9/1/16

PLANT SITE LOCATION:

1290 Industrial Way SW
Albany, OR 97322

LAND USE COMPATIBILITY FINDING:

Approving Authority: City of Albany
Approval Date: 01/29/1996

**ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY**

_____ _____
Claudia Davis, Western Region Air Quality Manager Dated

Source(s) Permitted to Discharge Air Contaminants (OAR 340-216-8010):

| Table 1 Code | Source Description | SIC |
|---|---|---|
| Part B, 57 | Organic or Inorganic Chemical Manufacturing | 2833, 2869, 2819 |

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# 1.0 GENERAL EMISSION STANDARDS AND LIMITS

**1.1. Visible Emissions**

The permittee must comply with the following visible emission limits from air contaminant sources other than fugitive emission sources, as applicable. Opacity must be measured as a six-minute block average using EPA Method 9, a continuous opacity monitoring system (COMS) installed and operated in accordance with the DEQ Continuous Monitoring Manual or 40 CFR part 60, or an alternative monitoring method approved by DEQ that is equivalent to EPA Method 9.

a. Emissions from any air contaminant source must not equal or exceed 20% opacity.

**1.2. Particulate Matter Emissions**

The permittee must comply with the following particulate matter emission limits, as applicable:

a. Particulate matter emissions from any fuel burning equipment must not exceed 0.14 grains per dry standard cubic foot, corrected to 12% $CO_2$ or 50% excess air.

b. Particulate matter emissions from any air contaminant source other than fuel burning equipment and fugitive emission sources must not exceed 0.14 grains per standard cubic foot.

**1.3. Fugitive Emissions**

The permittee must take reasonable precautions to prevent fugitive dust emissions, as measured by EPA Method 22, by:

a. Operating all air contaminant generating processes so that fugitive emissions associated with the operation will be adequately controlled at all times.

b. Treating vehicular traffic areas of the plant site under the control of the permittee.

c. Using, where possible, water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.

**1.4. Particulate Matter Fallout**

The permittee must not cause or permit the deposition of any particulate matter larger than 250 microns in size at sufficient duration or quantity, as to create an observable deposition upon the real property of another person.

**1.5. Nuisance and Odors**

The permittee must not cause or allow air contaminants from any source to cause a nuisance. Nuisance conditions will be verified by DEQ personnel.

# 2.0 NESHAPS REQUIREMENTS

**2.1. National Emission Standards for Hazardous Air Pollutants**

National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart VVVVVV (6V) – Chemical Manufacturing Area Sources, is applicable to some parts of the manufacturing operations at this source. The sections that currently apply to this source are: 40 CFR 63.11494 through 63.11496, 63.11498 and 63.11501.

Federal requirements apply to each chemical manufacturing process unit (CMPU) that is located at an area source of hazardous air pollutant emissions. The HAP listed in 40 CFR Part 63, Subpart VVVVVV Table 1 are present as a feedstock in the CMPU. A CMPU includes all process vessels, equipment and activities necessary to operate a chemical manufacturing process. A CMPU consists of one or more unit operations and any associated recovery device, storage tank, transfer operation, surge control vessel and bottoms receiver associated with the production of materials. The full text of the federal standard is found in 40 CFR Part 63, Subpart VVVVVV. [40 CFR 63.11494]

**2.2. Management Practices and Other Requirements**

a. The permittee has a CMPU subject to 40 CFR 63, Subpart VVVVVV. The permittee must comply with 40 CFR 63.11495 (a)(1) through (5). [40 CFR 63.11495(a)]

b. Each process vessel must be equipped with a cover or lid that must be closed at all times when it is in organic HAP service or metal HAP service, except for manual operations that require access, such as material addition and removal, inspection, sampling and cleaning. This requirement does not apply to process vessels containing only metal HAP that are in a liquid solution or other form that will not result in particulate emissions of metal HAP. [40 CFR 63.11495(a)(1)]

c. The permittee must use submerged loading or bottom loading for transferring liquids containing Table 1 organic HAP to tank trucks or railcars. [40 CFR 63.11495(a)(2)]

d. The permittee must conduct inspections of process vessels and equipment for each CMPU in organic HAP service or metal HAP service to determine that the process vessels and equipment are sound and free of leaks. [40 CFR 63.11495(a)(3)]

   i. The inspections must be conducted at least quarterly. [40 CFR 63.11495(a)(3)(i)]

   ii. For these inspections, detection methods incorporating sight, sound, or smell are acceptable. Indications of a leak identified using such methods constitute a leak unless the permittee demonstrates that the indications of a leak are due to a condition other than loss of HAP. [40 CFR 63.11495(a)(3)(ii)]

iii. These inspections must be conducted while the CMPU is operating. [40 CFR 63.11495(a)(3)(iv)]

iv. No inspection is required in a calendar quarter during which the CMPU does not operate for the entire calendar quarter and is not in organic HAP service or metal HAP service. If the CMPU operates at all during a calendar quarter, an inspection is required. [40 CFR 63.11495(a)(3)(v)]

e. The permittee must repair any leak within 15 calendar days after detection of the leak, or document the reason for any delay of repair. A leak will be considered "repaired" if a condition specified in the following list is met. [40 CFR 63.11495(a)(4)(i) – (iii)]

i. The visual, audible, olfactory, or other indications of a leak to the atmosphere have been eliminated, or

ii. No bubbles are observed at potential leak sites during a leak check using soap solution, or

iii. The system will hold a test pressure.

f. The permittee must keep records of the dates and results of each inspection event, the dates of equipment repairs, and, if applicable, the reasons for any delay in repair. [40 CFR 63.11495(a)(5)]

g. For each small heat exchange system with a cooling water flow rate less than 8,000 gallons per minute and not meeting one or more of the conditions in 40 CFR 63.104(a), the permittee must comply with 40 CFR 63.11495(b)(1) through (3) below. [40 CFR 63.11495(b)]

i. The permittee must develop and operate in accordance with a heat exchange system inspection plan. The plan must describe the inspections to be performed that will provide evidence of hydrocarbons in the cooling water. The permittee must conduct inspections at least once per quarter, even if the previous inspection determined that the indications of a leak did not constitute a leak as defined by 40 CFR 63.104(b)(6). [40 CFR 63.11495(b)(1)]

ii. The permittee must perform repairs to eliminate the leak and any indications of a leak or demonstrate that the HAP concentration in the cooling water does not constitute a leak, as defined by 40 CFR 63.104(b)(6), within 45 calendar days after indications of the leak are identified, or they must document the reason for any delay of repair in their next semiannual compliance report. [40 CFR 63.11495(b)(2)]

iii. The permittee must keep records of the dates and results of each inspection, documentation of any demonstrations that indications of a leak do not constitute a leak, the dates of leak repairs, and, if applicable, the reasons for any delay in repair. [40 CFR 63.11495(b)(3)]

h. Startup, shutdown, and malfunction (SSM) provisions in subparts that are referenced in 40 CFR 63.11495 (a) and (b) do not apply. [40 CFR 63.11495(c)]

i. At all times, the permittee must operate and maintain any affected CMPU, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. [40 CFR 63.11495(d)]

**2.3. Standards and Compliance Requirements for Process Vents**

a. The permittee must comply with the requirements in 40 CFR 63.11496 (a)(1) through (4) for organic HAP emissions from their batch process vents for each CMPU using 40 CFR Part 63, Subpart VVVVVV Table 1 organic HAP. If uncontrolled organic HAP emissions from all batch process vents from a CMPU subject to 40 CFR Part 63, Subpart VVVVVV are equal to or greater than 10,000 lb/yr, the permittee must also comply with the emission limits and other requirements in 40 CFR Part 63, Subpart VVVVVV Table 2. [40 CFR 63.11496(a)]

b. The permittee must determine the sum of actual organic HAP emissions from all of their batch process vents within a CMPU subject to 40 CFR Part 63, Subpart VVVVVV using process knowledge, engineering assessment, or test data. Emissions for a standard batch in a process may be used to represent actual emissions from each batch in that process. The permittee must maintain records of the calculations. Calculations of annual emissions are <u>not</u> required if the permittee meets the emission standards for batch process vents in 40 CFR Part 63, Subpart VVVVVV Table 2. [40 CFR 63.11496(a)(1)]

c. As an alternative to calculating actual emissions for each affected CMPU at their facility, the permittee may elect to estimate emissions for each CMPU based on the emissions for the worst-case CMPU. The worst-case CMPU means the CMPU with the highest organic HAP emissions per batch. The worst-case emissions per batch are used with the number of batches run for other affected CMPU. Process knowledge, engineering assessment, or test data may be used to identify the worst-case process. The permittee must keep records of the information and procedures used to identify the worst-case process. [40 CFR 63.11496(a)(2)]

d. If the permittee's current estimate is that emissions from batch process vents from a CMPU are less than 10,000 lb/yr, then they must keep a record of the number of batches of each process operated per month. Also, they must reevaluate their total emissions from batch process vents prior to making any process changes that affect emission calculations in 40 CFR 63.11496(a)(1) and (2). If projected emissions increase to 10,000 lb/yr or more, the permittee must be in compliance with options for batch process vents in 40 CFR Part 63, Subpart VVVVVV Table 2 upon initiating operation under the new operating conditions. The permittee must maintain records documenting the results of all updated emissions calculations. [40 CFR 63.11496(a)(3)]

e. As an alternative to determining the HAP emissions, the permittee may elect to demonstrate that the amount of organic HAP used in the process is less than 10,000 lb/yr. The permittee must keep monthly records of the organic HAP usage. [40 CFR 63.11496(a)(4)]

**2.4. Standards and Compliance Requirements for Wastewater Systems**

a. The permittee must comply with the requirements of 40 CFR 63.11498(a)(1) and of 40 CFR Part 63, Subpart VVVVVV Table 6, Item 1 for all wastewater streams from a CMPU. [40 CFR 63.11498(a)]

b. If the partially soluble HAP concentration in a wastewater stream is equal or greater than 10,000 ppmw and the wastewater stream contains a separate organic phase, then the permittee must also comply with 40 CFR Part 63, Subpart VVVVVV Table 6, Item 2 for that wastewater stream. [40 CFR 63.11498(a)]

c. For each wastewater stream, the permittee must discharge to onsite or offsite wastewater treatment or hazardous waste treatment. The permittee must maintain records identifying each wastewater stream and the type of treatment that it receives. [40 CFR Part 63, Subpart VVVVVV Table 6, Item 1]

d. The permittee must determine the total concentration of partially soluble HAP in each wastewater stream using process knowledge, engineering assessment, or test data. The permittee must reevaluate the concentration of partially soluble HAP in each wastewater stream if they make any process or operational change that affects the concentration of partially soluble HAP in a wastewater stream. [40 CFR 63.11498(a)(1)]

**2.5. Recordkeeping Requirements**

a. The permittee must maintain files of all information required by 40 CFR Part 63, Subpart VVVVVV for at least 5 years following the date of each occurrence. [40 CFR 63.11501(c)]

b. For each CMPU subject to 40 CFR Part 63, Subpart VVVVVV, the permittee must keep the records specified in 40 CFR 63.11501 (c)(1)(i) through (viii) below. [40 CFR 63.11501(c)(1)]

i. Records of management practice inspections, repairs, and reasons for any delay of repair, as specified in 40 CFR 63.11495(a)(5).

ii. Records of small heat exchange system inspections, demonstrations of indications of leaks that do not constitute leaks, repairs, and reasons for any delay in repair as specified in 40 CFR 63.11495(b).

iii. If batch process vent emissions are less than 10,000 lb/yr for a CMPU, records of batch process vent emission calculations, as specified in 40 CFR 63.11496(a)(1), the number of batches operated each month, as specified in 40 CFR 63.11496(a)(3), and any updated emissions calculations, as specified in 40 CFR 63.11496(a)(3).

# 3.0 PLANT SITE EMISSION LIMITS

**3.1. Plant Site Emission Limits (PSEL)**

The permittee must not cause or allow plant site emissions to exceed the following:

| Pollutant | Limit | Units |
|---|---|---|
| $NO_X$ | 39 | tons per year |
| CO | 99 | tons per year |
| VOC | 70 | tons per year |
| GHGs ($CO_2e$) | 74,000 | tons per year |
| Single HAP (Hexane) | 9 | tons per year |
| Combined HAPs | 24 | tons per year |

**3.2. Annual Period**

The annual plant site emissions limits apply to any 12-consecutive calendar month period.

# 4.0 COMPLIANCE DEMONSTRATION

**4.1. PSEL Compliance Monitoring**

The permittee must demonstrate compliance with the PSEL for each 12-consecutive calendar month period based on the following calculations for each pollutant except GHGs:

$$\mathbf{E_{NOx\ or\ CO} = \Sigma\ [(EF \times P)/2000\ lbs]}$$

where:

$E_{NOx\ or\ CO}$ = NOx or CO emissions (ton/yr)
EF = NOx or CO emission factor (see Condition 11.0)
P = process production (see Condition 12.0)

$$\mathbf{E_{VOC} = \Sigma\ ([(EF \times P)/2000\ lbs] + [E_{VOC\ CALC}])}$$

where:

$E_{VOC}$ = VOC emissions (ton/yr)
EF = pollutant emission factor (see Condition 11.0)
P = process production (see Condition 12.0)
$E_{VOC\ CALC}$ = VOC emissions calculated in accordance with Condition 4.3 (tons/yr)

$$\mathbf{E_{HAP} = \Sigma\ [E_{HAP\ CALC}]}$$

where:

$E_{HAP}$ = HAP emissions for each HAP pollutant (ton/yr)
$E_{HAP\ CALC}$ = HAP emissions calculated in accordance with Condition 4.3 (tons/yr)

**4.2. Emission Factors**

The permittee must use the default emission factors for the emission devices or activities listed in Condition 11.0. The default emission factors shall be used for calculating pollutant emissions, unless alternative emission factors are approved by DEQ. The permittee may request or DEQ may require using alternative emission factors provided they are based on actual test data or other documentation (e.g., AP-42 compilation of emission factors) that has been reviewed and approved by DEQ.

**4.3. Process VOC and HAP Emission Calculations**

The permittee must use the "Emission Master", or some other DEQ approved software program, to calculate the VOC and HAP emissions generated from the chemical manufacturing processes at the facility. The Emission Master software program calculates VOC and HAP emissions for batch and continuous processes using EPA equations found in EIIP, Volume 2, Chapter 16, *Methods for Estimating Air Emissions from Chemical Manufacturing Facilities.* Actual solvent usage data is entered into the Emission Master program.

## 5.0 RECORDKEEPING REQUIREMENTS

**5.1. Operation and Maintenance**

The permittee must maintain the following records related to the operation and maintenance of the plant and associated air contaminant control devices:

a. PSEL monitoring records;
b. Production data in Condition 12.0;
c. Leak inspection logs in Condition 2;
d. Leak repair logs in Condition 2.

**5.2. Excess Emissions**

The permittee must maintain records of excess emissions as defined in OAR 340-214-0300 through 340-214-0340 (recorded on occurrence). Typically, excess emissions are caused by process upsets, startups, shutdowns, or scheduled maintenance. In many cases, excess emissions are evident when visible emissions are greater than 20% opacity as a six-minute block average. If there is an ongoing excess emission caused by an upset or breakdown, the permittee must cease operation of the equipment or facility no later than 48 hours after the beginning of the excess emissions, unless continued operation is approved by DEQ in accordance with OAR 340-214-0330(4).

**5.3. Complaint Log**

The permittee must maintain a log of all written complaints and complaints received via telephone that specifically refer to air pollution concerns associated to the permitted facility. The log must include a record of the permittee's actions to investigate the validity of each complaint and a record of actions taken for complaint resolution.

**5.4. Retention of Records** Unless otherwise specified, the permittee must retain all records for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application and make them available to DEQ upon request. The permittee must maintain the two (2) most recent years of records onsite.

## 6.0 REPORTING REQUIREMENTS

**6.1. Excess Emissions** The permittee must notify DEQ of excess emissions events if the excess emission is of a nature that could endanger public health.

a. Such notice must be provided as soon as possible, but never more than one hour after becoming aware of the problem. Notice must be made to the regional office identified in Condition 9.0 by email, telephone, facsimile, or in person.

b. If the excess emissions occur during non-business hours, the permittee must notify DEQ by calling the Oregon Emergency Response System (OERS). The current number is 1-800-452-0311.

c. The permittee must also submit follow-up reports when required by DEQ.

**6.2. Annual Report** For each year this permit is in effect, the permittee must submit to DEQ by **March 1** two (2) copies of the following information for the previous calendar year:

a. Operating parameters:

i. Natural gas consumption, monthly and annually;

ii. Wastewater processed, monthly and annually;

iii. Total chemicals used in labs, monthly and annually;

iv. Total chemicals transferred from tanks to tanker trucks, monthly and annually;

v. Leak inspection logs;

vi. Leak repair logs.

b. A summary of pollutant emissions determined each month in accordance with Condition 4.0. Emissions reported for each month of the year. Emissions reported for the rolling 12-consecutive calendar month period.

c. Records of all planned and unplanned excess emissions events.

d. Summary of complaints relating to air quality received by permittee during the year.

e. List permanent changes made in plant process, production levels, and pollution control equipment which affected air contaminant emissions.

f. List major maintenance performed on pollution control equipment.

**6.3. Greenhouse Gas Registration and Reporting**

If the calendar year emission rate of greenhouse gases ($CO_2e$) is greater than or equal to 2,756 tons (2,500 metric tons), the permittee must register and report its greenhouse gas emissions with DEQ in accordance with OAR 340-215.

**6.4. Notice of Change of Ownership or Company Name**

The permittee must notify DEQ in writing using a Departmental "Transfer Application Form" within 60 days after the following:

a. Legal change of the name of the company as registered with the Corporations Division of the State of Oregon; or

b. Sale or exchange of the activity or facility.

**6.5. Construction or Modification Notices**

The permittee must notify DEQ in writing using a Departmental "Notice of Intent to Construct Form," or other permit application form and obtain approval in accordance with OAR 340-210-0205 through 340-210-0250 before:

a. Constructing, installing, or establishing a new stationary source that will cause an increase in any regulated pollutant emissions;

b. Making any physical change or change in operation of an existing stationary source that will cause an increase, on an hourly basis at full production, in any regulated pollutant emissions; or

c. Constructing or modifying any air pollution control equipment.

## 7.0 ADMINISTRATIVE REQUIREMENTS

**7.1. Permit Renewal Application**

The permittee must submit the completed application package for renewal of this permit **180 days prior to the expiration date (March 1, 2021)**. Two (2) copies of the application must be submitted to the DEQ Permit Coordinator listed in Condition 9.0.

**7.2. Permit Modifications**

Application for a modification of this permit must be submitted within **60 days** prior to the source modification. When preparing an application, the applicant should also consider submitting the application 180 days prior to allow DEQ adequate time to process the application and issue a permit before it is needed. A special activity fee must be submitted with an application for the permit modification. The fees and two (2) copies of the application must be submitted to the DEQ Business Office.

## 8.0 FEES

**8.1. Annual Compliance Fee**

The permittee must pay the annual fee specified in OAR 340-216-8020, Table 2, Part 2 for a Standard ACDP on **December 1** of each year this permit is in effect. An invoice indicating the amount, as determined by DEQ regulations will be mailed prior to the above date. **Late fees in accordance with Part 4 of the table will be assessed as appropriate.**

**8.2. Change of Ownership or Company Name Fee**

The permittee must pay the non-technical permit modification fee specified in OAR 340-216-8020, Table 2, Part 3(a) with an application for changing the ownership or the name of the company.

**8.3. Special Activity Fees**

The permittee must pay the special activity fees specified in OAR 340-216-8020, Table 2, Part 3 (b through i) with an application to modify the permit.

## 9.0 DEQ CONTACTS / ADDRESSES

**9.1. Business Office**

The permittee must submit payments for invoices, applications to modify the permit, and any other payments to DEQ's Business Office:

Department of Environmental Quality
Accounting / Revenue
811 SW Sixth Avenue
Portland, Oregon 97204-1390

**9.2. Permit Coordinator**

The permittee must submit all notices and applications that do not include payment to the Western Region's Permit Coordinator:

4026 Fairview Industrial Drive SE
Salem, OR 97302

**9.3. Report Submittals**

Unless otherwise notified, the permittee must submit all reports (annual reports, source test plans and reports, etc.) to DEQ's Western Region. If you know the name of the Air Quality staff member responsible for your permit, please include it:
Western Region
4026 Fairview Industrial Drive SE
Salem, OR 97302

**9.4. Web Site**

Information about air quality permits and DEQ's regulations may be obtained from the DEQ web page at www.deq.state.or.us

# 10.0 GENERAL CONDITIONS AND DISCLAIMERS

| | | |
|---|---|---|
| **10.1.** | **Permitted Activities** | This permit allows the permittee to discharge air contaminants from processes and activities related to the air contaminant source(s) listed on the first page of this permit until this permit expires, is modified, or is revoked. |
| **10.2.** | **Other Regulations** | In addition to the specific requirements listed in this permit, the permittee must comply with all other legal requirements enforceable by DEQ. |
| **10.3.** | **Conflicting Conditions** | In any instance in which there is an apparent conflict relative to conditions in this permit, the most stringent conditions apply. |
| **10.4.** | **Masking of Emissions** | The permittee must not cause or permit the installation of any device or use any means designed to mask the emissions of an air contaminant that causes or is likely to cause detriment to health, safety, or welfare of any person or otherwise violate any other regulation or requirement. |
| **10.5.** | **DEQ Access** | The permittee must allow DEQ's representatives access to the plant site and pertinent records at all reasonable times for the purposes of performing inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emissions discharge records and conducting all necessary functions related to this permit in accordance with ORS 468-095. |
| **10.6.** | **Permit Availability** | The permittee must have a copy of the permit available at the facility at all times. |
| **10.7.** | **Open Burning** | The permittee may not conduct any open burning except as allowed by OAR 340, division 264. |
| **10.8.** | **Asbestos** | The permittee must comply with the asbestos abatement requirements in OAR 340, division 248 for all activities involving asbestos-containing materials, including, but not limited to, demolition, renovation, repair, construction, and maintenance. |
| **10.9.** | **Property Rights** | The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. |

**10.10. Permit Expiration**

a. A source may not be operated after the expiration date of the permit, unless any of the following occur prior to the expiration date of the permit:

i. A timely and complete application for renewal or for an Oregon Title V Operating Permit has been submitted, or

ii. Another type of permit (ACDP or Oregon Title V Operating Permit) has been issued authorizing operation of the source.

b. For a source operating under an ACDP or Oregon Title V Operating Permit, a requirement established in an earlier ACDP remains in effect notwithstanding expiration of the ACDP, unless the provision expires by its terms or unless the provision is modified or terminated according to the procedures used to establish the requirement initially.

**10.11. Permit Termination, Revocation, or Modification**

DEQ may modify or revoke this permit pursuant to OAR 340-216-0082 and 340-216-0084.

## 11.0 EMISSION FACTORS

| Emissions device or activity | Pollutant | Emission Factor (EF) | EF units | EF Reference |
|---|---|---|---|---|
| Boilers | CO | 84 | lb/MMft$^3$ natural gas combusted | DEQ AQ-EF05 |
| | NOx | 100 | lb/MMft$^3$ natural gas combusted | DEQ AQ-EF05 |
| | VOC | 5.5 | lb/MMft$^3$ natural gas combusted | DEQ AQ-EF05 |
| Wastewater Treatment (PACT) | VOC | 0.0001 | ton/ton wastewater processed | W.R. Grace Engineering Calculation |
| Labs | VOC | 0.0054 | ton/ton chemicals used in labs | W.R. Grace Engineering Calculation |
| Product Transfer from Tanks to Tanker Trucks | VOC | 0.0006 | ton/ton chemicals transferred to tanker trucks | W.R. Grace Engineering Calculation |

## 12.0 PROCESS/PRODUCTION RECORDS

| Emissions device or activity | Process or production parameter | Frequency |
|---|---|---|
| Boilers | Natural gas consumption (ft$^3$) | Monthly, Annually |
| Wastewater Treatment (PACT) | Wastewater processed (tons) | Monthly, Annually |
| Labs | Chemicals used in labs (tons) | Monthly, Annually |
| Product Transfer from Tanks to Tanker Trucks | Chemicals transferred from tanks to tanker truck (tons) | Monthly, Annually |

# 13.0 ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

| | |
|---|---|
| ACDP | Air Contaminant Discharge Permit |
| ASTM | American Society for Testing and Materials |
| AQMA | Air Quality Maintenance Area |
| calendar year | The 12-month period beginning January 1st and ending December 31st |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| $CO_2e$ | carbon dioxide equivalent |
| DEQ | Oregon Department of Environmental Quality |
| dscf | dry standard cubic foot |
| EPA | US Environmental Protection Agency |
| FCAA | Federal Clean Air Act |
| Gal | gallon(s) |
| GHG | greenhouse gas |
| gr/dscf | grains per dry standard cubic foot |
| HAP | Hazardous Air Pollutant as defined by OAR 340-244-0040 |
| I&M | inspection and maintenance |
| lb | pound(s) |
| MMBtu | million British thermal units |
| NA | not applicable |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| $NO_X$ | nitrogen oxides |
| NSPS | New Source Performance Standard |
| NSR | New Source Review |
| $O_2$ | oxygen |
| OAR | Oregon Administrative Rules |
| ORS | Oregon Revised Statutes |
| O&M | operation and maintenance |
| Pb | lead |
| PCD | pollution control device |
| PM | particulate matter |
| $PM_{10}$ | particulate matter less than 10 microns in size |
| $PM_{2.5}$ | particulate matter less than 2.5 microns in size |
| ppm | part per million |
| PSD | Prevention of Significant Deterioration |
| PSEL | Plant Site Emission Limit |
| PTE | Potential to Emit |
| RACT | Reasonably Available Control Technology |
| scf | standard cubic foot |
| SER | Significant Emission Rate |
| SIC | Standard Industrial Code |
| SIP | State Implementation Plan |
| $SO_2$ | sulfur dioxide |
| Special Control Area | as defined in OAR 340-204-0070 |
| VE | visible emissions |
| VOC | volatile organic compound |
| year | A period consisting of any 12-consecutive calendar months |

# STANDARD AIR CONTAMINANT DISCHARGE PERMIT REVIEW REPORT

Department of Environmental Quality
Western Region

State of Oregon Department of Environmental Quality

**Source Information:**

| | |
|---|---|
| SIC | 2833, 2869, 2819 |
| NAICS | 325411, 325199, 325180 |

| | |
|---|---|
| Source Categories (Table 1 Part, code) | Part B, 57 |
| Public Notice Category | II |

**Compliance and Emissions Monitoring Requirements:**

| | |
|---|---|
| FCE | |
| Compliance schedule | |
| Unassigned emissions | |
| Emission credits | |
| Special Conditions | |

| | |
|---|---|
| Source test [date(s)] | |
| COMS | |
| CEMS | |
| PEMS | |
| Ambient monitoring | |

**Reporting Requirements**

| | |
|---|---|
| Annual report (due date) | March 1 |
| Quarterly report (due dates) | |

| | |
|---|---|
| Monthly report (due dates) | |
| Excess emissions report | |
| Other (specify) | |

**Air Programs**

| | |
|---|---|
| Synthetic Minor (SM) | |
| SM -80 | |
| NSPS (list subparts) | |
| NESHAP (list subparts) | VVVVVV (6V) |
| Part 68 Risk Management | |
| CFC | |

| | |
|---|---|
| NSR | |
| PSD | |
| RACT | |
| TACT | |
| Other (specify) | |

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# PERMITTING

## PERMITTEE IDENTIFICATION

1. W.R. Grace & Co. – Conn., is located at 1290 Industrial Way SW, Albany.

## PERMITTING ACTION

2. The proposed permit is a renewal of an existing Air Contaminant Discharge Permit (ACDP) that was issued on 10/12/2011 and was originally scheduled to expire on 4/1/2016. The existing ACDP remains in effect until the proposed permit is issued because the permittee submitted a timely and complete application for renewal.

3. The original proposed renewal permit was issued for public comment on 9/13/16. Errors were found in the GHG emission calculations. This revised version replaces the original.

## OTHER PERMITS

4. Other permits issued or required by the DEQ for this source include:
NPDES Stormwater General Permit 1200-Z, DEQ Site ID# 100734
Hazardous Waste Generator, EPA Number OR085979474

## ATTAINMENT STATUS

5. The source is located in an attainment area for all pollutants.

6. The source is not located within 10 kilometers of any Class I Air Quality Protection Areas.

# SOURCE DESCRIPTION

## OVERVIEW

7. The permittee operates a facility that manufactures chemicals (e.g., specialty catalyst products and intermediates) used in the pharmaceutical, plastic, and other industries. Poly Organix built the facility in 1983. The facility was purchased by Synthetech in 1987. W. R. Grace purchased the facility in 2010.

   The chemical manufacturing process may be conducted in small scale (gram) or large scale (ton) batches depending on the nature of the product. Production consists of five steps – workup, reaction, isolation, drying, and packaging.

   The workup phase involves charging chemicals to vessels, mixing chemicals, and transferring chemical mixtures.

Reactions occur when workup materials and raw materials undergo molecular changes. The reactions occur in closed reactors under controlled temperatures and pressures.

Isolation involves the crystallization of products from a solution and separating the product-bearing phase from other phases.

Drying usually involves the use of centrifuges to drive solvent or aqueous filtrate out of the wetcake and subsequent heat drying of the wetcake in rotary or flat tray devices. The dried products are then packaged in containers.

Two natural gas-fired boilers provide process steam.

The Building 1 complex contains manufacturing facilities, a R&D laboratory, quality control laboratories, wastewater laboratory, packaging room, cold and warming rooms, and office spaces including offices, closets, rest rooms, and lunch room. Manufacturing operations occur at small to medium scale. Equipment includes eight reactors, one centrifuge, one dryer, multiple condensers, one scrubber, and, as needed, mobile reactors.

The Building 2 complex contains manufacturing and wastewater facilities, warehousing, and office spaces including offices, electrical room, closets, and rest rooms. Manufacturing operations occur at medium to large scale. Equipment includes eleven reactors, three centrifuges, six dryers, multiple condensers, three scrubbers, and, as needed, mobile reactors.

The Building 6 complex contains manufacturing facilities. Manufacturing operations occur at medium to large scale. Equipment includes four reactors, one dryer, multiple condensers, one scrubber, and, as needed, mobile reactors.

The Maintenance complex consists of storage spaces, utility area, cooling tower, boiler and chiller room, treated water sampling and discharge room.

The Warehouse complex consists of chemical storage areas and a freezer.

The Wastewater Treatment complex consists of a biological treatment tank (PACT), filter press for sludge removal, and associated water tanks.

The Building 2 Tank Farm consists of two tanks and a distillation column.

The West Tank Farm consists of nine tanks. The tanks handle various streams of solvents or wastewater.

8. The following changes have been made to the facility since the last permit renewal:

a. NC # 26727 Permittee requested to install a filter dryer (F-132) in the Building 1 processing room. The filter dryer replaced centrifuge C-48. This request was approved.

b. NC # 26826 Permittee requested to make the following changes:
   i. Reconfiguration of existing reactor R-212
   ii. Addition of an 8,000 gallon storage tank (T410)
   iii. Repurposing an 8,000 gallon storage tank (T406)
   iv. Addition of a process filter (F406)
   v. Addition of a process stack (Building 2 Butane Stack) specific for emissions from Butane-emitting processes.

   This request was approved.

c. NC # 27264 Permittee requested to install a chemical reactor system:
   i. Reactor R-214 (2,000 gallons)
   ii. Vapor Condenser VC-214
   iii. Receiver T214
   iv. Vacuum pump VP-214
   v. Vacuum receiver VC-214-1
   vi. Air Scrubber S-266

   This request was approved.

d. NC # 27340 Permittee requested to install a back-up natural gas fired boiler, Hurst Model 55-G-150, 150 hp. Keep primary 200 hp boiler in operation. This request was approved.

e. NC # 27404 Permittee requested to install four reactor systems to produce specialty chemicals in new Building 6:
   i. Four chemical reactors (R-601, R-602, R-603, R-604)
   ii. Four process-related vapor condensers (VC-601, VC-602, VC-603, VC-604)
   iii. Four distillate receivers (T601, T602, T603, T604)
   iv. One filter dryer (F-632) including condenser (VC-632) and distillate receiver (T632)
   v. One vacuum pump (VP-651) with pollution control condenser (VC-651) and receiver (T651);
   vi. One process vent line with pollution control condenser (VC-664)
   vii. One Air Scrubber (SC-663)

   This request was approved.

f. NC # 27628 Permittee requested to install an additional tray dryer D295 in Building 2. Emissions from the dryer are controlled by VC-255 and VC-330. This request was approved.

g. NC # 28030 Permittee requested to add S-262, a unit consisting of a venturi scrubber and a packed column scrubber, mounted together on a mobile skid. S-262 is used to scrub corrosive vapors from R-203 or R-204 process vents. This request was approved.

h. NC # 23882 In 2010, the permittee requested in to burn solvents in the boiler. This request was approved, but has since been withdrawn by the permittee.

PROCESS AND CONTROL DEVICES

9. Existing air contaminant sources at the facility consist of the following:

a. Hurst natural gas-fired boiler – 8.4 MMBtu/hour heat input, Model No. 54-X-200-150, manufactured in 1999, 28-foot tall exhaust stack. This boiler is not capable of burning a backup fuel.

b. Hurst natural gas-fired boiler – 6.3 MMBtu/hour heat input, Model No. 55-G-150-150, manufactured in 2005, 28-foot tall exhaust stack. This boiler is not capable of burning a backup fuel.

c. Building 1, Building 2 and Building 6 - Manufacturing Processes:

Reactors: Chemicals, including solvents, solids, and/or gases are charged to the reactors and agitated. The reactors may be heated, cooled, pressurized, and/or evacuated. Mixtures may be transferred from the reactors to other process equipment. VOC/HAP emissions may occur at any stage. Emissions are controlled by condensers and/or acid base scrubbers.

Centrifuges and Filtrate Tanks: Solid – liquid slurries are transferred from other process equipment to centrifuges, where the solid is separated from the liquid. Solids remain on the centrifuge and the liquid transfers to the tank. VOC/HAP emissions may occur during transfer and spin down. Emissions are controlled by condensers and/or acid or base scrubbers.

Dryers: Product wet cake is charged to the dryer. The dryer may be heated and/or evacuated. A temperature control unit uses steam from the boiler to heat water that recirculates through the dryer jacket. Dried product is transferred to drums. VOC/HAP emissions are controlled by condensers. Particulate matter emissions are controlled by a bag filter and have been determined to be minimal.

Multiple valve configurations are possible for many vessels.

A listing of the individual process devices used in Building 1, Building 2, and Building 6 is provided below.

10. Devices:

| Building 1 | | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Centrifuge | C-32 | Basket centrifuge | 1998 | B1 Scrubber |
| Reactor | SS-300 | 300-gal. stainless steel reactor with agitator and jacket | Pre-1990 | VC-300 to VC-3 to B1 Scrubber, or VC-300 to B1 Scrubber |
| Reactor | SS-100 | 100-gal. stainless steel reactor with agitator and jacket | Pre-1990 | VC-100 to VC-3 to B1 Scrubber, or VC-100 to B1 Scrubber |
| Reactor | GL-50 | 50-gal. glass-lined reactor with agitator and jacket | Pre-1990 | VC-50 to VC-3 to B1 Scrubber, or VC-50 to B1 Scrubber |
| Reactor | GL-104 | 100-gal. glass-lined reactor with agitator and jacket | Pre-1990 | VC-104 to VC-3 to B1 Scrubber, or VC-104 to B1 Scrubber |
| Reactor | GL-200 | Glass-lined 200-gallon reactor with agitator and jacket | Pre-1990 | VC-200 to VC-3 to B1 Scrubber, or VC-200 to B1 Scrubber |
| Reactor | R-001 | 20-gal. hastelloy reactor with agitator and jacket | 2016 | VC-001 to VC-3 to B1 Scrubber, or VC-001 to B1 Scrubber |
| Reactor | R-002 | 13-gal. glass-lined reactor with agitator and jacket | 2016 | VC-002 to VC-3 to B1 Scrubber, or VC-002 to B1 Scrubber |
| Reactor | R-003 | 13-gal. glass-lined reactor with agitator and jacket | 2016 | VC-003 to VC-3 to B1 Scrubber, or VC-003 to B1 Scrubber |
| Tank | T-3 | Receiving tank for VC-3 | 2013 | B1 Scrubber |
| Tank | T-32 | Filtrate tank for C-32 | 1998 | B1 Scrubber |
| Tank | R-200A | Receiver for B1 reactors | Pre-1990 | VC-3 to B1 Scrubber, or B1 Scrubber |
| Vacuum Pump | VP-100 | Vacuum pump for B1 process devices | Pre-1990 | VC-3 to B1 Scrubber |
| Dryer | FD-01 | Comber Filter Dryer | 2012 | VC-120 to VC-3 to B1 Scrubber, or VC-120 to B1 Scrubber |
| Laboratories | Lab | R&D, QA/QC, and wastewater laboratories | Pre-1990 | No controls, or VC-3 to B1 scrubber |

| Building 6 | | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Reactor | R-601 | 100-gal. Hastelloy reactor with agitator and jacket | 2013 | VC-601 to VC-621, or VC-601 to SC-663, or VC-601 to VC-651 to VC-621 or SC-663 |
| Reactor | R-602 | 500-gal. glass-lined reactor with agitator and jacket | 2013 | VC-602 to VC-621, or VC-602 to SC-663, or VC-602 to VC-651 to VC-621 or SC-663 |
| Reactor | R-603 | 300-gal. glass-lined reactor with agitator and jacket | 2013 | VC-603 to VC-621, or VC-603 to SC-663, or VC-603 to VC-651 to VC-621 or SC-663 |
| Reactor | R-604 | 200-gal. glass-lined reactor with agitator and jacket | 2013 | VC-604 to VC-621, or VC-604 to SC-663, or VC-604 to VC-651 to VC-621 or SC-663 |
| Dryer | F-632 | Cogeim Dryer | 2013 | VC-632 to VC-621, or VC-632 to SC-663 |
| Tank | T651-1 | Receiver for VC-651 | 2013 | VC-621 |
| Tank | T632-1 | Receiver for VC-632 | 2013 | VC-621, or SC-663 |
| Tank | T601 | Receiver for R-601 | 2013 | VC-621, or SC-663, or VC-651 to VC-621 or SC-663 |
| Tank | T602 | Receiver for R-602 | 2013 | VC-621, or SC-663, or VC-651 to VC-621 or SC-663 |
| Tank | T603/604 | Receiver for R-603 / R-604 | 2013 | VC-621, or SC-663, or VC-651 to VC-621 or SC-663 |
| Tank | T621 | Receiver for VC-621 | 2013 | VC-621 |
| Tank | T633 | Feedstock Tank | 2013 | VC-621 |
| Tank | T634 | Feedstock Tank | 2013 | VC-621 |
| Tank | T635 | Feedstock Tank | 2013 | VC-621 |
| Vacuum Pump | VP-651 | Vacuum pump for B6 | 2013 | VC-651 to VC-621, or VC-651 to SC-663 |

| Building 2 | | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Centrifuge | C260 | Basket Centrifuge | 1998 | VC-283 |
| Centrifuge | C261 | Basket Centrifuge | 1998 | VC-286 |
| Centrifuge | C262 | Basket Centrifuge | 1998 | VC-287 |
| Column | MSC-405-1 | Purification Column | 2011 | VC-233 |
| Column | MSC-405-2 | Purification Column | 2011 | VC-233 |
| Distillation | DC504 | Distillation Column | 2012 | VC-251, VC-284 |
| Distillation | DC505 | Distillation Column | 2011 | VC-505-B, VC-505-C |
| Dryer | D230 | Cone Screw Dryer | 2011 | VC-230-1, VC-230-2 |
| Dryer | D290 | Rotary Dryer | Pre-1990 | VC-255 to VC-233 |
| Dryer | D291 | Tray Dryer | Pre-1990 | VC-255 to VC-233 |
| Dryer | D292 | Tray Dryer | Pre-1990 | VC-255 to VC-233 |
| Dryer | D295 | Tray Dryer | 2014 | VC-255 to VC-233 |
| Dryer | D296 | Tray Dryer | 2014 | VC-255 to VC-233 |
| Pump | VP-214 | Vacuum Pump | 2013 | VC-214-1 to VC-283 |
| Pump | VP-230 | Vacuum Pump | 2011 | VC-230-2 to T230-3 |
| Pump | VP-250E | Vacuum Pump | 1998 | VC-250E to VC-284 |
| Pump | VP-251 | Vacuum Pump | 1998 | VC-251 to VC-284 |
| Pump | VP-252 | Vacuum Pump | 1998 | VC-252 to VC-284 |
| Pump | VP-255 | Vacuum Pump | 1998 | VC-255 to VC-233 |
| Pump | VP-256 | Vacuum Pump | 1998 | VC-256 to VC-288 |
| Pump | VP-257 | Vacuum Pump | 1998 | VC-257 to VC-288 |
| Pump | VP-505 | Vacuum Pump | 2011 | VC-505-C |
| Reactor | R-201 | 2000 gal. glass lined reactor with agitator and jacket | 1998 | VC-201 to VC-280, or VC-201 to VC-250E / VC-256 to VC-284/288, or VC-201 to B2 Scrubber |
| Reactor | R-202 | 2000 gal. glass lined reactor with agitator and jacket | 1998 | VC-202 to VC-280, or VC-202 to VC-250E / VC-256 to VC-284/288, or VC-202 to B2 Scrubber |
| Reactor | R-203 | 2000 gal. glass lined reactor with agitator and jacket | 1998 | VC-203 to VC-281, or VC-203 to VC-252 to VC-284, or VC-203 to B2 Scrubber |
| Reactor | R-204 | 2000 gal. glass lined reactor with agitator and jacket | 1998 | VC-204 to VC-281, or VC-204 to VC-252 to VC-284, or VC-204 to B2 Scrubber |

| Building 2 | Cont'd | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Reactor | R-205 | 750 gal. stainless steel reactor with agitator and jacket | 2000 | VC-205 to VC-281, or VC-205 to VC-257 to VC-288, or B2 Scrubber |
| Reactor | R-206 | 1000 gal. stainless steel reactor with agitator and jacket | 2000 | VC-206 to VC-280, or VC-206 to VC-256 to VC-288, or B2 Scrubber |
| Reactor | R-207 | 500 gal. stainless steel reactor with agitator and jacket | 2000 | VC-207 to VC-280, or VC-207 to VC-256 to VC-288, or B2 Scrubber |
| Reactor | R-208 | 400 gal. stainless steel reactor with agitator and jacket | 2000 | VC-208 to VC-281, or VC-208 to VC-257 to VC-288, or B2 Scrubber |
| Reactor | R-211 | 2000 gal. stainless steel reactor with agitator and jacket | 2008 | VC-211 to VC-289, or VC-211 to VC-252 to VC-283, or B2 Scrubber |
| Reactor | R-212 | 2000 gal. stainless steel reactor with agitator and jacket | 2008 | None |
| Reactor | R-214 | 2000 gal. stainless steel reactor with agitator and jacket | 2013 | VC-214 to VC-289 |
| Tank | T201 | Receiving tank for R-201 | 1998 | VC-280, or VC-256 to VC-283/288, or B2 Scrubber |
| Tank | T202 | Receiving tank for R-202 | 1998 | VC-280, or VC-256 to VC-283/288, or B2 Scrubber |
| Tank | T203 | Receiving tank for R-203 | 1998 | VC-281/233, or VC-251/252 to VC-283, or B2 Scrubber |
| Tank | T204 | Receiving tank for R-204 | 1998 | VC-281/233, or VC-251/252 to VC-283, or B2 Scrubber |
| Tank | T205 | Receiving tank for R-205 | 2000 | VC-281/233, or VC-257 to VC-288, or B2 Scrubber |
| Tank | T206 | Receiving tank for R-206 | 2000 | VC-280, or VC-256/250E to VC-288/283, or B2 Scrubber |

| Building 2 | Cont'd | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Tank | T207 | Receiving tank for R-207 | 2000 | VC-280, or VC-256/250E to VC-288/284, or B2 Scrubber |
| Tank | T208 | Receiving tank for R-208 | 2000 | VC-281, or VC-257 to VC-288, or B2 Scrubber |
| Tank | T211 | Receiving tank for R-211 | 2008 | VC-281/233, or VC-252 to VC-283, or B2 Scrubber |
| Tank | T212 | Receiving tank for R-212 | 2008 | VC-233 |
| Tank | T214 | Receiving tank for R-214 | 2013 | VC-289 |
| Tank | T213 | Quenching tank for R-212 | 2012 | VC-233 |
| Tank | T222 | Feedstock tank | 2011 | VC-233 |
| Tank | T226 | Feedstock tank | 2012 | VC-233 |
| Tank | T227 | Feedstock tank | 2011 | VC-233 |
| Tank | T228 | Feedstock tank | 2011 | VC-233 |
| Tank | T230-2 | Receiving tank for VC-230-1 | 2011 | VC-230-2 |
| Tank | T230-3 | Receiving tank for VC-230-2 | 2011 | None |
| Tank | T233 | Vent header catch tank VC-233 | 2013 | VC-233 |
| Tank | T250 | Receiving tank for VP-250 | 1998 | VC-283 |
| Tank | T251 | Receiving tank for VP-251 | 1998 | VC-283 |
| Tank | T252 | Receiving tank for VP-252 | 1998 | VC-283 |
| Tank | T255 | Receiving tank for VC-255 | 1998 | VC-330/283 |
| Tank | T256 | Receiving tank for VP-256 | 1998 | VC-288 |
| Tank | T257 | Receiving tank for VC-257 | 2000 | VC-288 |
| Tank | T260 | Filtrate tank for C260 | 1998 | VC-284 |
| Tank | T261 | Filtrate tank for C261 | 1998 | VC-286 |
| Tank | T262 | Filtrate tank for C262 | 1998 | VC-287 |
| Tank | T283 | Vapor knock out pot for VC-283 | 1998 | none |
| Tank | T286 | Vapor knock out pot for VC-286 | 2000 | none |
| Tank | T287 | Vapor knock out pot for VC-287 | 2000 | none |
| Tank | T505A | Receiving tank for DC505 | 2011 | VC-505-C |
| Tank | T505B | Receiving tank for VP-505 / VC-505-C | 2011 | none |

| Mobile | | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Reactor | MG-31 | Mobile 30-gal. glass-lined reactor with agitator and jacket. May be used with other process devices in Building 1, 2, or 6. | Pre-1990 | Vented through an emissions control system compatible with the specified use. May also be vented through the Mobile Equipment Station in B1. |
| Reactor | MS-65 | Mobile 65-gal. stainless steel reactor with agitators and jackets. May be used with other process devices in Building 1, 2, or 6. | Pre-1990 | Vented through an emissions control system compatible with the specified use. May also be vented through the Mobile Equipment Station in B1. |
| Reactor | MS-150 | Mobile 150-gal. stainless steel reactor with agitator and jacket. May be used with other process devices in Building 1, 2, or 6. | Pre-1990 | Vented through an emissions control system compatible with the specified use. May also be connected to and vented through the Mobile Equipment Station in B1 |

Outside solvent storage tanks emitting uncontrolled VOC/HAP emissions. Specifications for these tanks are shown in the following table.

Note that the contents of tanks will vary depending upon customer demand.

| Tanks | | | | |
|---|---|---|---|---|
| *Device* | *ID* | *Description* | *Installed* | *Control* |
| Tanks | T400/401 | Organic Chemical Tank, Fixed Roof 4,000 gallon capacity total | 1999 | None |
| Tanks | T402/403 | Organic Chemical Tank, Fixed Roof 8,000 gallon capacity total | 1999 | None |
| Tanks | T404/405 | Organic Chemical Tank, Fixed Roof 8,000 gallon capacity total | 1999 | None |
| Tank | T406 | Organic Chemical Tank, Fixed Roof 4,000 gallon capacity | 1999 | VC-233 |
| Tank | T408 | Organic Chemical Tank, Fixed Roof 4,325 gallon capacity | 2011 | VC-233 |
| Tank | T409 | Organic Chemical Tank, Fixed Roof 6,000 gallon capacity | 2010 | None |
| Tank | T410 | Organic Chemical Tank, Fixed Roof 8,000 gallon capacity | 2012 | None |
| Tank | T411 | Organic Chemical Tank, Fixed Roof 10,000 gallon capacity | 2011 | None |
| Tank | T500 | Aqueous with Organic Solvents Tank, Fixed Roof 3,000 gallon capacity | 1999 | VC-288 |
| Tank | T501 | Organic Solvents with Aqueous Tank, Fixed Roof 300 gallon capacity | 1999 | VC-288 |
| Tank | T502 | Aqueous with Organic Solvents Tank, Fixed Roof 300 gallon capacity | 1999 | VC-288 |

a. Building 1 room air exhausted uncontrolled to the atmosphere through ventilation outlets containing VOC/HAP emissions.

b. Building 2 room air exhausted uncontrolled to the atmosphere through ventilation outlets containing VOC/HAP emissions.

c. Building 6 room air exhausted uncontrolled to the atmosphere through ventilation outlets containing VOC/HAP emissions.

d. Building 1 VOC/HAP fugitive emissions estimated to be 3% of total calculated emissions.

e. Building 2 VOC/HAP fugitive emissions estimated to be 3% of total calculated emissions.

f. Building 6 VOC/HAP fugitive emissions estimated to be 3% of total calculated emissions.

11. Control Devices:

Process and control device specifications are shown in the following tables:

| *Control Device* | B1 Scrubber | S-266 Scrubber | S-267 Scrubber |
|---|---|---|---|
| *Processes Controlled* | B1 reactors | Building 2 reactors and associated receivers | Building 2 reactors and associated receivers |
| *Installed* | Pre-1990 | 2013 | 2000 |
| *Manufacturer / Model* | Croll/Reynolds 3X6 | Croll/Reynolds<br>8 X 8 – 54V | Croll/Reynolds<br>18T-64 |
| *Control Efficiency* | 98 % | 95 – 98 % | 90 % |
| *Type of Scrubber* | Venturi | Jet Venturi | Packed Tower |
| *Is water re-circulated?* | Yes | Yes | Yes |
| *Water flow rate (gpm)* | 90 | 170 | 10.2 |
| *Design water pressure (psig)* | 5” difference | 20 | 5” difference |
| *Inlet gas flow rate (acfm)* | 200 | 100 - 560 | 300 |
| *Design pressure drop (inches $H_2O$)* | 2” | 8” @ 100 SCFM<br>1” @ 560 SCFM | 2” |
| *Inlet gas pretreatment?* | B1 condensers | B2 condensers | B2 condensers |
| *Vented to:* | B1 Process Stack | B2 Scrubber Stack | B2 Scrubber Stack |

| *Control Device* | S-262 Scrubber | | |
|---|---|---|---|
| *Processes Controlled* | R-203 or R-204 | | |
| *Installed* | 2015 | | |
| *Manufacturer / Model* | | Heil 730 | Heil 770-6 |
| | | | |
| *Control Efficiency* | 98 % | | |
| *Type of Scrubber* | Combination | Packed Column | Venturi |
| *Is water re-circulated?* | | Yes | Yes |
| *Water flow rate (gpm)* | | 4 | 20 |
| *Design water pressure (psig)* | | 20 | 70 |
| *Inlet gas flow rate (acfm)* | | 100 | 100 |
| *Design pressure drop (inches $H_2O$)* | | 1” | NA |
| | | | |
| *Inlet gas pretreatment?* | VC-203/204 | | |
| *Vented to:* | B2 Process Stack | | |

| | |
|---|---|
| *Control Device* | SC-663 Scrubber |
| *Processes Controlled* | Building 6 reactors and receivers |
| *Installed* | 2013 |
| *Manufacturer / Model* | Croll / Reynolds 88/36V |
| *Control Efficiency* | 95 – 98 % |
| *Type of Scrubber* | Jet Venturi |
| *Is water re-circulated?* | Yes |
| *Water flow rate (gpm)* | 60 |
| *Design water pressure (psig)* | 70 |
| *Inlet gas flow rate (acfm)* | 500 |
| *Design pressure drop (inches $H_2O$)* | ~ 3.25” |
| *Inlet gas pretreatment?* | B6 condensers |
| *Vented to:* | B6 Process Stack |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-001 | R-001 | 2016 | Special Metals Inc | Unknown | Carbon steel shell / Tantalum tube side, 200 psi rated, CTW @ 14ºC | No | VC-3 to B1 Scrubber or B1 Scrubber |
| VC-002 | R-002 | 2016 | Special Metals Inc | Unknown | Carbon steel shell / Tantalum tube side, 200 psi rated, CTW @ 14ºC | No | VC-3 to B1 Scrubber or B1 Scrubber |
| VC-003 | R-003 | 2016 | Special Metals Inc | Unknown | Carbon steel shell / Tantalum tube side, 200 psi rated, CTW @ 14ºC | No | VC-3 to B1 Scrubber or B1 Scrubber |
| VC-3 | All Building 1 processes | 2013 repurposed | Perry Products | Unknown | Jacketed shell, Glycol @ -15ºC | VC-50, VC-100, VC-200, VC-104, and/or VC-300 | B1 Scrubber |
| VC-50 | GL-50 | Pre-1990 | Northland Stainless | 95% | Shell and tube heat exchanger, CTW @ 14ºC | No | R-200 or VC-3 to B1 Scrubber or B1 Scrubber |
| VC-100 | SS-100 | Pre-1990 | Perry Products | 95% | Shell and tube heat exchanger, CTW @ 14ºC | No | R-200 or VC-3 to B1 Scrubber or B1 Scrubber |
| VC-104 | GL-104 | Pre-1990 | Perry Products | 85% | Shell and tube heat exchanger, CTW @ 14ºC | No | R-200 or VC-3 to B1 Scrubber or B1 Scrubber |
| VC-120 | FD-01 | 2012 | Alaskan Copper Works | Unknown | Shell and tube heat exchanger, 35.5 square feet, Hastelloy C tube side, CTW @ 14ºC | No | VC-3 to B1 Scrubber or B1 Scrubber |
| VC-200 | GL-200 | Pre-1990 | Alaskan Copper Works | 85% | Shell and tube heat exchanger, CTW @ 14ºC | No | VC-3 to B1 scrubber or B1 Scrubber |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-201 | R-201 | 1999 | Harris Thermal | 95% | Shell and tube heat exchanger, 75 psi rated, 330 square feet, Hastelloy C shell side, CTW @ 14ºC | No | VC-280 or VC-250E via VP-250E to VC-284 or VC-250E to B2 Scrubber |
| VC-202 | R-202 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 330 square feet, Hastelloy C shell side, CTW @ 14ºC | No | VC-280 or VC-256 via VP-256 to VC-288 or VC-256 to B2 Scrubber |
| VC-203 | R-203 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 330 square feet, 316 SS shell side, CTW @ 14ºC | No | VC-281 or VC-252 via VP-252 to VC-284 or VC-252 via VP-252 to B2 Scrubber |
| VC-204 | R-204 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 330 square feet, 316 SS shell side, CTW @ 14ºC | No | VC-281 or VC-252 via VP-252 to VC-284 or VC-252 via VP-252 to B2 Scrubber |
| VC-205 | R-205 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 200 square feet, 316 SS shell side, CTW @ 14ºC | No | VC-281 or VC-257 via VP-257 to VC-288 or VC-257 via VP-257 to B2 Scrubber |
| VC-206 | R-206 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 180 square feet, Hastelloy C shell side, CTW @ 14ºC | No | VC-280 or VC-256 via VP-256 to VC-288 or VC-256 via VP-256 to B2 Scrubber |
| VC-207 | R-207 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 150 square feet, Hastelloy C shell side, CTW @ 14ºC | No | VC-280 or VC-256 via VP-256 to VC-288 or VC-256 via VP-256 to B2 Scrubber |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-208 | R-208 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 75 psi rated, 140 square feet, 316 SS shell side, CTW @ 14ºC | No | VC-281 or VC-257 via VP-257 to VC-288 or VC-257 via VP-257 to B2 Scrubber |
| VC-211 | R-211 | 2008 | Harris Thermal | 95% | Shell and tube heat exchanger, 75 psi rated, 330 square feet, 316 SS shell side, CTW @ 14ºC | No | VC-288 or VC-252 via VP-252 to VC-284 or VC-252 via VP-252 to B2 Scrubber |
| VC-214 | R-214 | 2013 | Atlas Industrial D-16272-1 | 90% | 316 SS, 90.7 square feet, CTW @ 14ºC | No | VC-289 to B2 Scrubber |
| VC-214-1 | VP-214 | 2013 | Atlas Industrial | 90% | Hastelloy C shell-in-tube, 294.7 square feet, CTW @ 14ºC | No | VC-283 to B2 Scrubber |
| VC-230-1 | D230 | 2011 | Harris Thermal | 95% | 316 SS Shell-in-tube, 323 square feet, Glycol @ -10ºC | No | T230-2 to T230-3 and B2 Process Stack |
| VC-230-2 | VP-230, T230-2 | 2011 | Harris Thermal | 95% | 316 SS Shell-in-tube, 3.2 square feet, Glycol @ -10ºC | No | T230-3 to B2 Process Stack |
| VC-233 | T233 | 2013 | CH Murphy | 95% | 316 SS shell-in-tube, Glycol @ -10ºC | VC-203, VC-204, VC-255 | B2 Process Stack |
| VC-250E | VP-250E | 1998 | Industrial Filters | 95% | Shell and tube heat exchanger, Hastelloy C shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | VC-201 | VC-284 or B2 Scrubber |
| VC-251 | VP-251 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, Hastelloy C shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | VC-203 | VC-284 or B2 Scrubber |
| VC-252 | VP-252 | 2008 | Perry Products | 90% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | VC-203, VC-204, VC-211 | VC-284 |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-255 | D290, D291, D292, VP-255 | 1998 | Perry Products | 90% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | No | VC-233 |
| VC-256 | VP-256 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | VC-202, VC-206, VC-207 | VC-288 or B2 Scrubber |
| VC-257 | VP-257 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 7 square feet, CTW @ 14ºC | VC-205, VC-208 | VC-288 or B2 Scrubber |
| VC-280 | R-201, R-202, R-206, R-207, T201, T202, T206, T207 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | VC-201, VC-202, VC-206, VC-207 | B2 Process Stack |
| VC-281 | R-203, R-204, R-205, R-208, T203, T204, T205, T208 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | VC-203, VC-204, VC-205, VC-208 | B2 Process Stack |
| VC-283 | C-260, T260 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | VC-214-1 | B2 Process Stack |
| VC-284 | VP-250E, VP-251, VP-252, T250, T251, DC504 | 1998 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | VC-250E, VC-251, VC-252 | B2 Process Stack |
| VC-286 | C-261, T261 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | No | B2 Process Stack |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-287 | C-262, T260 | 2000 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | No | B2 Process Stack |
| VC-288 | VP-256, VP-257, T256, T257, T500, T501, T502 | 2000 | Harris Thermal | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 53 square feet, Glycol @ -10ºC | VC-256, VC-257 | B2 Process Stack |
| VC-289 | R-211, R-214 | 2008 | Perry Products | 95% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, 140 square feet, Glycol @ -10ºC | VC-211, VC-214 | B2 Process Stack |
| VC-300 | SS-300 | Pre-1990 | Perry Products | 75% | Shell and tube heat exchanger, CTW @ 14ºC | No | R-200 to VC-3 to B1 Scrubber or B1 Scrubber |
| VC-330 | T255 | 2001 | Perry Products | 90% | Shell and tube heat exchanger, 316 SS shell side, 75 psi rated, Glycol @ -10ºC | VC-255 | B2 Process Stack |
| VC-505-B | DC505 | 2011 | Rubicon / TH18BU6-36 | 95% | 316 SS shell-in-tube, 90.7 square feet, CTW @ 14ºC | No | T505A to VP-505 VC-505-C to T505B to atmosphere |
| VC-505-C | T505A, VP-505 | 2011 | Rubicon / VT4A1-48V | 75% | 316 SS shell-in-tube, 8.7 square feet, CTW @ 14ºC | VC505-1 | T505B to atmosphere |
| VC-601 | R-601 | 2013 | Pfaudler | 70% | Shell and tube, SS / tantalum, 20 square feet, rated 100 psi, CTW @ 14ºC | No | VC-621 or SC-663 |
| VC-602 | R-602 | 2013 | Titan Metal Fabrication | 70% | Shell and tube, Carbon steel / tantalum, 30 square feet, rated 150 psi, CTW @ 14ºC | No | VC-621 or SC-663 |

| *Control Device* | *Processes Controlled* | *Installed* | *Manufacturer / Model* | *Control Efficiency* | *Design Parameters* | *Inlet gas pre-treatment* | *Vented to:* |
|---|---|---|---|---|---|---|---|
| VC-603 | R-603 | 2013 | Titan Metal Fabrication | 70% | Shell and tube, Carbon steel / tantalum, 55 square feet, rated 150 psi, CTW @ 14ºC | No | VC-621 or SC-663 |
| VC-604 | R-604 | 2013 | Pfaudler | 70% | Shell and tube, Carbon steel / tantalum, 26 square feet, rated 100 psi, CTW @ 14ºC | No | VC-621 or SC-663 |
| VC-621 | Building 6 reactors and receivers | 2013 | Cosmos Minerals Corp | 85% | Shell and tube, Carbon steel / tantalum, 35 square feet, rated 150 psi, CTW @ 14ºC | VC-601, VC-602, VC-603, VC-604, VC-632, VC-651 | To atmosphere |
| VC-632 | F632 | 2013 | Astro Cosmos Metallurgic | 85% | Shell and tube, Tantalum, rated 150 psi, CTW @ 14ºC | No | VC-621 or SC-663 |
| VC-651 | VP-651 | 2013 | Doyle & Roth | Unknown | Shell and tube heat exchanger, CTW @ 14ºC | VC-601, VC-602, VC-603, VC-604 | VC-621 or SC-663 |

VC = Vapor Condenser
CTW = Cooling Tower Water

## COMPLIANCE

12. The facility was inspected on 3/11/2016 and found to be out of compliance. See details in section 14.

13. During the prior permit period there were no complaints recorded for this facility.

14. The following enforcement actions have been taken against this source since the last permit renewal.

    A Warning Letter (2016-WL-1486) was issued on April 1, 2016, for failure to meet 40 CFR 63.11495 (a)(4) which requires that the facility repair any leak within 15 calendar days after detection of the leak, or document a reason for the delay of repair. The facility immediately changed their forms and work order procedures. The situation was resolved in a timely manner. No further violations were known to occur.

# EMISSIONS

15. Proposed PSEL information:

| Pollutant | Baseline Emission Rate (tons/yr) | Netting Basis | | Plant Site Emission Limits (PSEL) | | |
|---|---|---|---|---|---|---|
| | | Previous (tons/yr) | Proposed (tons/yr) | Previous PSEL (tons/yr) | Proposed PSEL (tons/yr) | PSEL Increase (tons/yr) |
| PM | 0 | 0 | 0 | - - | de minimis | - - |
| $PM_{10}$ | 0 | 0 | 0 | - - | de minimis | - - |
| $PM_{2.5}$ | 0 | 0 | 0 | - - | de minimis | - - |
| $SO_2$ | 0 | 0 | 0 | - - | de minimis | - - |
| $NO_x$ | 0 | 0 | 0 | 39 | 39 | - - |
| CO | 0 | 0 | 0 | 99 | 99 | - - |
| VOC | 0 | 0 | 0 | 70 | 70 | - - |
| GHG ($CO_2e$) | 1,203 | 0 | 1,203 | - - | 74,000 | N/A |
| Single HAP (Hexane) | 0 | 0 | 0 | 9 | 9 | - - |
| Combined HAPs | 0 | 0 | 0 | 24 | 24 | - - |

a. The proposed PSELs for the pollutants NOx , CO, and Greenhouse Gases (GHG) have been set equal to the Generic PSEL in accordance with OAR 340-222-0040(1) since the projected emission levels are less than the Generic PSEL level but greater than de minimis levels for those pollutants.

b. Emissions of PM, $PM_{10}$, $PM_{2.5}$ and $SO_2$ are less than the de minimis level of 1 ton per year, thus no PSEL is required to be set, in accordance with OAR Chapter 340 Division 222.

c. Greenhouse gas (GHG) emissions have been added to the PSEL within this permit renewal. No actual increases from these emissions have occurred, only recognizing that GHG is considered a regulated criteria pollutant since the last permit issuance in 2011.

d. Except for reasons described in section c. above, the previous PSEL is the PSEL in the last permit.

e. The basis for each pollutant PSEL is shown in the Emission Calculation Detail Sheet attached to this report.

f. The PSEL is a federally enforceable limit on the potential to emit.

SIGNIFICANT EMISSION RATE ANALYSIS

16. In 2011, the permittee requested to increase the VOC emission limit from the generic limit of 39 tons per year to 70 tons per year. An air quality analysis was performed by DEQ in April 2011. The results of that analysis showed no significant impact. Therefore, the proposed increase in VOC emissions to 70 tons per year was approved.

17. For each pollutant besides VOC, as described above, the proposed Plant Site Emission Limit is less than the Netting Basis plus the significant emission rate, thus no air quality analyses are required.

## MAJOR SOURCE APPLICABILITY

18. A major source is a facility that has the potential to emit 100 tons/yr or more of any criteria pollutant or 10 tons/yr or more of any single HAP or 25 tons/yr or more of combined HAPs. This facility is not a major source of emissions. The basis for this determination can be found within the attached emissions detail sheets.

19. A source that has the potential to emit at major source levels, has permit limits below major source levels, and actual emissions are at least 80% of major source thresholds is called a synthetic minor 80 (SM-80). The source does not have the potential to emit at major source levels nor does it have actual emission of at least 80% of the major source level. The basis for this determination can be found within the attached emissions detail sheets.

20. A source that has potential to emit at the major source levels but accepts a PSEL below major source levels is called a synthetic minor (SM). This source does not have the potential to emit at major source levels. Therefore, this source is not a synthetic minor. The basis for this determination can be found within the attached emissions detail sheets.

21. A source that has the potential to emit less than major source thresholds is called a true minor. This source is a true minor. The basis for this determination can be found within the attached emissions detail sheets.

CRITERIA POLLUTANTS

22. This facility is a true minor source of criteria pollutant emissions.

HAZARDOUS AIR POLLUTANTS

23. This source is a true minor source of hazardous air pollutants. Provided below is a summary of the HAP emissions based on process operations and include a 3% fugitive factor.

| CAS # | Pollutant | Potential to Emit (tons/yr) |
|---|---|---|
| 75-05-8 | Acetonitrile | 0.9 |
| 98-86-2 | Acetophenone | 0.0 |
| 62-53-3 | Aniline | 0.0 |
| 67-66-3 | Chloroform | 0.3 |
| 75-09-2 | Methylene Chloride | 0.3 |
| 68-12-2 | Dimethylformamide | 0.1 |
| 77-78-1 | Dimethyl Sulfate | 0.0 |
| 123-91-1 | 1,4-Dioxane | 0.1 |
| 50-00-0 | Formaldehyde | 0.0 |
| 110-54-3 | **Hexane** | **4.6** |
| 7647-01-0 | Hydrogen Chloride | 0.4 |
| | Hydrogen Cyanide (Cyanide Compounds) | 0.0 |
| 67-56-1 | Methyl Alcohol | 0.7 |
| 1634-04-4 | Methyl t-Butyl Ether | 3.3 |
| 74-88-4 | Methyl Iodide | 0.0 |
| 108-10-1 | Methyl Isobutyl Ketone | 0.0 |
| 121-69-7 | N,N-Dimethylaniline | 0.0 |
| | Nickel Compounds | 0.0 |
| 108-88-3 | Toluene | 0.8 |
| 7550-45-0 | Titanium Tetrachloride | 0.0 |
| 121-44-8 | Triethylamine | 0.0 |
| 1330-20-7 | Xylenes | 0.1 |
| | **HAPs total** | **11.9** |

Pollutant usage is based upon source's best estimates at this time, and reflects pollutants that have been used at some time, but may or may not be in use now.

Actual pollutants and/or usages will continue to vary with product and process requirements.

Projections through 2019 were estimated based upon previous year's emissions calculated with Emission Master software.

# ADDITIONAL REQUIREMENTS

## NSPS APPLICABILITY

24. 40 CFR Part 60, Subpart Kb (Volatile Organic Storage Vessels) does not apply because the storage tanks at this facility are less than 75 cubic meters.

25. 40 CFR Part 60, Subpart Dc (Small Industrial-Commercial-Institutional Steam Generating Units) does not apply to either of the boilers because each is rated at less than 10 MMBtu/hour.

## NESHAPS/MACT APPLICABILITY

26. 40 CFR Part 63, Subparts F, G, H, and GGG are not applicable to the source because it is not a major source of hazardous air pollutants.

27. 40 CFR Part 63, Subpart VVVVVV (6V) - Chemical Manufacturing Area Sources is applicable to some parts of the manufacturing operations at this source. The source has chemical manufacturing process units (CMPU) that contain the following Table 1 HAPS: Methylene Chloride and Chloroform.

**Table 1 to Subpart VVVVVV of Part 63—Hazardous Air Pollutants Used To Determine Applicability of Chemical Manufacturing Operations**

| Type of HAP | Chemical name | CAS # |
|---|---|---|
| Organic compounds | 1,3-butadiene | 106-99-0 |
| | 1,3-dichloropropene | 542-75-6 |
| | Acetaldehyde | 75-07-0 |
| | Chloroform | 67-66-3 |
| | Ethylene dichloride | 107-06-2 |
| | Hexachlorobenzene | 118-74-1 |
| | Methylene chloride | 75-09-2 |
| | Quinoline | 91-22-5 |
| Metal compounds | Arsenic compounds | |
| | Cadmium compounds | |
| | Chromium compounds | |
| | Lead compounds | |
| | Manganese compounds | |
| | Nickel compounds | |
| Others | Hydrazine | 302-01-2 |

**Table 2 to Subpart VVVVVV of Part 63—Emission Limits and Compliance Requirements for Batch Process Vents**

| For | You must | Except |
|---|---|---|
| 1. Batch process vents in a CMPU at an existing source for which the total organic HAP emissions are equal to or greater than 10,000 lb/yr | a. Reduce collective uncontrolled total organic HAP emissions from the sum of all batch process vents by ≥85 percent by weight or to ≤ 20 ppmv by routing emissions from a sufficient number of the batch process vents through a closed vent system to any combination of control devices in accordance with the requirements of 40 CFR 63.982(c) and the requirements referenced therein; or | i. Compliance may be based on either total organic HAP or total organic carbon (TOC); and<br><br>ii. As specified in 40 CFR 63.11496(g). |
| | b. Route emissions from batch process vents containing at least 85 percent of the uncontrolled total organic HAP through a closed-vent system to a flare in accordance with the requirements of 40 CFR 63.982(b) and the requirements referenced therein; or | i. Not applicable. |
| | c. Comply with the alternative standard specified in 40 CFR 63.2505 and the requirements referenced therein; or | i. As specified in 40 CFR 63.11496(e). |
| | d. Comply with combinations of the requirements in Items a., b., and c. of this Table for different groups of batch process vents | i. The information specified above for Items a., b., and c., as applicable. |
| 2. Batch process vents in a CMPU at a new source for which the total organic HAP emissions are equal to or greater than 10,000 lb/yr | a. Comply with any of the emission limits in Items 1.a through 1.d of this Table, except 90 percent reduction applies instead of 85 percent reduction in Item 1.a, and 90 percent of the emissions must be routed to a flare instead of 85 percent in Item 1.b | i. The information specified above for Items 1.a., 1.b., 1.c., and 1.d, as applicable. |

**Table 6 to Subpart VVVVVV of Part 63—Emission Limits and Compliance Requirements for Wastewater Systems**

| For each | You must | And you must |
|---|---|---|
| 1. Wastewater stream | a. Discharge to onsite or offsite wastewater treatment or hazardous waste treatment | i. Maintain records identifying each wastewater stream and documenting the type of treatment that it receives.<br><br>Multiple wastewater streams with similar characteristics and from the same type of activity in a CMPU may be grouped together for recordkeeping purposes. |
| 2. Wastewater stream containing partially soluble HAP at a concentration ≥10,000 ppmw and separate organic and water phases | a. Use a decanter, steam stripper, thin film evaporator, or distillation unit to separate the water phase from the organic phase(s); or | i. For the water phase, comply with the requirements in Item 1 of this table, and<br><br>ii. For the organic phase(s), recycle to a process, use as fuel, or dispose as hazardous waste either onsite or offsite, and<br><br>iii. Keep records of the wastewater streams subject to this requirement and the disposition of the organic phase(s). |
| | b. Hard pipe the entire wastewater stream to onsite treatment as a hazardous waste, or hard pipe the entire wastewater stream to a point of transfer to onsite or offsite hazardous waste treatment. | i. Keep records of the wastewater streams subject to this requirement and the disposition of the wastewater streams. |

**Table 7 to Subpart VVVVVV of Part 63—Partially Soluble HAP**

| Partially soluble HAP name | CAS # |
|---|---|
| 1,1,1-Trichloroethane (methyl chloroform) | 71556 |
| 1,1,2,2-Tetrachloroethane | 79345 |
| 1,1,2-Trichloroethane | 79005 |
| 1,1-Dichloroethylene (vinylidene chloride) | 75354 |
| 1,2-Dibromoethane | 106934 |
| 1,2-Dichloroethane (ethylene dichloride) | 107062 |
| 1,2-Dichloropropane | 78875 |
| 1,3-Dichloropropene | 542756 |
| 2,4,5-Trichlorophenol | 95954 |
| 1,4-Dichlorobenzene | 106467 |
| 2-Nitropropane | 79469 |
| 4-Methyl-2-pentanone (MIBK) | 108101 |
| Acetaldehyde | 75070 |
| Acrolein | 107028 |
| Acrylonitrile | 107131 |
| Allyl chloride | 107051 |
| Benzene | 71432 |
| Benzyl chloride | 100447 |
| Biphenyl | 92524 |
| Bromoform (tribromomethane) | 75252 |
| Bromomethane | 74839 |
| Butadiene | 106990 |
| Carbon disulfide | 75150 |
| Chlorobenzene | 108907 |
| Chloroethane (ethyl chloride) | 75003 |
| Chloroform | 67663 |
| Chloromethane | 74873 |
| Chloroprene | 126998 |
| Cumene | 98828 |
| Dichloroethyl ether | 111444 |
| Dinitrophenol | 51285 |
| Epichlorohydrin | 106898 |
| Ethyl acrylate | 140885 |
| Ethylbenzene | 100414 |
| Ethylene oxide | 75218 |
| Ethylidene dichloride | 75343 |
| Hexachlorobenzene | 118741 |
| Hexachlorobutadiene | 87683 |
| Hexachloroethane | 67721 |

| | |
|---|---|
| Methyl methacrylate | 80626 |
| Methyl-t-butyl ether | 1634044 |
| Methylene chloride | 75092 |
| N-hexane | 110543 |
| N,N-dimethylaniline | 121697 |
| Naphthalene | 91203 |
| Phosgene | 75445 |
| Propionaldehyde | 123386 |
| Propylene oxide | 75569 |
| Styrene | 100425 |
| Tetrachloroethylene | 127184 |
| Tetrachloromethane | 56235 |
| Toluene | 108883 |
| Trichlorobenzene (1,2,4-) | 120821 |
| Trichloroethylene | 79016 |
| Trimethylpentane | 540841 |
| Vinyl acetate | 108054 |
| Vinyl chloride | 75014 |
| Xylene (m) | 108383 |
| Xylene (o) | 95476 |
| Xylene (p) | 106423 |

RACT APPLICABILITY

28. The RACT rules are not applicable to this source because it is not in the Portland AQMA, Medford AQMA, or Salem SKATS.

TACT APPLICABILITY

29. The source is meeting the state's TACT/Highest and Best Rules by controlling VOC and HAP emissions with wet scrubbers.

## PUBLIC NOTICE

30. Pursuant to OAR 340-216-0066(4)(a)(A), issuance of Standard Air Contaminant Discharge Permits require public notice in accordance with OAR 340-209-0030(3)(b), which requires DEQ to provide notice of the proposed permit action and a minimum of 30 days for interested persons to submit written comments. **The public notice was emailed/mailed on September 30, 2016, and the comment period will end on October 31, 2016.**

SB:wk

# APPENDIX A

# PSEL
# EMISSION CALCULATION
# DETAIL SHEETS

**W.R. Grace**
**EMISSION CALCULATION DETAIL SHEET**
**Potential to Emit**

## Pollutant: PM / $PM_{10}$ / $PM_{2.5}$ (100% of PM is $PM_{10}$; 100% of $PM_{10}$ is $PM_{2.5}$)

| Source | Production Parameter | Emission Factor | | Emissions (tons/year) |
|---|---|---|---|---|
| | | Rate | Reference | |
| Boilers | 125 MMcf/year Natural Gas | 2.5 lb/MMcf | DEQ AQ-EF05 | 0.16 |
| Cooling Towers | Cooling tower operation | 0.02 tons/year | W.R. Grace Engineering Estimation using AP-42 factors | 0.02 |
| | | | **Total PM / $PM_{10}$ / $PM_{2.5}$** | **0.18** |

Note: The PM, $PM_{10}$ and $PM_{2.5}$ PSEL are not being assigned because the total proposed emissions are less than the de minimis level of 1 ton per year for each pollutant.

## Pollutant: CO

| Source | Production Parameter | Emission Factor | | Emissions (tons/year) |
|---|---|---|---|---|
| | | Rate | Reference | |
| Boilers | 125 MMcf/year Natural Gas | 84 lb/MMcf | DEQ AQ-EF05 | 5.3 |
| | | | **Total CO** | **5.3** |

Note: The CO PSEL will be set at the generic emission level of 99 tons/year.

## Pollutant: $NO_X$

| Source | Production Parameter | Emission Factor | | Emissions (tons/year) |
|---|---|---|---|---|
| | | Rate | Reference | |
| Boilers | 125 MMcf/year Natural Gas | 100 lb/MMcf | DEQ AQ-EF05 | 6.3 |
| | | | **Total $NO_X$** | **6.3** |

Note: The $NO_X$ PSEL will be set at the generic emission level of 39 tons/year.

**W.R. Grace**
**EMISSION CALCULATION DETAIL SHEET**
**Potential to Emit**

**Pollutant: $SO_2$**

| Source | Production Parameter | Emission Factor | | Emissions (tons/year) |
|---|---|---|---|---|
| | | Rate | Reference | |
| Boilers | 125 MMcf/year Natural Gas | 1.7 lb/MMcf | DEQ AQ-EF05 | 0.11 |
| B1 Scrubber [(a)] | 2 tons/year of Thionyl Chloride | Emission Master Software | W.R. Grace | 0.04 |
| B2 Scrubbers [(a)] | 3 tons/year of Thionyl Chloride | Emission Master Software | W.R. Grace | 0.04 |
| | | | **Total $SO_2$** | **0.19** |

Note: The $SO_2$ PSEL is not being assigned because the total proposed emissions are less than the de minimis level of 1 ton per year.

(a) $SO_2$ is formed during the reaction/decomposition of Thionyl Chloride

**W.R. Grace**
**EMISSION CALCULATION DETAIL SHEET**
**Potential to Emit**

## Pollutant: VOC

| Source | Production Parameter | Emission Factor | | Emissions (tons/year) |
|---|---|---|---|---|
| | | Rate | Reference | |
| Boiler | 125 MMcf/year Natural Gas | 5.5 lb/MMcf | DEQ AQ-EF05 | 0.34 |
| B1 Process Stacks | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 1.50 |
| B1 Room Ventilation | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 0.08 |
| B2 Process Stacks | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 14.96 |
| B2 Room Ventilation | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 4.15 |
| B6 Process Stacks | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 1.10 |
| B6 Room Ventilation | Emissions calculated by Emission Master Software | Emission Master Software | Emission Master Software | 0.10 |
| VOC Fugitives | Emissions calculated by Emission Master Software | 3% of process stack emissions | W.R. Grace engineering estimate | 0.66 |
| Wastewater Treatment (PACT) | 5,358 tons wastewater/year | 0.0001 ton/ton | W.R. Grace Engineering Estimate | 0.54 |
| Labs | 25 tons chemicals/year | 0.0054 ton/ton | W.R. Grace Engineering Estimate | 0.14 |
| Transfers from Tanks to Tanker Truck | 9,091 tons chemicals/year | 0.0006 ton/ton | W.R. Grace Engineering Estimate | 5.45 |
| | | | **Total VOC** | **29.02** |

These are the maximum potential emissions including proposed production rates through 2019.

The Emission Master software program calculates VOC and HAP emissions for batch and continuous processes using EPA equations found in EIIP, Volume 2, Chapter 16, *Methods for Estimating Air Emissions from Chemical Manufacturing Facilities.* Actual solvent usage data is entered into the Emission Master program. http://www.mitchellscientific.com/EmissionMaster.htm

**W.R. Grace**
**EMISSION CALCULATION DETAIL SHEET**
**Potential to Emit**

**Pollutant: HAP**

| CAS # | Pollutant | Potential to Emit (tons/yr) |
|---|---|---|
| 75-05-8 | Acetonitrile | 0.9 |
| 98-86-2 | Acetophenone | 0.0 |
| 62-53-3 | Aniline | 0.0 |
| 67-66-3 | Chloroform | 0.3 |
| 75-09-2 | Methylene Chloride | 0.3 |
| 68-12-2 | Dimethylformamide | 0.1 |
| 77-78-1 | Dimethyl Sulfate | 0.0 |
| 123-91-1 | 1,4-Dioxane | 0.1 |
| 50-00-0 | Formaldehyde | 0.0 |
| 110-54-3 | **Hexane** | **4.6** |
| 7647-01-0 | Hydrogen Chloride | 0.4 |
| | Hydrogen Cyanide (Cyanide Compounds) | 0.0 |
| 67-56-1 | Methyl Alcohol | 0.7 |
| 1634-04-4 | Methyl t-Butyl Ether | 3.3 |
| 74-88-4 | Methyl Iodide | 0.0 |
| 108-10-1 | Methyl Isobutyl Ketone | 0.0 |
| 121-69-7 | N,N-Dimethylaniline | 0.0 |
| | Nickel Compounds | 0.0 |
| 108-88-3 | Toluene | 0.8 |
| 7550-45-0 | Titanium Tetrachloride | 0.0 |
| 121-44-8 | Triethylamine | 0.0 |
| 1330-20-7 | Xylenes | 0.1 |
| | **HAP total** | **11.9** |

These are the maximum potential emissions including proposed production rates through 2019.

The Emission Master software program calculates VOC and HAP emissions for batch and continuous processes using EPA equations found in EIIP, Volume 2, Chapter 16, *Methods for Estimating Air Emissions from Chemical Manufacturing Facilities.* Actual solvent usage data is entered into the Emission Master program.
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**W.R. Grace**
**EMISSION CALCULATION DETAIL SHEET**
**Potential to Emit**

## GHG Equation:

**GHG Emission Rate (tons/yr) = [Fuel Usage (1)] x [HHV(2)] x [EF(3)] x [CF(4)] x [CF(5)] x [GWP(6)]**

(1) in cubic feet per year
(2) HHV = High Heat Value (MMBtu/scf)
(3) EF = Emission Factor (kg GHG/MM Btu)
(4) CF (Conversion Factor - kg to metric tons) = 0.001
(5) CF (Conversion Factor – metric tons to tons) = 1.1023
(6) GWP = Global Warming Potential

## Constants:

| | | |
|---|---|---|
| NG HHV | = | $1.026 \times 10^{-3}$ MMBtu/scf |
| 1 Metric Ton | = | 1000 kg = 2205 lb = 1.1023 ton |
| EF for $CO_2$ | = | 53.06 kg $CO_2$/MMBtu |
| EF for $CH_4$ | = | $1.0 \times 10^{-3}$ kg $CH_4$/MMBtu |
| EF for $N_2O$ | = | $1.0 \times 10^{-4}$ kg $N_2O$/MMBtu |
| GWP $CH_4$ | = | 25 |
| GWP $N_2O$ | = | 298 |

## Facility-Wide Natural Gas Combustion

Fuel Usage = **125 MMcf/yr**

GHG Emission Rates

| | | |
|---|---|---|
| $CO_2$ | = | 6,805 metric tons $CO_2e$/yr |
| $CH_4$ | = | 3 metric tons $CO_2e$/yr |
| $N_2O$ | = | 4 metric tons $CO_2e$/yr |

**Total GHG = 7,509 short tons $CO_2e$/yr**

**or = 6,812 metric tons $CO_2e$/yr**