Table of Contents for Neville Chemical Company SIP Package
RACT 2 Case-by-Case Evaluation
Amended Title V Permit No. 0060-OP15c

Description	**Page No.**
RACT SIP Completeness Checklist	2-3
SIP Permit (redacted)	4-38
SIP Technical Support Document (review memo)	39-47
SIP Comment Response Document	48-50
Draft Title V Permit	51-148
Draft Technical Support Document	149-155
RACT Evaluation (ERG)	156-185
RACT Evaluation (facility)	186-274
RACT I Order	275-285
Final Issued Title V Permit	286-383

Pennsylvania Department of Environmental Protection
Bureau of Air Quality

RACT SIP COMPLETENESS CHECKLIST

TO BE FILLED IN BY REGIONAL STAFF AND SUBMITTED TO CENTRAL OFFICE

Facility Name: _Neville Chemical Company

RACT Plan Approval/Permit Number: _Title V Operating Permit No. 0060-OP15c_

Plan Approval/Permit Issuance Date: __April 23, 2020

TECHNICAL MATERIALS

Included	Not Included	Not Applicable	
☒	☐	☐	**Identification of all regulated (NOx and VOC) pollutants affected by the RACT plan (Review memo and RACT Permit)**
☒	☐	☐	**Quantification of the changes in plan allowable emissions from the affected sources as a result of RACT implementation. (Review Memo)**
☐	☐	☒	**Rationale as to why applicable CTG or ACT regulation is not RACT for the facility. (Review Memo)**
☐	☐	☒	**Demonstration that the NAAQS, PSD increment, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. (Review Memo)**
☐	☐	☒	**In the event of actual emission increase as a result of RACT SIP revision: Modeling information to support the proposed revision, including input data, output data, model used, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis. (Review Memo)**
☐	☐	☒	**Include evidence, where necessary that emission limitations are based on continuous emission reduction technology. (Review Memo)**
☒	☐	☐	**State in RACT PA/OP that expiration date shown in PA or OP is for state purposes. Either use the statement below or redact the expiration date on the permit.** **(Sample: The expiration date shown in this permit is for state purposes. For federal enforcement purposes the conditions of this operating permit which pertain to the implementation of RACT regulations shall remain in effect as part of the State Implementation Plan (SIP) until replaced pursuant to 40 CFR 51 and approved by the U.S. Environmental Protection Agency (EPA). The operating permit shall become enforceable by the U.S. EPA upon its approval of the above as a revision to the SIP.) (RACT Permit)**
☐	☐	☒	**Include evidence that the State has the necessary legal authority under State law to adopt and implement the RACT plan. (Reference of PA's Air Pollution Control Act (January 8, 1960, P.L. 2119, as amended and 25 PA Code Chapter 127 (NSR), and 25 PA Code Chapter 129 §§129.91 – 95 in RACT PA/OP). (Review memo or more likely operating permit)**

☒	☐	☐	**State that independent technical and economic justification for RACT determination <u>by the Department</u> was performed. As long as you reviewed the companies proposal you may agree with it but that must be stated. (Review memo)**
☐	☐	☒	**Confidential Business Information excluded, highlighted or marked. Please also redact all checks from the application. (Review Memo, RACT Permit, RACT Plan by the company)**
☒	☐	☐	**Adequate compliance demonstration, monitoring, recordkeeping, work practice standards, and reporting requirements. (Review memo and RACT Permit)**

<u>ADMINISTRATIVE DOCUMENTS</u>

<u>Attached</u>	<u>Not Attached</u>	<u>Not Applicable</u>	
☒	☐	☐	**<u>Signed</u> copy of final RACT Plan Approval/Operating Permit.**
☒	☐	☐	**Redacted copy of the RACT Plan Approval/Operating Permit. Reviewer should be able to read the redacted text. (We can do electronically if the PA/OP is uploaded in AIMS or available in pdf format). Make sure that the expiration date of the operating permit is redacted. SIPs do not expire.**
☒	☐	☐	**Signed Technical Support Document or Review Memorandum. The review memo should contain a discussion about previous case by case RACT determinations so that requirements can be compared**
☒	☐	☐	**Public Notice evidence: Include a copy of the actual published notice of the public hearing as it appeared in the local newspaper(s). The newspaper page must be included to show the date of publication. The notice must specifically identify by title and number each RACT regulation adopted or amended. A signed affidavit showing the dates of publication and the newspaper clipping is best. Next best is a copy of the newspaper clippings from all days the article was published. An email showing that the newspaper article was purchased is acceptable unless the EPA receives comments during their comment period stating that there is no proof of publication. The newspaper notice must say that the case by case requirements will be submitted to the EPA as an amendment to the SIP**
☒	☐	☐	**A separate formal certification duly signed indicating that public hearings were held. If no public hearings were held the review memo should state that.**
☒	☐	☐	**Public hearing minutes: This document must include certification that the hearing was held in accordance with the information in the public notice. It must also list the RACT regulations that were adopted, the date and place of the public hearing, and name and affiliation of each commenter. If there were no comments made during the notice period or at the hearing, please indicate that in the review memo.**
☒	☐	☐	**Comment and Response Document: A compilation of EPA, company, and public comments and Department's responses to these comments.**
☒	☐	☐	**Copy of RACT proposal, amendments, and other written correspondence between the Department and the facility.**

ALLEGHENY COUNTY HEALTH DEPARTMENT

AIR QUALITY PROGRAM
301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1811

Title V Operating Permit
& Federally Enforceable State Operating Permit

Issued To: **Neville Chemical Company**

Facility: **Neville Chemical Company**
2800 Neville Road
Neville Township, PA 15225-1496

ACHD Permit #: **0060c**

Date of Issuance: **September 28, 2015**

Date Amended: **April 23, 2020**

~~**Expiration Date:**~~ ~~**September 27, 2020**~~

~~**Renewal Date:**~~ ~~**March 28, 2020**~~

Issued By: Digitally signed by JoAnn Truchan, PE
Date: 2020.04.23 11:55:53 -04'00'
JoAnn Truchan, P.E.
Section Chief, Engineering

Prepared By: H. Gurvich Digitally signed by Helen Gurvich
Date: 2020.04.23 11:53:08 -04'00'
Helen Gurvich
Air Quality Engineer

IV. SITE LEVEL TERMS AND CONDITIONS

Pages 2 through 26 have been redacted.

~~1. Reporting of Upset Conditions (§2103.12.k.2)~~

~~The permittee shall promptly report all deviations from permit requirements, including those attributable to upset conditions as defined in Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.~~

~~2. Visible Emissions (§2104.01.a)~~

~~Except as provided for by Article XXI §2108.01.d pertaining to a cold start, no person shall operate, or allow to be operated, any source in such manner that the opacity of visible emissions from a flue or process fugitive emissions from such source, excluding uncombined water:~~

~~a. Equal or exceed an opacity of 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,~~
~~b. Equal or exceed an opacity of 60% at any time.~~

~~3. Odor Emissions (§2104.04) (County-only enforceable)~~

~~No person shall operate, or allow to be operated, any source in such manner that emissions of malodorous matter from such source are perceptible beyond the property line.~~

~~4. Materials Handling (§2104.05)~~

~~The permittee shall not conduct, or allow to be conducted, any materials handling operation in such manner that emissions from such operation are visible at or beyond the property line.~~

~~5. Operation and Maintenance (§2105.03)~~

~~All air pollution control equipment required by this permit or any order under Article XXI, and all equivalent compliance techniques approved by the Department, shall be properly installed, maintained, and operated consistently with good air pollution control practice.~~

~~6. Open Burning (§2105.50)~~

~~No person shall conduct, or allow to be conducted, the open burning of any material, except where the Department has issued an Open Burning Permit to such person in accordance with Article XXI §2105.50 or where the open burning is conducted solely for the purpose of non-commercial preparation of food for human consumption, recreation, light, ornament, or provision of warmth for outside workers, and in a manner which contributes a negligible amount of air contaminants.~~

~~7. Shutdown of Control Equipment (§2108.01.b)~~

~~a. In the event any air pollution control equipment is shut down for reasons other than a breakdown, the person responsible for such equipment shall report, in writing, to the Department the intent to shut down such equipment at least 24 hours prior to the planned shutdown. Notwithstanding the submission of such report, the equipment shall not be shut down until the approval of the Department is obtained; provided, however, that no such report shall be required if the source(s) served by such air pollution control equipment is also shut down at all times that such equipment~~

Pages 28 through 35 have been redacted.

~~1) Comply with the recordkeeping requirements of condition IV.29.d and reporting requirements of condition IV.29.e below; and~~

~~2) Repeat the determination of total annual benzene quantity from facility waste whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.~~

~~3) The permittee shall calculate the total annual benzene quantity from facility waste according to the procedures outlined in 40 CFR Part 61, Subpart FF, §61.355(b) and (c).~~

~~d.~~ ~~The permittee shall maintain records that identify each waste stream at the facility subject to 40 CFR Part 61, Subpart FF, and indicate whether or not the waste stream is controlled for benzene emissions. In addition the permittee shall maintain the following records: [§61.356(b)(1)]~~

~~1) For each waste stream not controlled for benzene emissions, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.~~

~~e.~~ ~~If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the permittee shall submit to the Department a report that updates the information listed in the following paragraphs whenever there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more. [§61.357(b); §61.357(a)(3)(i)-(vi)]~~

~~1) Whether or not the water content of the waste stream is greater than 10 percent;~~

~~2) Whether or not the waste stream is a process wastewater stream, product tank drawdown, or landfill leachate;~~

~~3) Annual waste quantity for the waste stream;~~

~~4) Range of benzene concentrations for the waste stream;~~

~~5) Annual average flow-weighted benzene concentration for the waste stream; and~~

~~6) Annual benzene quantity for the waste stream.~~

30. Leak Detection and Repair (§2105.06, Plan Approval Order and Agreement Upon Consent Number 230, dated December 13, 1996)

a. The permittee shall conduct a Leak Detection and Repair (LDAR) program at the facility at all times when facility operations may result in fugitive emissions of VOCs. Such LDAR program shall consist of the following: [RACT Order #230, 1.8; 25 Pa Code §129.99]

1) Components applicable to the LDAR program shall be all accessible valves, pumps, and safety pressure relief valves in light oil service.

2) The subject components shall be monitored visually and with a VOC analyzer, and shall be tagged or labeled using Neville's component identification system.

3) Initially, each non difficult/unsafe subject component shall be monitored on a monthly basis. Any component for which a leak is not detected for two successive months shall be monitored on a quarterly basis. Any component for which a leak is not detected for two successive quarters shall then be monitored on an annual basis. Difficult/unsafe components shall be monitored annually.

4) Visual leaks are determined if the component is visually leaking or dripping product from the component. Leaks determined using the analytical test method are an instrument reading exceeding 10,000 parts per million by volume.

5) If a component is designated as leaking by either the visual or analytical method, the component

will not be designated as a "leaker". Instead:

a) A first attempt of repair of the component will be performed for the purposes of stopping or reducing leakage, using best available practices, until the component can achieve non-leaking status.
b) Should this attempt fail, the component will be repaired or replaced and the monitoring will revert to the previous inspection schedule. Two successful monitoring events will allow the new or repaired component to again move up the progression of monthly, quarterly, and annual inspection frequency.

6) Recordkeeping of labeled or tagged monitoring components will be maintained, and include the type of component with available specifications, dates of monitoring, instrument readings, and location of the component.

b. The permittee shall maintain all appropriate records to demonstrate compliance with the requirements of both §2105.06 of Article XXI and RACT Order #230. Such records shall provide sufficient data to clearly demonstrate that all requirements of both §2105.06 of Article XXI and RACT Order #230 are being met. [RACT Order #230, 1.9; 25 Pa Code §129.100]

c. The facility shall retain all records required by both §2105.06 of Article XXI and RACT Order #230 for at least 2 years, and shall make the same available to the Department upon request. [RACT Order #230, 1.10; 25 Pa Code §129.100]

~~31. HAP LDAR Implementation (§2103.20.b.4)~~

~~a. Upon issuance of this permit the permittee shall continue to implement a Hazardous Air Pollutant Leak Detection and Repair (HAP LDAR) program to monitor equipment in HAP service throughout the facility. Such HAP LDAR program shall consist of the following:~~

~~1) The permittee shall maintain an electronic registry to identify all components in HAP service.~~

~~2) Monitoring shall be conducted on a different set of one-third of all components every 12-month period, in accordance with condition IV.31.b below. All components shall be tested at least once every three (3) years.~~

~~3) If, for each component type where the average percent leaking value is greater than or equal to 2%, the facility shall increase the monitoring frequency for that component type to once every 12-month period for all components of that type. This monitoring frequency shall be maintained until the leak rate for that component type is demonstrated to be less than 2% over a 24-month period, at which time the permittee may return to the monitoring schedule in condition IV.31.a.2) above.~~

~~4) For each type of component, a leak is defined as follows:~~

~~a) valves: 500 ppm~~$_v$
~~b) pump seals: 1,000 ppm~~$_v$
~~c) pressure relief valves: 500 ppm~~$_v$
~~d) agitator seals: 10,000 ppm~~$_v$
~~e) flanges: 500 ppm~~$_v$
~~f) screw connectors: 500 ppm~~$_v$
~~g) manways: 500 ppm~~$_v$
~~h) gauge hatches: 500 ppm~~$_v$
~~i) instruments: 500 ppm~~$_v$
~~j) open-ended lines: 500 ppm~~$_v$

~~b. Monitoring of all components shall be conducted in accordance with Method 21 of 40 CFR Part 60, Appendix A.~~

C. Process P007: Unit 21

Pages 38 through 46 have been redacted.

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Process P007 consists of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

~~a. The permittee shall not operate or allow to be operated Unit 21 unless the Aqueous Treaters are equipped with conservation vents. Each conservation vent shall have a set point above the maximum vapor pressure of the material being processed. [§2103.12.a.2.B]~~

~~b. Total throughput through Unit 21 shall not exceed 89,400,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]~~

~~c. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table V-C-1 below: [§2103.12.a.2.B]~~

~~**TABLE V-C-1: Unit 21 Holding Tower and Holding Tank Emission Limitations**~~

~~Pollutant~~	~~Unit 21 Holding Towers & Tank~~	
	~~Short-term (lb/product change[1])~~	~~Long-term (tpy[2])~~
~~Volatile Organic Compounds (VOC)~~	~~21.09~~	~~**0.55**~~
~~Hazardous Air Pollutants (HAP)~~	~~10.55~~	~~**0.28**~~

~~1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.~~
~~2. A year is defined as any consecutive 12-month period.~~

d. The Unit 21 Holding Towers and Final Holding Tank shall not emit more than 21.09 lb per product change [25 Pa Code §129.99]

~~e. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table V-C-2 below: [§2103.12.a.2.B]~~

~~**TABLE V-C-2: Unit 21 Aqueous Treater Emission Limitations**~~

~~Pollutant~~	~~Unit 21 Aqueous Treaters~~			
	~~Treater #4 (lb/batch)[1]~~	~~Treater #10 (lb/batch)[1]~~	~~Treater #11 (lb/batch)[1]~~	~~Long-term (tpy)[2,3]~~
~~Volatile Organic Compounds (VOC)~~	~~22.13~~	~~10.26~~	~~12.99~~	~~**6.23**~~
~~Hazardous Air Pollutants (HAP)~~	~~12.41~~	~~5.75~~	~~7.28~~	~~**3.50**~~

~~1. Maximum emissions based on material charging.~~
~~2. A year is defined as any consecutive 12-month period.~~
~~3. Total for all three aqueous treaters.~~

~~f. The permittee shall not use boron trifluoride (BF_3) as a catalyst in Unit 21 unless all BF_3 emissions from the Holding Towers and Final Holding Tank are being controlled by a packed-bed scrubber. [§2103.12.a.2.B]~~

~~2. Testing Requirements:~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~3. Monitoring Requirements:~~

~~The permittee shall visually inspect the BF_3 scrubber required under condition V.C.1.f at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]~~

4. Record Keeping Requirements:

~~a. The permittee shall keep and maintain the following data for the Unit 21 Holding Towers and Final Holding Tank: [RACT Order #230, 1.9; §2103.12.j]~~
~~1) Number of product changes per month and the rolling 12-month total;~~
~~2) Poly oil addition rate (lb/hr) and the rolling 12-month total;~~
~~3) Number of solvent flushes per batch; and~~
~~4) If the rolling 12-month total throughput of poly oil exceeds 80,500,000 lbs or if the rolling 12-month total number of product changes exceeds 47, the calculated estimated emissions per month.~~

b. The permittee shall keep and maintain the following data for the Unit 21 Aqueous Treaters: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
1) Number of batch fillings per treater per month and the rolling 12-month total;
2) Amount of water used per treater per batch;
3) Number of washings per treater per batch; and
4) If the rolling 12-month total of batches exceeds any of the following, the calculated estimated emissions per month:
   a) Treater #4, 221 batches;
   b) Treater #10, 363 batches; or
   c) Treater #11, 296 batches.

c. The permittee shall keep and maintain records of any compositional analyses of poly oil processed in Unit 21. [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]

~~d. The permittee shall keep and maintain the following data for the packed-bed scrubber: [§2103.12.j]~~
~~1) The amount of BF_3 catalyst used in the reactor per batch; and~~
~~2) A log of the monitoring required under condition V.C.3.~~

e. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2102.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

~~5. Reporting Requirements:~~

~~a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]~~
~~1) Calendar dates covered in the reporting period;~~
~~2) All batch information required to be recorded under conditions V.C.4.a and V.C.4.b above; and~~
~~3) Packed-bed scrubber information required to be recorded under condition V.C.4.d.1) above.~~

~~b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for Unit 21 and all associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. Unit 21 and all associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

D. Processes P008 & P009: Continuous Stills #3 and #4

Process Description: Continuous Stills
Facility ID: No. 3 Continuous Still & No. 4 Continuous Still
Raw Materials: polyoil, resin-forming feedstock, additives
Control Device: none

As identified above, Processes P008 & P009 consist of the equipment listed under the heading "Continuous Stills" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

~~a. The number of product changes shall be limited to 365 in any 12-month period in each continuous still. [§2103.12.a.2.B]~~

~~b. The No. 3 and No. 4 Continuous Stills shall not exceed the emissions limitations in Table V-D-1 below: [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]~~

~~TABLE V-D-1: No. 3 & No. 4 Continuous Still Emission Limitations~~

~~Pollutant~~	~~No. 3 Continuous Still~~		~~No. 4 Continuous Still~~	
	~~Short-term (lb/prod. change)[1]~~	~~Long-term (tpy)[2]~~	~~Short-term (lb/prod. change)[1]~~	~~Long-term (tpy)[2]~~
~~Volatile Organic Compounds (VOC)~~	~~14.00~~	~~**2.56**~~	~~76.00~~	~~**13.87**~~
~~Hazardous Air Pollutants (HAP)~~	~~1.66~~	~~**0.31**~~	~~6.13~~	~~**1.12**~~

~~1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.~~
~~2. A year is defined as any consecutive 12-month period.~~

c. The No. 4 Continuous Still shall not emit more than 76.00 lb per product change. [25 PA Code §129.99]

~~2. Testing Requirements:~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~3. Monitoring Requirements:~~

~~None, except as provided elsewhere.~~

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for both the No. 3 and No. 4 Continuous Stills and associated equipment: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
1) Number of product changes per month and the rolling 12-month total;
2) Total operating times;

3) Type and amount of daily raw materials used;
4) Type and amount of daily resins produced; and
5) For each still, if the rolling 12-month total number of product changes exceeds 330, the calculated estimated emissions per month.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

~~**5. Reporting Requirements:**~~

~~a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]~~
~~1) Calendar dates covered in the reporting period; and~~
~~2) Total number of product changes and operating time per month.~~

~~b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the No. 3 and No. 4 Continuous Stills and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.~~

b. The No. 3 and No. 4 Continuous Stills and associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

E. Process P011: No. 2 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 2 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P011 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 2 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I007a, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I007a, V.A.1.b; §2103.12.a.2.B; 25 PA Code §129.99]

~~c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I007a, V.A.1.c; §2103.12.a.2.B]~~

~~d. Fugitive emission from pumps, valves, compressors, and safety pressure relief valves in the No. 2 Packaging Center shall not exceed 1.49 tons/yr of VOCs. [IP #0060-I007a, V.A.1.e; §2103.12.a.2.B]~~

~~e. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.1.f; §2103.12.a.2.B]~~

~~f. Emissions from the No. 2 Packaging Center shall not exceed the following at any time: [IP #0060-I007a, V.A.1.g; §2103.12.a.2.B]~~

~~Table V-E-1: No. 2 Packaging Center Emission Limitations~~

	~~Process~~	~~Short-term (lb/hr)[1]~~	~~Long-term (tpy)[2]~~
~~Particulate Matter[4]~~	~~Crusher, Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.38~~	~~1.67~~
~~PM_{10}[(4)]~~	~~Crusher, Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.38~~	~~1.67~~
~~$PM_{2.5}$[(4)]~~	~~Crusher, Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.38~~	~~1.67~~
~~VOC~~	~~Resin Drain Kettles[3]~~	~~0.51~~	~~15.56~~
	~~No. 2 Flaking Belt~~	~~1.86~~	~~8.14~~
~~HAP~~	~~Resin Drain Kettles[3]~~	~~0.01~~	~~0.36~~
	~~No. 2 Flaking Belt~~	~~0.04~~	~~0.19~~

~~1. Based on a 3-hour average.~~
~~2. A year is defined as any 12 consecutive months.~~
~~3. Short-term emissions are per kettle (lb/hr per kettle). There are seven (7) total drain kettles.~~
~~4. All particulate matter emission limits are for filterable particulate.~~

2. Testing Requirements:

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 ("Emissions Testing) and §2108.02. [IP #0060-I007a, V.A.2.a-b; §2103.12.h; 25 PA Code §129.100]

1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.E.1.f above;
2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
5) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
6) Any alternative test methods approved by the Department.

~~b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~**3. Monitoring Requirements:**~~

~~a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [IP #0060-I007a, V.A.3.a; §2103.12.i]~~

~~b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.3.b; §2103.12.i]~~

~~c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [IP #0060-I007a, V.A.3.c; §2103.12.i]~~

~~d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 2 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I007a, V.A.3.d; §2103.12.i]~~

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 2 Packaging Center to demonstrate

compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I007a, V.A.4.a; §2103.12.j; 25 PA Code §129.100]

1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month);
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.E.3.d above.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [IP #0060-I007a, V.A.4.c; §2103.12.j.2; 25 PA Code §129.100]

~~5. **Reporting Requirements:**~~

~~a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I007a, V.A.5.a; §2103.12.k]~~

~~b. The semiannual report shall include the following information at a minimum: [IP #0060-I007a, V.A.5.b; §2103.12.k]~~

~~1) Calendar dates covered in the reporting period;~~
~~2) Monthly data required by conditions V.E.4.a.1), 3), and 4) above; and~~
~~3) Reasons for any non-compliance with the emission standards.~~

~~c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I007a, V.A.5.c; §2103.12.k]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the No. 2 Packaging Center and associated equipment: [§2105.03]~~

~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I007a, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

F. Process P012: No. 3 Packaging Center

Process Description: Pastillating and Packaging
Facility ID: No. 3 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P012 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 3 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99; 25 PA Code §129.97(c)(2)]

b. Emissions from the Resin Pastillating Belt shall not exceed 0.51 lbs of VOC per ton of resin produced. [§2103.12.a.2.B; 25 PA Code §129.99]

~~c. Emissions from the Resin Pastillating Belt shall not exceed 0.02 lbs of HAP per ton of resin produced. [§2103.12.a.2.B]~~

~~d. The permittee shall not operate the bagging stations unless all emissions are directed to the No. 3 Packaging Center baghouse. [2103.12.a.2.B]~~

~~e. Emissions from the No. 3 Packaging Center shall not exceed the following at any time: [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]~~

~~**TABLE V-F-1: No. 3 Packaging Center Emission Limitations**~~

	~~Process~~	~~Short-term (lb/hr)[1]~~	~~Long-term (tpy)[2]~~
~~Particulate Matter[5]~~	~~Large & Small Bagging Stations, and Pastillating (total emissions)~~	~~0.25~~	~~**1.09**~~
~~PM_{10}[(5)]~~	~~Large & Small Bagging Stations, and Pastillating (total emissions)~~	~~0.25~~	~~**1.09**~~
~~$PM_{2.5}$[(5)]~~	~~Large & Small Bagging Stations, and Pastillating (total emissions)~~	~~0.25~~	~~**1.09**~~
~~VOC~~	~~Resin Drain Kettles[3]~~	~~0.71~~	~~**21.78**~~
	~~No. 3 Pastillating Belt~~	~~1.53~~	~~**6.69**~~
	~~Pouring[4]~~	~~0.94~~	~~**1.96**~~
~~HAP~~	~~Resin Drain Kettles[3]~~	~~0.03~~	~~**0.71**~~
	~~No. 3 Pastillating Belt~~	~~0.05~~	~~**0.22**~~
	~~Pouring[4]~~	~~0.03~~	~~**0.08**~~

~~1. Based on a 3-hour average.~~
~~2. A year is defined as any 12 consecutive months. There are seven (7) total drain kettles.~~

~~3. Short-term emissions are per kettle (lb/hr per kettle).~~
~~4. Product is either poured, pastillated, or loaded under Section V.J.~~
~~5. All particulate matter emission limits are for filterable particulate.~~

2. Testing Requirements:

a. An emissions test shall be performed within 18 months after issuance of this permit in accordance with Site Level condition IV.13 ("Emissions Testing") and §2108.02. [§2103.12.h; 25 PA Code §129.100]

1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the pastillating belt VOC emission limits in condition V.F.1.e above;
2) Testing shall be conducted at maximum pastillating belt production and shall consist of three (3) 1-hour test runs;
3) The outlet gas flow rate and VOC emissions shall be continuously monitored and recorded during the emissions testing;
4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
5) Any alternative test methods approved by the Department.

~~b. Emissions testing for VOC and HAP shall be performed within six (6) months after actual throughput of resin on the pastillating belt first exceeds 24,000,000 pounds in any rolling 12-month period and every five (5) years thereafter. [§2103.12.h]~~

~~1) Emissions testing of VOC shall be in accordance with condition V.F.2.a above;~~
~~2) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs.~~

~~c. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~**3. Monitoring Requirements:**~~

~~a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]~~

~~b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 3 Packaging Center baghouse. [§2103.12.i]~~

~~c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]~~

~~d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 3 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [§2103.12.i]~~

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 3 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [§2103.12.j; 25 PA Code §129.100]
1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
2) Date of kettle fillings, amount filled, and type of fill (resin or resin solution) for the reporting period;
3) Total amount of throughput on the pastillating belt (daily, monthly, and 12-month);
4) Total amount of final product packaged at the bagging areas (monthly and 12-month)**;**
5) Total amount of final product from the pouring station (monthly and 12-month);
6) Total calculated VOC and HAP emissions from the resin drain kettles, pastillating belt, and pouring station, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
7) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.F.3.d above.

~~b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]~~

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

~~**5. Reporting Requirements:**~~

~~a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]~~

~~b. The semiannual report shall include the following information: [§2103.12.k]~~
~~1) Calendar dates covered in the reporting period; and~~
~~2) Monthly and 12-month data required by conditions V.F.4.a.1), 4), 5), and 6) above.~~

~~c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the No. 3 Packaging Center and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

G. Process P013: No. 5 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 5 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P013 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 5 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I008, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I008, V.A.1.b; §2103.12.a.2.B; 25 PA Code §129.99]

~~c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I008, V.A.1.c; §2103.12.a.2.B]~~

~~d. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 5 Packaging Center baghouse. [2103.12.a.2.B]~~

~~e. Emissions from the No. 5 Packaging Center shall not exceed the following at any time: [IP #0060-I008, V.A.1.e; OP #4051008-000-66500; §2103.12.a.2.B]~~

~~**TABLE V-G-1: No. 5 Packaging Center Emission Limitations**~~

	~~Process~~	~~Short-term (lb/hr)[1]~~	~~Long-term (tpy)[2]~~
~~Particulate Matter[4]~~	~~Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.25~~	~~**1.09**~~
~~PM_{10}(4)~~	~~Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.25~~	~~**1.09**~~
~~$PM_{2.5}$(4)~~	~~Large & Small Bagging Stations, and Flaking (total emissions)~~	~~0.25~~	~~**1.09**~~
~~VOC~~	~~Resin Drain Kettles[3]~~	~~1.07~~	~~**14.00**~~
	~~No. 5 Flaking Belt~~	~~1.67~~	~~**7.33**~~
~~HAP~~	~~Resin Drain Kettles[3]~~	~~0.04~~	~~**0.46**~~
	~~No. 5 Flaking Belt~~	~~0.04~~	~~**0.17**~~

~~1. Based on a 3-hour average.~~
~~2. A year is defined as any 12 consecutive months.~~
~~3. Short-term emissions are per kettle (lb/hr/kettle). There are three (3) total drain kettles.~~
~~4. All particulate matter emission limits are for filterable particulate.~~

2. **Testing Requirements:**

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 ("Emissions Testing") and §2108.02. [IP #0060-I008, V.A.2.a & b; §2103.12.h; 25 PA Code §129.100]
   1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.G.1.e above;
   2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
   3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
   4) Molten resin feed rate and finished resin produced shall be recorded for each test run;
   5) Type of resin produced shall be recorded for each test run;
   6) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
   7) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
   8) Any alternative test methods approved by the Department.

~~b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~3. **Monitoring Requirements:**~~

~~a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]~~

~~b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 5 Packaging Center baghouse. [§2103.12.i]~~

~~c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]~~

~~d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 5 Flaking Belt, exhaust hood, and associated duct work once per week to ensure the equipment is operating properly, and that the integrity of the system is not compromised by damage, malfunction or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I008, V.A.3; §2103.12.i]~~

4. **Record Keeping Requirements:**

a. The permittee shall record the following information for the No. 5 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I008, V.A.4.a; §2103.12.j] ; 25 PA Code §129.100
   1) Process operation time, raw material usage, and production records (daily, monthly, and 12-

month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month);
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.G.3.d above.

~~b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]~~

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

~~**5. Reporting Requirements:**~~

~~a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I008, V.A.5.a; §2103.12.k]~~

~~b. The semiannual report shall include the following information: [IP #0060-I008, V.A.5.b; §2103.12.k]~~
~~1) Calendar dates covered in the reporting period; and~~
~~2) Monthly and 12-month data required by conditions V.G.4.a.1), 3), and 4) above;~~
~~3) Non-compliance information required by condition V.G.4.b above, and~~
~~4) Reasons for any non-compliance with the emission standards.~~

~~c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the No. 5 Packaging Center and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I008, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

H. Process P014: Wastewater Collection, Conveyance, and Treatment

Facility ID: Wastewater Collection System
Raw Materials: industrial process wastewaters, water treatment chemicals, biological treatment nutrients, storm waters
Control Device(s): none

As identified above, Process P014 consists of equipment listed under the heading "Other Processes – Wastewater Collection, Conveyance, and Treatment" in Table II-1 in the Facility Description, Section II, as well as all catch basins and other water collection locations within the facility.

1. Restrictions:

~~a. The permittee shall not operate or allow to be operated the Surge Tank (#5001), Batch Tanks (#2011-2013), and Sludge Holding Tank (#2010) unless each is covered with a fixed roof. [§2103.12.a.2.B]~~

~~b. Emissions from the wastewater collection and conveyance system shall not exceed the following at any time: [§2103.12.a.2.B]~~

~~**TABLE V-H-1: Wastewater Conveyance System Emission Limitations**~~

~~POLLUTANT~~	~~Yearly Emissions (tons/yr)[1]~~
~~Volatile Organic Compounds (VOCs)~~	~~3.36~~
~~Hazardous Air Pollutants (HAPs)~~	~~1.08~~

~~1. A year is defined as any consecutive 12-month period.~~

~~c. Emissions from the batch tanks, equalization tank, biological treatment system, and other vessels in the wastewater treatment system shall not exceed the following at any time: [§2103.12.a.2.B; IP #90-I-0058-P; 25 PA Code §129.97(c)(2)]~~

~~**TABLE V-H-2: Wastewater Treatment System Emission Limitations**~~

~~POLLUTANT~~	~~Batch Tanks~~	~~Equalization Tank~~	~~Aeration Tanks~~
	~~tpy[1]~~	~~tpy[1]~~	~~tpy[1]~~
~~Volatile Organic Compounds (VOCs)~~	~~10.28~~	~~1.79~~	~~1.37~~
~~Hazardous Air Pollutants (HAPs)~~	~~1.52~~	~~0.73~~	~~0.87~~

~~1. A year is defined as any consecutive 12-month period.~~

d. The permittee shall not operate or allow to be operated the Rotary Vacuum Filter unless Boiler #6 is in operation. The Rotary Vacuum Filter shall not be operated unless all emissions from the vacuum pump are vented to Boiler #6. [§2103.12.a.2.B; 25 PA Code §129.99]

~~**2. Testing Requirements:**~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~**3. Monitoring Requirements:**~~

~~a. The permittee shall take monthly Photo Ionization Detector (PID) readings (or equivalent monitoring device as approved by the Department) of each manhole/catch basin for the contaminated water system just below the manhole/catch basin opening for VOCs and HAPs. [§2103.12.i]~~

~~b. The permittee may reduce the frequency of manhole/catch basin PID readings from monthly to quarterly if total emissions from the contaminated water conveyance system do not exceed the limits in condition V.H.1.b above for twelve (12) consecutive monthly readings. [§2103.12.i]~~
~~1) The permittee may reduce the frequency from quarterly to semiannually if total emissions do not exceed the limits in condition V.H.1.b above for three (3) consecutive years.~~
~~2) If emissions exceed the limits in condition V.H.1.b above, the permittee shall resume more frequent readings.~~

~~c. The PID monitoring device shall be calibrated using isobutylene gas in order to generate readings that have the same "PID or Isobutylene Units" as the PID readings from the "Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) Emission Estimate for Wastewater Conveyance and Treatment" report (published by Malcolm Pirnie, Inc., January 2008). [§2103.12.i]~~

~~d. The permittee shall measure the VOC and total HAP concentrations of the wastewater influent to the Equalization Tank on a quarterly basis. [§2103.12.i]~~

4. Record Keeping Requirements:

~~a. The permittee shall keep rolling 12-month records of VOC and HAP emission calculations for the wastewater conveyance system based on the PID readings required by conditions V.H.3.a and V.H.3.b above and the emission factors determined in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c above, or other factors approved by the Department. [§2103.12.j]~~

~~b. The permittee shall keep records of the following for the wastewater treatment system: [§2103.12.j]~~
~~1) A table of all PID readings conducted.~~
~~2) Daily, monthly, and rolling 12-month wastewater flow volume treated.~~
~~3) Quarterly wastewater influent concentrations samples required under condition V.H.3.d above.~~

~~c. If the recorded values of the quarterly wastewater concentrations in condition V.H.4.b.3) exceed the values in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c, the permittee shall re-evaluate the emissions estimate using TOXCHEM or other model program as approved by the Department. [§2103.12.j]~~

d. The permittee shall record all instances of operation of the Rotary Vacuum Filter, including date, time, and duration of operation and total throughput of wastewater to the unit. [§2103.12.j; 25 PA Code §129.100]

~~e. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]~~

~~f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]~~

~~**5. Reporting Requirements:**~~

~~a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]~~

~~b. The semiannual report shall include the following information: [§2103.12.k]~~
~~1) Calendar dates covered in the reporting period.~~
~~2) Estimated VOC and HAP emissions from the wastewater conveyance system required under condition V.H.4.a above.~~
~~3) A summary of the PID readings required to be maintained under condition V.H.4.b.1) above.~~
~~4) The monthly wastewater volume recorded under condition V.H.4.b.2) above.~~
~~5) Estimated VOC and HAP emissions from the wastewater treatment system.~~
~~6) All information for the Rotary Vacuum Filter required to be recorded by condition V.H.4.d above for the time period of the report.~~

~~c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the Wastewater Collection, Conveyance, and Treatment system: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The Wastewater Collection, Conveyance, and Treatment system shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

I. Process P015: Resin Rework Tanks

Facility ID: Tanks N2 and N4
Raw Materials: resins, rosins, distillate oils
Control Device(s): double-pipe surface condenser

1. Restrictions:

a. The permittee shall not operate or allow to be operated the resin rework tanks N2 and N4 unless all emissions are vented through a condenser. [RACT Order #230, §1.3; §2103.12.a.2.B; 25 PA Code §129.99]

~~b. Emissions from the resin rework tanks at the exit of the condenser shall not exceed the emissions limitations in Table V-I-1 below: [§2103.12.a.B]~~

~~TABLE V-I-1: Resin Rework Tank Emission Limitations~~

~~POLLUTANT~~	~~Hourly Emissions (lb/hr)~~[1]	~~Yearly Emissions (tons/yr)~~[2]
~~Volatile Organic Compounds (VOCs)~~	~~3.78~~	**~~16.55~~**
~~Hazardous Air Pollutants (HAPs)~~	~~0.08~~	**~~0.32~~**

~~1. Based on a 3-hour average.~~
~~2. A year is defined as any consecutive 12-month period.~~

~~c. The average monthly inlet coolant temperature on the condenser shall not exceed 90 °F. [RACT Order #230, §1.3.a; §2103.12.a.2.B]~~

~~2. Testing Requirements:~~

~~a. The permittee shall perform an one-time test within 24-months of the issuance date of this permit in accordance with Site Level Condition IV.13 ("Emissions Testing") and Article XXI §2108.02. [§2102.12.h; §2108.02]~~

~~b. Emissions testing shall be performed at the outlet of the condenser for VOC in accordance with EPA Reference Methods 25 and the Allegheny County Health Department Source Testing Manual, or any alternative test method as approved by the Department. Testing shall be performed during the period of maximum emissions from the process and shall consist of three (3) test runs, each performed over the entire vessel loading period. The following information shall be reported as part of the emissions test report: [§2103.12.h; §2108.02]~~
~~1) VOC emissions (in lb/hr);~~
~~2) Vessel loading duration;~~
~~3) Coolant inlet temperature (continuous);~~
~~4) Outlet vapor temperature (continuous); and~~
~~5) Resin production rate (gallons/batch; lb/batch)~~

~~c. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~3. Monitoring Requirements:~~

~~a. The permittee shall install, operate, and maintain a condenser coolant inlet temperature instrument that continuously monitors the coolant inlet temperature to a standard accuracy of the greater of ±2.2 °C or ±0.75% of the temperature measured. The permittee shall at all times properly maintain and calibrate the continuous temperature monitor and recorder in accordance with manufacturer's specifications and good engineering practices. [§2103.12.i]~~

~~b. Monitoring data recorded during periods of monitoring system breakdowns, repairs, preventive maintenance, calibration checks, zero (low-level) and high-level adjustments, periods of non-operation of the process unit (or portion thereof) resulting in cessation of the emissions to which the monitoring applies, shall not be included in any average to determine compliance, except monitoring data is to be collected during periods of startup, shutdown and malfunction. [§2103.12.i]~~

~~c. The permittee shall seek Department approval of any alternative monitoring systems. [§2103.12.i]~~

4. Record Keeping Requirements:

a. The permittee shall maintain the following records for the condenser: [§2103.12.j; 25 PA Code §129.100]
1) A record of condenser coolant inlet temperature values measured at least once every 15 minutes; or
2) A record of block average values for 15-minute or shorter periods calculated from all measured coolant inlet temperature values during each period or from at least one measured data value per minute if measure more frequently than once per minute;
3) Hours of operation;
4) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment; and
5) Resin production data.

~~b. The permittee shall record the following information any time the coolant inlet temperature monitor required by condition V.I.3.a above is offline while the Resin Rework Tanks are in operation: [§2103.12.j]~~
~~1) Date and time the unit went offline;~~
~~2) Duration of offline status; and~~
~~3) Cause of offline status.~~

~~c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]~~

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2; 25 PA Code §129.100]

~~5. Reporting Requirements:~~

~~a. The permittee shall report the following information to the Department semiannually in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [§2103.12.k]~~

~~1) Calendar dates covered in the reporting period;~~
~~2) Hours of operation; and~~
~~3) Any instances of non-compliance~~

~~b. The permittee shall report all information in condition V.I.4.b regarding the coolant inlet temperature monitor in the semiannual report. [§2103.12.k]~~

~~c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a. The permittee shall do the following for the Resin Rework Tanks and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The Resin Rework Tanks and condenser shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1, 1.3; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

J. Process P016: Final Product Loading

Facility ID: LX-830 Fuel Oil Barge Loading and Final Product Tankcar & Tank Wagon Loading
Raw Materials: Petroleum hydrocarbon resins, distillate fuel oils, and distillate oils
Control Device(s): none

~~**1. Restrictions:**~~

~~a. Emissions from the Final Product Loading process shall not exceed the emissions limits in Table V-J-1 below: [§2103.12.a.2.B]~~

~~**TABLE V-J-1: Final Product Loading Emission Limitations**~~

~~POLLUTANT~~	~~Barge Loading~~		~~Tankcar & Tank Wagon Loading~~		~~Total~~
	~~lb/hr[1]~~	~~tpy[2]~~	~~lb/hr[1]~~	~~tpy[2]~~	~~tpy[2]~~
~~Volatile Organic Compounds (VOCs)~~	~~13.30~~	~~0.79~~	~~22.52~~	~~18.24~~	~~**19.03**~~
~~Hazardous Air Pollutants~~	~~0.64~~	~~0.04~~	~~0.26~~	~~0.21~~	~~**0.25**~~

~~1. Based on a 3-hour average.~~
~~2. A year is defined as any consecutive 12-month period.~~

~~b. The rate of barge loading shall not exceed 850 gallons per minute, and total transfer of material transferred to barges shall not exceed 6.0 million gallons in any 12-month period. [§2103.12.a.2.B]~~

~~c. The rate of tankcar/tank wagon loading shall not exceed 250 gallons per minute, and total transfer of material transferred to tankcars or tank wagons shall not exceed 24.3 million gallons in any 12-month period. [§2103.12.a.2.B]~~

~~**2. Testing Requirements:**~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~**3. Monitoring Requirements:**~~

~~None, except as provided elsewhere.~~

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records for each batch of product loaded: [§2103.12.j; 25 PA Code §129.100]
1) Date and time of loading operations;
2) Type of loading (barge or tankcar);
3) Amount of material transferred;
4) Type of material transferred; and
5) Temperature of material during loading of tankcars or tank wagons.

~~b. The permittee shall record the calculated estimated emissions per month if the total amount of~~

~~material loaded to barges exceeds 5.4 million gallons in any rolling 12-month period, or if the total amount of material loaded to tankcars or tank wagons exceeds 21.9 million gallons in any rolling 12-month period. [§2103.12.j]~~

~~c.~~ ~~The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]~~

~~d.~~ ~~All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]~~

~~**5. Reporting Requirements:**~~

~~a.~~ ~~The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]~~
~~1) Calendar dates covered in the reporting period; and~~
~~2) All loading information required to be recorded under condition V.J.4.a above;~~
~~3) In lieu of the actual temperatures recorded under condition V.J.4.a.5) above, the permittee may report the temperature of the material at the storage tank.~~

~~b.~~ ~~Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a.~~ ~~The permittee shall do the following for the product loading systems and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The Barge Loading and Tankcar & Tank Wagon Loading processes shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

P. D001-D012: Storage Tanks

Pages 70 through 81 have been redacted.

Process Description	Storage Tanks					
Facility ID	D001	D002	D003	D004	D005	D006
Stored Materials	Catalytic & Misc. Poly Oil	Distillates	Heat Poly Charge Stock	LX-1144 Charge Stock	Misc.	Naphthenic/Ink /Vegetable Oil
Process Description	Storage Tanks					
Facility ID	D007	D008	D009	D010	D011	D012
Stored Materials	Nevchem LR	Recovered Oil	Resin Former	Resin Solutions	Unit 20 Feed Blend	Unit 21 Feed Blend

Control(s): Vapor balancing during barge off-loading on Tanks #5003 (included under D005); vent condenser and nitrogen blanketing on Tank #5003

As identified above, the storage tanks consist of the tanks listed under the heading "Storage Tanks" in Table-II in the Facility Description, Section II.

~~**1. Restrictions:**~~

~~a. The permittee shall store all materials in accordance with Site Level Condition IV.17. [§2103.12.a.2.B; §2105.12.a]~~

~~b. Emissions from the storage tanks shall not exceed the values in Table V-P-1 at any time: [§2103.12.a.2.B; §2105.12.b]~~

~~**TABLE V-P-1: Storage Tanks Emission Limitations**~~

~~Storage Tank Category~~		~~VOC Emissions (tons/yr)[1]~~	~~HAP Emissions (tons/yr)[1]~~
~~D001~~	~~Catalytic & Misc. Poly Oil~~	~~3.79~~	~~0.09~~
~~D002~~	~~Distillates~~	~~5.37~~	~~0.91~~
~~D003~~	~~Heat Poly Charge Stock~~	~~4.48~~	~~0.24~~
~~D004~~	~~LX-1144 Charge Stock~~	~~0.01~~	~~0.01~~
~~D005~~	~~Miscellaneous~~	~~1.45~~	~~0.01~~
~~D006~~	~~Naphthenic/Ink/Vegetable Oil~~	~~0.12~~	~~0.01~~
~~D007~~	~~Nevchem LR~~	~~0.07~~	~~0.01~~
~~D008~~	~~Recovered Oil~~	~~0.11~~	~~0.02~~
~~D009~~	~~Resin Former[2]~~	~~1.55~~	~~0.26~~
~~D010~~	~~Resin Solutions~~	~~21.59~~	~~0.01~~
~~D011~~	~~Unit 20 Feed Blend~~	~~0.73~~	~~0.16~~
~~D012~~	~~Unit 21 Feed Blend~~	~~2.74~~	~~0.08~~
~~**Total**~~		~~**42.01**~~	~~**1.77**~~

~~1. A year is defined as any consecutive 12-month period.~~
~~2. Does not include emissions from Tanks #8501-#8506. Emissions from those tanks may be found in Table V-P-2 below. See condition V.P.1.e below.~~

~~c. Combined emissions from Tanks #8501-8506 shall not exceed the limits in Table V-P-2: [IP #0060-I004, V.A.1.a; §2103.12.a.2.B]~~

~~Table V-P-2: Tanks #8501-#8506 Emissions Limitations~~

~~Pollutant~~	~~Annual Emissions (tons/yr)[1]~~
~~Volatile Organic Compounds (VOC)~~	~~3.4~~
~~Hazardous Air Pollutants (HAP)~~	~~0.6~~

~~1. A year is defined as any consecutive 12-month period.~~

~~d. The permittee shall not operate or allow to be operated Tank #5003 unless the vapor recovery system is in place. [§2103.12.a.2.B; §2105.12.b]~~

~~e. The permittee shall limit the quantity of materials transferred into Tanks #8501-8506 to no more than 12,000,000 gallons per any 12 month period. [§2105.12.b]~~

~~f. The permittee shall not store or allow to be stored in Tanks #6301-6302 and #8501-8506 any liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa at a temperature equal to the local maximum monthly average temperature as reported by the National Weather Service. The maximum true vapor pressure shall be determined as follows: [IP #0060-I004, V.A.1.d; §60.110b(b); §2103.12.a.2.B; §2105.12.b]~~

~~1) In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss from External Floating Roof Tanks"; or~~
~~2) As obtained from standard reference texts; or~~
~~3) As determined by ASTM Method D2879-97; or~~
~~4) Any other method approved by the Department.~~

~~g. The permittee shall not operate or allow to be operated Tanks #6301-6302 and #8501-8506 unless the operating parameters for the conservation and vacuum vents for each tank are a minimum of 0.58 psig and 0.05 psig respectively. [IP #0060-I004, V.A.1.e; §2103.012.a.2.B; §2105.12.b]~~

~~h. The permittee shall not store or allow to be stored any material in Tank #601 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §2105.12.b; §60.113]~~

~~i. The permittee shall not store or allow to be stored any material in Tanks #1005 and #2102 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §2105.12.b; §60.115a(d)(1)]~~

~~j. The permittee shall not operate or allow to be operated the Piperylene Tank #5003 unless a nitrogen blanketing system is in place and the vent condenser is in operation. [§2103.12.a.2.B; §2105.12.b]~~

~~2. Testing Requirements:~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

3. Monitoring Requirements:

a. The permittee shall monitor the coolant temperature at the outlet of the vent condenser on the Piperylene Tank #5003. [§2103.12.i; 25 PA Code §129.99]

4. Record Keeping Requirements:

~~a. The permittee shall keep readily accessible records showing the dimension of the storage vessel and analysis showing the capacity of the storage vessel for the life of the source. [IP #0060-I004, V.A.3.b; §2103.12.j]~~

~~b. The permittee shall maintain a record of the volatile organic liquid (VOL) stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period. The permittee shall determine the vapor pressure using one of the methods in condition V.P.1.f above and shall indicate which method was used. [IP #0060-I004, V.A.3.c; §2103.12.j]~~

~~c. The permittee shall record and maintain records of the total yearly throughput of material and the number of turnovers in each tank. [IP #0060-I004, V.A.4.a.1; §2103.12.j]~~

d. The permittee shall record and maintain records of the outlet coolant temperature on the vent condenser for the Piperylene Tank #5003. [§2103.12.j; 25 PA Code §129.99]

~~e. The permittee shall maintain records of the calculated VOC and HAP emissions from the storage tanks on a calendar year basis. If the actual throughput of resin formers (measured as receipts) exceeds 18.7 mmgal in any rolling 12-month period, the permittee shall calculate and report the VOC and HAP emissions from the storage tanks for the 12-month period. [§2103.12.j]~~

~~f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]~~

~~**5. Reporting Requirements:**~~

~~a. The permittee shall notify the Department within thirty (30) days of when the maximum true vapor pressure of the liquid stored in Tanks #6301-6302 or #8501-8506 exceeds 3.5 kPa. [IP #0060-I004, V.A.4.d; §2103.12.k]~~

~~b. The permittee shall submit notification of intent to store any new material in Tanks #6301-6302 or #8501-8506 other than resin forming feedstocks or fuel oil to the Department a minimum of ten (10) working days prior to the intended store date. This notification shall at a minimum include the Material Safety Data Sheet (MSDS) and emission calculation for the new material. [IP #0060-I004, V.A.5.a.2; §2103.12.k]~~

~~c. The permittee shall report to the Department the calculated VOC and HAP emissions from the storage tanks in the previous 12-month period within 30 days upon request by the Department. [§2103.12.k]~~

~~d.~~ ~~Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]~~

6. Work Practice Standards:

~~a.~~ ~~The permittee shall do the following for all storage tanks and associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. The storage tanks shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

C. Sources of Minor Significance

Pages 86 through 93 have been redacted.

Facility ID	Source Description	Reason for Determination of Minor Significance
G001	Hydrolaser Water Blasting/Cleaning	Maximum PTE is <1.0 tpy of particulate; no VOC or HAP is emitted
G002	Parts Washing	Maximum PTE is <2.0 tpy of VOC; HAPs are negligible
G003	R&D Laboratory Hoods	Laboratory equipment used exclusively for chemical or physical analyses
G004	Tank Cleaning & Painting	Maximum PTE is <3.75 tpy of VOC
F001	Parking Lots & Roadways	Maximum PTE is <3.4 tpy of particulate

1. Restrictions:

~~a. The permittee shall not exceed 2,500 gallons per year of cleaner in the Parts Washing process. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]~~

~~b. The permittee shall not use or allow to be used any halogen-containing cleaners in the Parts Washing process. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]~~

~~c. The permittee shall not exceed 2,000 gallons per year of coatings in the Tank Cleaning & Painting process. [§2103.12.a.2.B]~~

~~d. The permittee shall use only coatings compliant with Article XXI, Table 2105.10 in the Tank Cleaning & Painting process. [§2103.12.a.2.B]~~

~~e. For the parts washing process, the permittee shall keep and maintain records of the total amount and type of cleaner used. [§2103.12.j; 25 PA Code §129.97(c)(2)]~~

f. For the Tank Cleaning & Painting process, the permittee shall keep and maintain records of the total amount and type of all thinners and coatings used. [§2103.12.j; §2105.10.c; 25 PA Code §129.100]

~PERMIT SHIELD IN EFFECT~

VII. ALTERNATIVE OPERATING SCENARIOS

A. Process P006/P007 (Alternative): Unit 20 and Unit 21

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 20 and Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Processes P006 and P007 consist of the equipment listed under the heading “Catalytic Resin and Polyoil Neutralization” in Table II-1 in the Facility Description, Section II. Under the alternative operating scenario, the #4 Aqueous Treater/Agitator is moved from Unit 21 and placed in operation after the Rinse Decanter in Unit 20. The #4 Aqueous Treater/Agitator is not heated in this alternative scenario.

1. Restrictions:

~~a. The permittee shall not operate or allow to be operated Unit 20 and Unit 21 under the alternative operating scenario unless all conditions from Section V.B.1 and V.C.1 are met. [§2103.12.a.2.B]~~

~~b. Total throughput through Unit 20 shall not exceed 66,600,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 96 in any 12-month period. [§2103.12.a.2.B]~~

~~c. Emissions from the Unit 20 process shall not exceed the emissions limitations in Table VII-A-1 below: [§2103.12.a.2.B]~~

~~**TABLE VII-A-1: Unit 20 Emissions Limitations**~~

~~Pollutant~~	~~Unit 20 Total (for all process phases)~~	
	~~lb/product change[1]~~	~~tpy[2]~~
~~Volatile Organic Compounds (VOC)~~	~~75.28~~	~~3.76~~
~~Hazardous Air Pollutants (HAP)~~	~~8.17~~	~~0.40~~

~~1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.~~
~~2. A year is defined as any consecutive 12-month period.~~

~~d. The Unit 20 process shall not emit more than 75.28 lb per product change. [25 Pa Code §129.99]~~

~~e. Total throughput through Unit 21 shall not exceed 53,640,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]~~

~~f. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table VI-A-2 below: [§2103.12.a.2.B]~~

~~**TABLE VI-A-2: Unit 21 Holding Tower and Holding Tank Emission Limitations**~~

~~Pollutant~~	~~Unit 21 Holding Towers & Tank~~	
	~~Short-term (lb/product change[1])~~	~~Long-term (tpy[2])~~
~~Volatile Organic Compounds (VOC)~~	~~21.09~~	~~**0.55**~~
~~Hazardous Air Pollutants (HAP)~~	~~10.55~~	~~**0.28**~~

~~1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.~~
~~2. A year is defined as any consecutive 12-month period.~~

g. The Unit 21 Holding Towers and Final Holding Tank shall not emit more than 21.09 lb per product change. [25 Pa Code §129.99]

~~h. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table VI-A-3 below: [§2103.12.a.2.B]~~

~~**TABLE VI-A-3: Unit 21 Aqueous Treater Emission Limitations**~~

~~Pollutant~~	~~Unit 21 Aqueous Treaters~~		
	~~Treater #10 (lb/batch)[1]~~	~~Treater #11 (lb/batch)[1]~~	~~Long-term (tpy)[2,3]~~
~~Volatile Organic Compounds (VOC)~~	~~10.26~~	~~12.99~~	~~**3.78**~~
~~Hazardous Air Pollutants (HAP)~~	~~5.75~~	~~7.28~~	~~**2.12**~~

~~1. Maximum emissions based on material charging.~~
~~2. A year is defined as any consecutive 12-month period.~~
~~3. Total for all three aqueous treaters.~~

~~**2. Testing Requirements:**~~

~~The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]~~

~~**3. Monitoring Requirements:**~~

~~The permittee shall visually inspect the BF_3 scrubber required under conditions V.B.1.d and V.C.1.e at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]~~

~~**4. Record Keeping Requirements:**~~

~~The permittee shall keep and maintain all records required under sections V.B.4 and V.C.4 and indicate that the records were obtained while operating under the alternative operating scenario. [§2103.12.j]~~

~~**5. Reporting Requirements:**~~

~~The permittee shall submit reports to the Department in accordance with General Condition III.15. The reports shall contain all information required under sections V.B.5 and V.C.5 and indicate that the information pertains to operation under the alternative operating scenario. [§2103.12.k]~~

6. **Work Practice Standards:**

~~a. The permittee shall do the following for the Unit 20 and Unit 21 and all associated equipment: [§2105.03]~~
~~1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;~~
~~2) Keep records of any maintenance; and~~
~~3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.~~

b. Unit 20 and Unit 21 and all associated equipment shall be properly operated and maintained at all times while operating under the alternative operating scenario according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

Page 98 has been redacted.

~PERMIT SHIELD IN EFFECT~

ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

April 23, 2019

SUBJECT: **Reasonable Available Control Technology (RACT II) Determination**
Neville Chemical Company
2800 Neville Road
Pittsburgh, PA 15225-1496
Allegheny County

Title V Operating Permit No. 0060c

TO: JoAnn Truchan, P.E.
Section Chief, Engineering

FROM: Helen O. Gurvich
Air Quality Engineer

I. Executive Summary

Neville Chemical Company is defined as a major source of VOC emissions and was subjected to a Reasonable Achievable Control Technology (RACT II) review by the Allegheny County Health Department (ACHD) required for the 1997 and 2008 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the facility has few technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton removed.

These findings are based on the following documents:

- RACT analysis performed by ERG (Neville Chemical_RACT_8-7-15.docx)
- RACT analysis performed by Neville Chemical Company (0060c2014-02-10ract.pdf)
- Title V Operating Permit (see Permit No. 0060b dated 12/22/2017)

II. Regulatory Basis

ACHD requested all major sources of NO_X (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_X and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. Neville Chemical requested a case by case RACT II determination under 25 Pa Code 129.99 for the emission units listed in Table 1 below. This document is the result of ACHD's determination of RACT for these emission sources at Neville Chemical based on the materials submitted by the subject source and other relevant information.

III. Facility Description, Existing RACT I and Sources of VOC

Neville Chemical Company manufactures synthetic hydrocarbon resins, plasticizers, and plasticizing oils. The facility also operates a groundwater remediation system and wastewater treatment system. Also located at the facility are three (3) resin flaking and packaging centers and two natural gas-fired boiler. The facility is a major source of volatile organic compounds (VOCs) and a minor source of nitrogen oxides (NO_X) emissions. Therefore, this RACT evaluation pertains only to control of VOC emissions.

The facility has changed from the previously SIP approved RACT I for Neville Chemical in 2001 (some units changed names, different identification numbers, some shutdowns, etc.). See Table 6 in Attachment A, for a side-by-side comparison of the 1996 Enforcement Order and Agreement Upon Consent 230, RACT I Approval and the RACT II.

Table 1 Facility Sources Subject to Case-by-Case RACT II (25 Pa Code §129.99) and Their Existing RACT I Limits

Source ID	Description	Rating	VOC PTE (TPY)	VOC Presumptive Limit (RACT II)	VOC Limit (RACT I) – Consent Order No. 230
P007	Unit 21: three aqueous treaters - Uncontrolled	89.4 MM lb/yr	6.23	Limit VOC to 21.1 lb/product change; Good operating practices	Good operating practices
P009	Still #4: tray tower, distillate condenser, decanter, and vapor surge tank - Uncontrolled	219.8 MM lb/yr	13.87	Limit VOC to 76.0 lb/product change; Good operating practices	Good operating practices
P011	No. 2 Packaging Center: seven drain kettles - Uncontrolled	86.7 MM lb/yr	15.56	Good operating practices	Good operating practices
	No. 2 Packaging Center: flaking belt, packaging station - Uncontrolled		8.14	Limit VOC to 0.338 lbs/ton of resin; Good operating practices	Good operating practices
P012	No. 3 Packaging Center: seven drain kettles - Uncontrolled	122.6 MM lb/yr	21.78	Good operating practices	Good operating practices
	No. 3 Packaging Center: pastillating belt - Uncontrolled		6.69	Limit VOC to 0.51 lbs/ton of resin; Good operating practices	Good operating practices
P013	No. 5 Packaging Center: three drain kettles - Uncontrolled	78.8 MM lb/yr	14.00	Good operating practices	Good operating practices
	No. 5 Packaging Center: flaking belt, packaging station - Uncontrolled		7.33	Limit VOC to 0.338 lbs/ton of resin; Good operating practices	Good operating practices
P014	Wastewater Conveyance System - Uncontrolled	105 MM gal/yr	3.36	Good operating practices	Good operating practices
	Wastewater Treatment System: 3 batch tanks - Uncontrolled		10.28	Good operating practices	Good operating practices
P015	Resin Rework Tanks: two resin rework tanks (N2 and N4 with condenser), and a distillate receiver (uncontrolled)	1.8 MM gal/yr	16.55	Good operating practices	Good operating practices
P016	Final Product Loading: Final Product Tankcar & Tankwagon Loading	24.3 MM gal/yr	18.24	Good operating practices	Good operating practices
D001	Tanks 1001, 1002, 1016, 1017	101,148-gal ea.	3.79	25 Pa Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
	Tank 2101	215,777 gal			
	Tank 2102	214,944 gal			
D002	Tank 9	2,477 gal.	5.37	Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
	Tanks 11-12	19,320 gal. ea.			
	Tanks 13-14	20,305 gal. ea.			
	Tank 69	9,728 gal.			
	Tank 85 (part of No. 3 Continuous Still, P008)	3,900 gal.			
	Tank 172	16,900 gal.			
	Tanks 178-179	16,120 gal. ea.			
	Tanks 211-212	20,078 gal. ea.			
	Tanks 273-278	25,974 gal. ea.			
	Tanks 308-311, 314-315	30,050 gal. ea.			
	Tans 601	60,918 gal.			

Source ID	Description	Rating	VOC PTE (TPY)	VOC Presumptive Limit (RACT II)	VOC Limit (RACT I) – Consent Order No. 230
	Tank 2108	217,334 gal.			
	Tank 3 (Still Wash Tank)	3,900 gal.			
D003	Tanks 176-177	16,120 gal. ea.	4.48	Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
	Tanks 205-206	20,160 gal. ea.			
	Tank 1014	100,674 gal.			
	Tanks 1018-1019	99,309 gal. ea.			
	Tanks 2104, 2107, 2109	217,334 gal. ea.			
	Tank 1015	101,148 gal.			
D009	Tanks 8501-8506	850,000 gal. ea.	3.4	Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
D010	Tanks 93-94	28,201 gal. ea.	21.59	Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
	Tank 135	2,010 gal.			
	Tanks 304-305, 312-313, 316- 317	30,050 gal. ea.			
	Tank 320	22,438 gal.			
	Tank 330	30,913 gal.			
	Tanks 331-334	30,000 gal. ea.			
D012	Tanks 2105-2106	217,334 gal. ea.	2.74	Compliance with Article XXI, §2105.12	Compliance with Article XXI, §2105.12
G004	Tank Cleaning and Painting	2,000 gal/yr	3.74	Good operating practices	Good operating practices
	Fugitive Emissions from Equipment Leaks (valves, pumps, pipe connectors, etc.)	N/A	3.75	LDAR program	LDAR program
P006/P007	Unit 20/21 (alternative)	66.6 MM lb/yr	3.76	Good operating practices	Good operating practices
		NA	3.78	Limit Unit 20 VOC to 75.3 lb/product change; Good operating practices	Good operating practices

Table 2 Facility Sources Subject to Presumptive RACT II per PA Code 129.97

Source ID	Description	Rating	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
P001	Thermal Oxidizer	18.9 MM Btu/hr	1.04	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P006	Unit 20: reactor, two mix tanks, two decanters, holding tank	66.6 MM lb/yr	1.93	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P008	Still #3: tray tower, distillate condenser, decanter, batch/flush tank, and sidestream oil tank (T-85)	67.2 MM lb/yr	2.56	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P012	No.3 Packaging Center: pouring station	122.6 MM lb/yr	1.96	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P014	Wastewater Treatment System: equalization tank		1.79	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's

Source ID	Description	Rating	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
		105 MM gal/yr			specifications and with good operating practices
P014	Wastewater Treatment System: 2 biological treatment aeration tanks		1.37	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P017	Groundwater Remediation System: 7 groundwater wells, 7 oil recovery wells, a number 2 drywell pump and treat system, and an old number 8 water well pump and treat system	165,000 gal/yr	1.46	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B013	Boiler #6	49.4 MM Btu/hr	1.30	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
D005	Tanks TA-13, TA-14	550 gal. ea.	1.45	< 2.7 TPY VOC	Compliance with Article XXI, §2105.12
	Tank TA-15	1,050 gal.			
	Tank 307	30,050 gal.			
	Tank 76	7,614 gal.			
	Tank 60SC	6,016 gal.			
	Tank 147	500 gal.			
	Tank 175	20,347 gal.			
	Tank 9 Agitator	4,852 gal.			
	Tank 5003	500,000 gal.			
D009	Tanks 1012-1013	100,674 gal. ea.	1.55	< 2.7 TPY VOC	Compliance with Article XXI, §2105.12
	Tanks 6301-6302	630,000 gal. ea.			
G002	Parts Washing	2,500 gal/yr	2.00	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices

Table 3 Facility Sources Exempt from RACT II per PA Code 129.96(c) [< 1 TPY VOC]

Source ID	Description	Rating	VOC PTE (TPY)
P001	Heat Polymerization Still #15: reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	18 MM lb/yr	0.559
P001	Heat Polymerization Still #16: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	21 MM lb/yr	0.796
P001	Heat Polymerization Still #18: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	26.28 MM lb/yr	0.846
P001	Heat Polymerization Still #19: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.803
P001	Heat Polymerization Still #43: a reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.803
P007	Unit 21: reactor, four holding towers, one final holding tank	89.4 MM lb/yr	0.55
P016	Final Product Loading: LX-830 Fuel Oil Barge Loading	6 MM gal/yr	0.79
B001	No.15 Still process heater	7.5 MM Btu/hr	0.22
B002	No.16 Still process heater	6.1 MM Btu/hr	0.18
B003	No.18 Still process heater	8.0 MM Btu/hr	0.23
B004	No.19 Still process heater	7.5 MM Btu/hr	0.22
B006	No. 3 Continuous Still Process Heater	5.25 MM Btu/hr	0.14
B007	No. 4 Continuous Still Process Heater	10.5 MM Btu/hr	0.31
B009	No. 2 Packaging Center Heater	5.0 MM Btu/hr	0.15
B010	No. 3 Packaging Center Heater	3.91 MM Btu/hr	0.12

Source ID	Description	Rating	VOC PTE (TPY)
B011	No. 5 Packaging Center Heater	3.0 MM Btu/hr	0.09
B012	Boiler #8	29.5 MM Btu/hr	0.80
B015	Heat Polymerization Still #43: Process Heater	7.5 MM Btu/hr	0.22
	Eight (8) Emergency Generators	0.03 to 1.76 MM Btu/hr	0.15
D004	Tank 80	15,100 gal	0.01
D006	Tanks 1, 2	19,320 gal. ea.	0.13
	Tank 4	22,000 gal.	
	Tank 10	20,850 gal.	
	Tank 68	9,728 gal.	
	Tank 81	10,000 gal.	
	Tank 100	11,025 gal.	
	Tank 102	10,000 gal.	
	Tank 108	10,307 gal.	
	Tank 112	9,743 gal.	
	Tank 145	2,000 gal.	
	Tanks 201-204	20,082 gal. ea.	
	Tanks 301-303	30,050 gal. ea.	
D007	Tanks 82-83	10,000 gal. ea.	0.07
	Tank 1005	101,516 gal.	
D008	Tanks 1008	100,989 gal.	0.11
D011	Tank 252	24,052 gal.	0.73
	Tanks 271-272	25,974 gal. ea.	
P007	Unit 21 (alternative)	53.64 MM lb/yr	0.55

IV. RACT Determination

Two detailed RACT Reviews were performed to evaluate the Neville Chemical facility; one was performed by Neville Chemical Co., and one by Allegheny County Health Department (ACHD). Both submissions were considered in the final RACT disposition for the Facility and findings from each were incorporated into the ACHD RACT II Determination.

The Technically Feasible Control Options for Neville Chemical are detailed in Table 4.

Table 4a – Technically Feasible VOC Control Cost Comparisons[1]

Control Option		P007 (Unit 21)	P009 (still #4)	P011 (resin kettles)	P011 (belt, packaging)	P012 (resin kettles)	P012 (pastillating belt)
Thermal Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$262,000	$218,000	$157,000	$80,000	$243,000	$516,000
	$/ton	42,900	16,000	10,300	10,300	11,400	78,200
Catalytic Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$183,000	$140,000	$114,000	$58,500	$162,000	$312,000
	$/ton	30,000	10,300	7,500	7,500	7,600	47,200
Carbon Adsorption (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$256,000	$260,000	$181,000	$93,000	$213,000	$183,000
	$/ton	42,000	19,100	11,900	11,900	10,000	27,700
Concentrator/ Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$185,000	$185,000	$102,000	$52,000	$162,000	$222,000
	$/ton	30,400	13,600	6,700	6,700	7,600	33,600

Control Option		P007 (Unit 21)	P009 (still #4)	P011 (resin kettles)	P011 (belt, packaging)	P012 (resin kettles)	P012 (pastillating belt)
Condensation (90%)	**tpy VOC Removed**	5.6	12.5	14.00	7.3	19.6	6.0
	Cost	$372,000	$217,000	$370,000	$193,000	$425,000	$846,000
	$/ton	66,500	17,400	26,400	26,400	21,700	141,000

[1]Each of the units being evaluated for case by case RACT have separate stacks.

Table 4b – Technically Feasible VOC Control Cost Comparisons (continued)[1]

Control Option		P013 (resin kettles)	P013 (belt, packaging)	P014 (conveyance system)	P014 (batch tanks)	P015 (rework tanks)	P016 (product loading)
Thermal Oxidation (98%)	**tpy VOC Removed**	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$141,000	$74,000	$64,000	$197,000	$165,000	$160,000
	$/ton	10,300	10,300	19,500	19,500	10,200	8,940
Catalytic Oxidation (98%)	**tpy VOC Removed**	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$103,000	$54,000	$45,000	$137,000	$159,000	$154,000
	$/ton	7,500	7,500	13,600	13,600	9,790	8,590
Carbon Adsorption (98%)	**tpy VOC Removed**	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$163,000	$86,000	$64,000	$196,000	$266,000	$261,000
	$/ton	11,900	11,900	19,400	19,400	16,400	14,600
Concentrator/ Oxidation (98%)	**tpy VOC Removed**	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$92,000	$48,000	$46,000	$139,000	$168,000	$168,000
	$/ton	6,700	6,700	13,800	13,800	10,400	9,390
Condensation (90%)	**tpy VOC Removed**	12.6	6.6	3.0	9.3	14.9	16.4
	Cost	$333,000	$174,000	$100,000	$305,000	$297,000	$290,000
	$/ton	26,400	26,400	30,200	30,200	19,900	17,700

[1]Each of the units being evaluated for case by case RACT have separate stacks.

ACHD has determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the processes of the Neville Chemical facility, but they are deemed financially infeasible due to their high cost per ton removed. For all of these processes, RACT was determined to be proper operation & maintenance, and good engineering practices.

For the Unit 21 and No. 4 Still, RACT was also determined to be limiting the VOC emissions per product change (21.1 and 76.0 lbs VOC/product change, respectively). For Unit 20 under the P006/P007 Alternative Operating Scenario, RACT was determined to be 75.28 lbs VOC/product change.

For the No. 2, No. 3, and No. 5 Packaging Center Flaker Belts, RACT was also determined to be limiting the VOC emissions per ton of resin produced (0.338, 0.51, and 0.338 lbs VOC/ton resin, respectively).

For the Rotary Vacuum Filter (part of the Wastewater Collection, Conveyance, & Treatment process), emissions are controlled through Boiler #6. RACT was determined to be a requirement for Boiler #6 to be in operation in order to use the Rotary Vacuum Filter.

Process P006/P007 is a separate process from both P006 and P007. It consists of a new process using the equipment from P006 and P007, but in a different configuration. The technically feasible control options are similar to P007

As P006/P007 has fewer potential emissions than P007 (3.76 tpy compared to 6.23 tpy), the cost per ton removed would be even greater than that of P007. Therefore, none of the proposed control options were deemed economically feasible. RACT was determined to be proper operation and maintenance.

All costs, except for the capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the "EPA Air Pollution Control Cost Manual, Sixth Edition" (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items. Costs do not include taxes on the control equipment or property taxes. See the ERG and facility RACT analyses for full cost estimates.

V. RACT Summary

Based on the findings in this RACT analysis, the Neville Chemical facility has few technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton removed. The new RACT II conditions will not result in any additional reductions in VOC from the Neville Chemical Facility. The conditions of Plan Approval Order and Agreement #230 (RACT I), issued December 13, 1996, have been superseded by the case-by-case and presumptive RACT II conditions in this proposed permit. The RACT II conditions are at least as stringent as those from RACT I.

VI. New and Revised RACT II OP Permit Conditions

Table 5 – RACT II Permit Conditions

Source ID	Description	Permit Condition TVOP 0060b	Regulations
	VOC LDAR	Condition IV.30.a Condition IV.30.b Condition IV.30.c	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100
P007	Unit 21	Condition V.C.1.d Condition V.C.4.b Condition V.C.4.c Condition V.C.4.e Condition V.C.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P009	Continuous Still #4	Condition V.D.1.c Condition V.D.4.a Condition V.D.4.b Condition V.D.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P011	No. 2 Packaging Center	Condition V.E.1.a Condition V.E.1.b Condition V.E.2.a Condition V.E.4.a Condition V.E.4.b Condition V.E.6.b	25 PA Code §129.99 25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P012	No. 3 Packaging Center	Condition V.F.1.a Condition V.F.1.b Condition V.F.2.a Condition V.F.4.a Condition V.F.4.c Condition V.F.6.b	25 PA Code §129.99 25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P013	No. 5 Packaging Center	Condition V.G.1.a Condition V.G.1.b Condition V.G.2.a Condition V.G.4.a Condition V.G.4.c Condition V.G.6.b	25 PA Code §129.99 25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P014	Wastewater Collection, Conveyance, and Treatment System	Condition V.H.1.d Condition V.H.4.d Condition V.H.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.99
P015	Resin Rework Tanks	Condition V.I.1.a Condition V.I.4.a Condition V.I.4.d Condition V.I.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100
P016	Final Product Loading	Condition V.J.4.a Condition V.J.6.b	25 PA Code §129.100 25 PA Code §129.99
D001-D012	Storage Tanks	Condition V.P.6.b	25 PA Code §129.99
G004	Tank Cleaning and Painting	Condition VI.C.1.f	25 PA Code §129.100
P006/P007	Unit 20/21 (alternative)	Condition VII.A.1.g Condition VII.A.6.b	25 PA Code §129.99 25 PA Code §129.99

ATTACHMENT A

Table 6 – Side by side comparison of the Consent Order #230 (RACT I) and RACT II

VOC Sources Evaluated Under RACT I	RACT I Source Current Status	RACT II Source ID	RACT II Source Description
Fugitive Emissions	In operation	N/A	Plantwide RACT LDAR – see section IV.30 of Title V OP
Storage & Blend Tanks	In operation	Several tank groups, D001 – D012	Storage tanks grouped by material type being stored
NEVCO Process	Shut down	N/A	N/A
Heat Polymerization Stills	In operation	P001	Heat Polymerization Stills 15, 16, 18, 19 & Unit 43
Unit 20 Continuous Polymerization	In operation, but now combined with Unit 21 and designated as Unit 2021	P006	Currently designated as Unit 20; should be replaced by requirements for Unit 2021
C-5 Process	Shut down	N/A	N/A
Resin Rework Tanks	In operation	P015	Resin Rework Tanks
No. 3 Continuous Still	In operation	P008	No. 3 Continuous Still
No. 4 Continuous Still	Shut down	P009	No. 4 Continuous Still (is shut down, so should be removed from Title V OP)
Wastewater Treatment	In operation	P014	Wastewater Collection, Conveyance & Treatment
#2 Packaging Center	In operation	P011	#2 Packaging Center: Resin Kettles and a Flaking Belt. Two flaking belts (#2 and #4) replaced with one flaking belt (#2).
#3 Packaging Center	In operation	P012	#3 Packaging Center: Resin Kettles, Pastillating Belt, and Pouring Station
#5 Packaging Center	In operation	P013	#5 Packaging Center: Resin Kettles and a Flaking Belt
Groundwater Air Stripper	Shut down	N/A	N/A
Screen Cleaning	Shut down	N/A	N/A

ALLEGHENY COUNTY HEALTH DEPARTMENT
Air Quality Program

SUMMARY OF PUBLIC COMMENTS AND DEPARTMENT RESPONSES ON THE PROPOSED ISSUANCE OF NEVILLE CHEMICAL COMPANY, OPERATING PERMIT NO. 0060c

[Notice of the opportunity for public comment appeared in the legal section of the Pittsburgh Post-Gazette on January 9, 2020. The public comment period ended on February 11, 2020.]

1. **COMMENT:** RACT I vs. RACT II and anti-backsliding requirement: EPA has previously SIP approved RACT I for Neville Chemical in 2001 (40 CFR 52.2020 (c)(166)(i)(B)(4)). It appears that at least some of the units in 2001 have add name changes or different identification numbers or descriptions compared with those found in the current review memo. There should be a side-by-side comparison of all units at Neville indicating the RACT I ID numbers and descriptions alongside the current ID numbers and descriptions. For units currently identified as meeting the presumptive RACT requirements at 25 Pa. Code §129.97, please ensure that all the RACT I requirements are evaluated. In aligning the RACT I and RACT II units and names, ACHD should ensure that the appropriate description is used for the emission unit.

   As required under the Clean Air Act §110(l), for each applicable emission unit at Neville Chemical, ACHD must provide an evaluation and comparison of the RACT II vs. RACT I requirements to ensure that there is no backsliding. The comparison of the RACT I vs. RACT II requirements under §110(l) is a comparison of the entire package of emission limitations, emission requirements, work practices, monitoring, testing and recordkeeping.

   RESPONSE: The facility has changed from the previously SIP approved RACT I for Neville Chemical in 2001 (some units changed names, different identification numbers, some shutdowns, etc.). Attachment A, with a table showing a side by side comparison of the 1996 Enforcement Order and Agreement Upon Consent 230, RACT I Approval and the RACT II, was added to the TSD for clarification. The RACT I Approval, is still in force and the provisions are included in the Title V Permit (and referenced) and have not been superseded.

2. **COMMENT:** Good operating practices proposed for RACT. ACHD has proposed that for all the units being evaluated for case by case RACT, RACT is good operating practices. However, in the draft permit, there appear to be many reasonable and more enforceable emission limits and practices identified for many of these units. For example, the permit provisions for P007 include short-term and long-term VOC emission limitations, among other requirements, for the Unit 21 Holding Tower and Tanks as well as the Aqueous Treaters. There are short term VOC emission limitations for P011, P012, P013 that should have been evaluated as RACT. The VOC emission requirements and practices identified in the permit are relevant to minimizing VOC emissions and hence, need to be part of the RACT evaluation. Therefore, it appears that ACHD could potentially be making RACT determinations that supplement the current proposal for good operating practices with specific emission limitations, requirements and named practices. A RACT technical and economic feasibility analysis needs to be conducted on each of these units.

   RESPONSE: All equipment was evaluated for RACT: In addition to current operation in accordance with the conditions of the operating permit, the only technically and economically feasible RACT was good operating practices, per 25 Pa. Code, §129.99. The permit was revised to include the LDAR program outlined in Site-Level Condition IV.30 to be RACT. The following were also considered to be RACT: VOC emissions per ton of resin produced limits for the No. 2 (V.E.1.b), No. 3 (V.F.1.b), and No. 5 (V.G.1.b) Packaging Center Flaker Belts; VOC emissions per product change for Unit 21 (V.C.1.d), No. 4 Still (V.D.1.c), and Unit 20 under the Alternative Operating Scenario (VII.A.1.g); and the use of Boiler #6 when operating the Rotary Vacuum Filter (V.H.1.d).

3. **COMMENT:** Proposed alternative RACT II for P006 (Unit 20) and P007 (Unit 21): ACHD identifies RACT II requirements for P006 (Unit 20) as meeting the presumptive RACT requirements at 25 Pa. Code §129.97(c)(2) when this unit's potential VOC emissions are less than 2.7 tons VOC per year (tpy). ACHD is proposing two different case by case RACT determination for P007 (Unit 21); one under an alternative scenario, which is not specifically described. For P006, ACHD is also proposing an alternative RACT when its potential VOC emissions are over 2.7 tpy, under a scenario, which is not described. Since potential emissions are those that represent design capacity or other enforceable emission restriction, the proposal for P006 and P007 is confusing. If a change in chemicals used at P006 and P007 explains the higher VOC emissions, the potential VOC emissions are considered higher than the 2.7 tpy threshold in §129.97(c)(2) and this must be explained in the review memo. Therefore, P006 and P007 should both be evaluated as case by case RACT units. ACHD must provide a technical and economic feasibility analysis to justify its conclusions about RACT for these emission units. Furthermore, where appropriate and feasible, good operating practices for control and minimization of fugitive VOC emissions from these units should be specified. ACHD may find the existing Pennsylvania regulations on fugitive VOC emissions (e.g., 25 Pa. Code §129.63a, §129.77), although not necessarily applicable to these units, helpful toward potentially identifying and specifying such practices, including monitoring and/or recordkeeping.

   RESPONSE: The Alternative Operating Scenario is a separate process from P006 and P007 and consists of an alternate configuration of the equipment from those two processes. For clarity, the permit and TSD have been revised to show it as Process P006/P007. A section has also been added to the TSD to explain the RACT options.

4. **COMMENT:** RACT II evaluation of technical and economic feasibility: The rationale for the RACT evaluation of the units being evaluated for case by case RACT needs to include more explanation of how the costs were assessed, leading to the conclusion that all technically feasible control options were not economically feasible. For example, please include more details about the method by which costs were evaluated (including, for example, assumptions of interest rate and equipment life). Note that some of the ranges for interest rates and defaults in the EPA Control Cost Manual may not be applicable or realistic for the current RACT evaluation. These may include unrealistic interest rates or inappropriate inclusion of sales or property taxes in Pennsylvania.

   RESPONSE: The following was added to the TSD: *Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items. Costs do not include taxes on the control equipment or property taxes. See the ERG and facility RACT analyses for full cost estimates.*

5. **COMMENT**: Applicable RACT requirements for Storage Tanks and other units: It appears that there may be existing requirements at 25 Pa. Code §129.56 (and Article XXI §2105.12 b) that may apply to

some of the storage tanks. For example, §129.56 applies to storage tanks with capacities greater than 40,000 gallons while §129.57 applies to storage tanks with capacities less than 40,000 gallons. Additionally, Neville Chemical's ID G004, tank cleaning and painting, must be sufficiently described to assess whether the existing ACHD requirements such as those at §2105.82, Industrial Cleaning Solvents, could apply. The case by case RACT provisions of §129.99 are only applicable to those units for which there is not an existing RACT requirement. ACHD needs to assess the applicability of existing RACT regulations such as these before concluding that a case by case RACT determination is needed.

RESPONSE: Tanks are evaluated for RACT applicability by looking at the PTE of each individual tank, not the tank groupings. A great majority of the tanks, if not all, would be less than 1 tpy and, thus, exempt from RACT II. Some of the tanks (e.g. 601, 8501-8506, 6301-6301) are already subject to CTG regulations in Article XXI, so they are not subject to case-by-case RACT II.

Neville's process G004 addresses tank painting in the plant (routine maintenance), so §2105.82 would not apply.

6. **COMMENT:** Title V Operating Permit regulatory citations for RACT: Since this action includes changes to the Neville Chemical Title V permit all emission units subject to RACT, please ensure that the proper presumptive RACT citations from 25. Pa. Code §129.97 and appropriate monitoring, testing and recordkeeping requirements for the appropriate emission units, are included in the Title V permit.

   RESPONSE: The appropriate citation for presumptive RACT (in each case here, §129.97(c)(2)) was added to all sources listed as presumptive in Table 2 of the Technical Support Document.

7. **COMMENT:** The Department Should Explain the Change in its Determination Regarding the Economic Feasibility of RACT Controls for the Flaking and Packaging Operations.

   RESPONSE: The Department made our RACT determination based on analyses supplied by the facility and a consultant hired by the Department (ERG), as well as our own evaluation. The RACT analysis submitted by Neville included detailed descriptions of the methodologies and calculations and listed control costs higher than those presented in the ERG report. It was also made clear in the Neville RACT submittal that the costs used for the cost analyses for the three packaging centers did not include all capital costs associated with the control technologies such as structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items. Therefore, the Department determined that no additional controls for the Flaking and Packaging Operations would be economically feasible.

LIST OF COMMENTERS

Name	Affiliation
Cynthia H. Stahl, PhD	**EPA, Region III** **Permit Branch, 3AD10**
Joseph Otis Minott, Esq. Christopher D. Ahlers, Esq.	**Clean Air Council**

ALLEGHENY COUNTY HEALTH DEPARTMENT

AIR QUALITY PROGRAM
301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1811

Title V Operating Permit
& Federally Enforceable State Operating Permit

Issued To:	**Neville Chemical Company**	**ACHD Permit #**:	**0060c**
Facility:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496	**Date of Issuance**: **Date Amended:** **Expiration Date**: **Renewal Date:**	**September 28, 2015** **-----** **September 27, 2020** **March 28, 2020**

Issued By: ______________________
JoAnn Truchan, P.E.
Section Chief, Engineering

Prepared By: ______________________
Helen Gurvich
Air Quality Engineer

TABLE OF CONTENTS

I. CONTACT INFORMATION 4
II. FACILITY DESCRIPTION 5
A. Process Flow Diagrams 12
III. GENERAL CONDITIONS - Major Source 17
IV. SITE LEVEL TERMS AND CONDITIONS 27
V. EMISSION UNIT LEVEL TERMS AND CONDITIONS 40
A. Process P001: Heat Polymerization Stills #15, #16, #18, #19, & Unit 43 40
B. Process P006: Unit 20 44
C. Process P007: Unit 21 47
D. Processes P008 & P009: Continuous Stills #3 and #4 50
E. Process P011: No. 2 Packaging Center 52
F. Process P012: No. 3 Packaging Center 55
G. Process P013: No. 5 Packaging Center 59
H. Process P014: Wastewater Collection, Conveyance, and Treatment 62
I. Process P015: Resin Rework Tanks 65
J. Process P016: Final Product Loading 68
K. B001, B002, B003, B004, & B015: Heat Poly Still Process Heaters 70
L. B006 & B007: Continuous Still Process Heaters 73
M. B009, B010, & B011: Packaging Center Heaters 75
N. B013: No. 6 Boiler 77
O. B012: No. 8 Boiler 80
P. D001-D012: Storage Tanks 82
VI. MISCELLANEOUS 86
A. Process P017: Groundwater Remediation 86
B. Emergency Generators 92
C. Sources of Minor Significance 94
VII. ALTERNATIVE OPERATING SCENARIOS 95
A. Processes P006 and P007 (Alternative): Unit 20 and Unit 21 95
VIII. EMISSIONS LIMITATIONS SUMMARY 98

AMENDMENTS:

DATE	***SECTION***	
05/17/16	I	Revised facility contact information
	II, Table II-1	Changed control device on Boiler No. 8 to "induced" flue gas recirculation; changed throughput on No. 3 Packaging Center Belt from 78.8 mmlbs/yr; added footnote to address multiple-use tanks
	IV.31.a.2)	Added clarification that all components must be monitored every three (3) years
	V.F	Changed "flaking belt" to "pastillating belt"; V.F.1.c, revised emissions for 48 mmlbs/yr throughput instead of 78.8 mmlbs/yr; V.F.2.a, changed testing date to 18 months from permit issuance from 12 months; V.F.2.a.5), removed HAP testing; V.F.2.b, added one-time VOC test and testing of VOC & HAP if throughput exceeds 24 mmlbs/yr; V.F.4.a.3), added recordkeeping of material throughput on belt
	V.G.5.b.2)	Corrected cross-reference
	V.H	V.H.4.c & 5.b.5), deleted erroneous cross-references
	V.I.2.b	Removed requirement to test for HAP
	V.L.1.a	Added condition to require reactivation plan for No. 4 Continuous Still Heater
	V.N	V.N.1.b, changed natural gas limit from 47,050 scf/hr and 412.2 mmscf/yr to 28,922 scf/hr and 253.4 mmscf/yr; V.N.2, corrected citations; V.N.2.a, revised to require testing only if natural gas combustion exceeds 206 mmscf/yr
	V.O	V.O.1.b, changed natural gas limit from 28,922 scf/hr and 253.4 mmscf/yr to 47,050 scf/hr and 412.2 mmscf/yr
	V.P	V.P.1.b, revised Table V-P-1 to correct limits for D009; V.P.4.e, revised condition to require calculation of rolling 12-month emissions only if resin former throughput exceeds 18.7 mmgal in the previous 12-month period; V.P.5.c, added condition to require permittee to provide 12-month total emissions within 30 days upon request by the Department
10/02/17	II, Table II-1	Changed control device on D009, Tanks 8501-8506 to "none"
	V.P	Removed controls for tanks #8501-8506 (included under D009).
	V.P.1.e	Removed old condition about Vapor Balancing System and added new condition to limit the quantity of material transferred into tanks #8501-8506 to no more than 12 MM gal/yr for any 12 month period.
	V.P.3.a	Removed requirement for Vapor Balancing System.
01/xx/20	V.C.4.b,c,e; V.C.6.b	Added RACT II citations
	V.D.4.a,b; V.D.6.b	Added RACT II citations
	V.E.1.a; V.E.6.b	Added RACT II citations
	V.F.1.a; V.F.6.b	Added RACT II citations
	V.G.1.a; V.G.6.b	Added RACT II citations
	V.H.6.b	Added RACT II citations
	V.I.1.a; V.I.6.b	Added RACT II citations
	V.J.6.b	Added RACT II citations
	V.P.6.b	Added RACT II citations
	VI.C.1.f	Added RACT II citations
	VII.A.6.b	Added RACT II citations

I. CONTACT INFORMATION

Facility Location:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496
Permittee/Owner:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496
Permittee/Operator: **(if not Owner)**	**same as owner**
Responsible Official:	**Mr. John H. Ferguson**
Title:	Vice-President & Plant Manager, Neville Island
Company:	Neville Chemical Company
Address:	2800 Neville Road Neville Township, PA 15225-1496
Telephone Number:	(412) 777-4253
Fax Number:	(412) 777-6729
Facility Contact:	**Mr. Daniel D. Kokoski**
Title:	Manager – Environmental
Telephone Number:	(412) 777-4201
Fax Number:	(412) 777-6729
E-mail Address:	dkokoski@nevchem.com

AGENCY ADDRESSES:

ACHD Engineer:	**Ms. Helen Gurvich**
Title:	Air Quality Engineer III
Telephone Number:	(412) 578-8105
Fax Number:	(412) 578-8144
E-mail Address:	helen.gurvich@alleghenycounty.us
ACHD Contact:	**Chief Engineer** **Allegheny County Health Department** Air Quality Program 301 39th Street, Building #7 Pittsburgh, PA 15201-1811
EPA Contact:	**Enforcement Programs Section (3AP12)** **USEPA Region III** 1650 Arch Street Philadelphia, PA 19103-2029

II. FACILITY DESCRIPTION

[This section is provided for informational purposes only and is not intended to be an applicable requirement.]

Neville Chemical Company, located at 2800 Neville Road, Pittsburgh (Neville Township), manufactures synthetic hydrocarbon resins, plasticizers, and plasticizing oils. The facility also operates a groundwater remediation system and wastewater treatment system. Also located at the facility are three (3) resin flaking and packaging centers, a 49.4 MMBtu/hr and a 29.5 MMBtu/hr natural gas-fired boiler. The facility is a major source of volatile organic compounds (VOCs); and a minor source of particulate matter (PM), particulate matter <10 µm in diameter (PM_{10}), particulate matter <2.5 µm in diameter ($PM_{2.5}$), nitrogen oxides (NO_X), sulfur oxides (SO_X), and hazardous air pollutants (HAPs), as defined in §2102.20 of Article XXI.

The emission units regulated by this permit are summarized in Table II-1:

TABLE II-1
Emission Unit Identification

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
Heat Polymerization Stills					
P001	**Heat Polymerization Still - #15**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	18,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	2 – Ejector Vents	thermal oxidizer			
	Decanter	thermal oxidizer			
P001	**Heat Polymerization Still - #16**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	21,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #18 & #19)	thermal oxidizer			
P001	**Heat Polymerization Still - #18**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	26,280,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #16 & #19)	thermal oxidizer			
P001	**Heat Polymerization Still - #19**				

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Reactor	18.9 MMBtu/hr thermal oxidizer	25,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #16 & #18)	thermal oxidizer			
P001	**Heat Polymerization Still - #43**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	25,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	2 – Ejector Vents	thermal oxidizer			
	Decanter	thermal oxidizer			
Continuous Stills					
P008	**No. 3 Continuous Still**				
	Tray Tower	none	67,200,000 lb/yr	polyoil, resin-forming feedstock, additives	--
	Distillate Condenser	none			--
	Decanter	none			S026
	Batch/Flush Tank	none			--
	Sidestream Oil Tank (T-85)	none			--
P009	**No. 4 Continuous Still**				
	Tray Tower	none	219,800,000 lb/yr	polyoil, resin-forming feedstock, additives	--
	Distillate Condenser	none			--
	Decanter	none			S028
	Vapor Surge Tank	none			--
Catalytic Resin and Polyoil Neutralization					
P006	**Unit 20**				
	Reactor	packed bed scrubber	66,600,000 lb/yr	ethylene-cracking products, resin-forming feedstock, additives	S020, S021
	2 – Mix Tanks	none			
	2 – Decanters	none			
	Holding Tank	packed bed scrubber			

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
P007	**Unit 21**				
	Reactor	none	89,400,000 lb/yr	ethylene-cracking products, resin-forming feedstock, additives	
	4 – Holding Towers	packed bed scrubber			
	Final Holding Tank	packed bed scrubber			
	3 – Aqueous Treaters	none			S025a, b, c
	Flaking and Packaging				
P011	**No. 2 Packaging Center**				
	7 – Drain Kettles	none	12,500 lb/hr 86,700,000 lb/yr	liquid hydrocarbon resins	S042-S048
	Flaking Belt	none		liquid hydrocarbon resins	S050a
	Packaging Station	fabric filter		solid flaked hydrocarbon resins	S051
P012	**No. 3 Packaging Center**				
	7 – Drain Kettles	none	122,600,000 lb/yr	liquid hydrocarbon resins	S054-S060
	Flaking Belt	none	48,000,000 lb/yr	liquid hydrocarbon resins	S061a, b, c
	Packaging Station	fabric filter	122,600,000 lb/yr	solid flaked hydrocarbon resins	S062
	Pouring Station	none	122,600,000 lb/yr	liquid hydrocarbon resins	S063
P013	**No. 5 Packaging Center**				
	3 – Drain Kettles	none	78,800,000 lb/yr	liquid hydrocarbon resins	S065-S067
	Flaking Belt	none		liquid hydrocarbon resins	S068a, b, c
	Packaging Station	fabric filter		solid flaked hydrocarbon resins	S069
	Other Processes				
P015	**Resin Rework Tanks**				
	Resin Rework Tanks, N2 and N4	condenser	1,800,000 gal/yr	resins, rosins, distillate oils	--
	Distillate Receiver	none		resins, rosins, distillate oils	S079
P016	**Final Product Loading**				
	LX-830 Fuel Oil Barge Loading	none	6,000,000 gal/yr	petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Final Product Tankcar & Tankwagon Loading	none	24,300,000 gal/yr	petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--
P017	**Groundwater Remediation System**				
	7 – Groundwater Wells	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	7 – Oil Recovery Wells	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	Number 2 Drywell pump and Treat System	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	Old Number 8 Water Well Pump and Treat System	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
P014	**Wastewater Collection, Conveyance, and Treatment**				
	3 – Surge Tanks (#5001, #5251, #1004)	none	105,000,000 gal/yr (total for system)	wastewater	--
	3 – Batch Tanks (#2011, #2012, #2013)	none		wastewater	S071-S073
	Equalization Tank (#5002)	none		wastewater	
	2 – Biological Treatment / Aeration Tanks (TA-2, TA-3)	none		wastewater	S074-S075
	2 – Clarifier Tanks (TA-4, TA-5)	none		wastewater	
	Effluent Tank (TA-7)	none		wastewater	S076
	Sludge Tank (#2010)	none		wastewater	S077
	Rotary Vacuum Filter	vented to No. 6 Boiler		wastewater	
	Oil/Water Separator	none		wastewater	S078
	Aerobic Digester Tank (TA-6)	none		wastewater	S078a
Still Process Heaters					
B001	No. 15 Still Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S001
B002	No. 16 Still Process Heater	none	6.1 MMBtu/hr	natural gas, liquid propane	S006
B003	No. 18 Still Process Heater	none	7.21 MMBtu/hr	natural gas, liquid propane	S009
B004	No. 19 Still Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S012
B015	Unit 43 Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S104
B006	No. 3 Continuous Still Process Heater	none	5.25 MMBtu/hr	natural gas, liquid propane	S027
B007	No. 4 Continuous Still Process Heater	none	10.5 MMBtu/hr	natural gas, liquid propane	S029

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
Packaging Center Heaters					
B009	No. 2 Packaging Center Heater	none	5.0 MMBtu/hr	natural gas, liquid propane	S053
B010	No. 3 Packaging Center Heater	none	3.91 MMBtu/hr	natural gas, liquid propane	S064
B011	No. 5 Packaging Center Heater	none	3.0 MMBtu/hr	natural gas, liquid propane	S070
Boilers and Generators					
B013	No. 6 Boiler	none	49.4 MMBtu/hr	natural gas	S099
B012	No. 8 Boiler	low-NO_X burners, induced flue gas recirc.	29.5 MMBtu/hr	natural gas	S098
--	8 - Emergency Generators	none		natural gas	--
Storage Tanks					
D001	1001-1002, 1016-1017	none	101,148 gal. ea.	Catalytic & Misc. Polymer Oil	--
D001	2101	none	215,777 gal.	Catalytic & Misc. Polymer Oil	--
D001	2102	none	214,944 gal.	Catalytic & Misc. Polymer Oil	--
D002	9	none	2,477 gal.	Distillates	--
D002	11-12	none	19,320 gal. ea.	Distillates	--
D002	13-14	none	20,305 gal. ea.	Distillates	--
D002	69	none	9,728 gal.	Distillates	--
D002	85 *(part of No. 3 Continuous Still, P008)*	none	3,900 gal.	Distillates	--
D002	172	none	16,900 gal.	Distillates	--
D002	178-179	none	16,120 gal. ea.	Distillates	--
D002	211-212	none	20,078 gal. ea.	Distillates	--
D002	273-278	none	25,974 gal. ea.	Distillates	--
D002	308-311, 314-315	none	30,050 gal. ea.	Distillates	--
D002	601	none	60,918 gal.	Distillates	--
D002	2108	none	217,334 gal.	Distillates	--
D002	3 Still Wash Tank	none	3,900 gal.	Distillates	--
D003	176-177	none	16,120 gal. ea.	Heat Poly Charge Stock	--
D003	205-206	none	20,160 gal. ea.	Heat Poly Charge Stock	--
D003	1014	none	100,674 gal.	Heat Poly Charge Stock	--

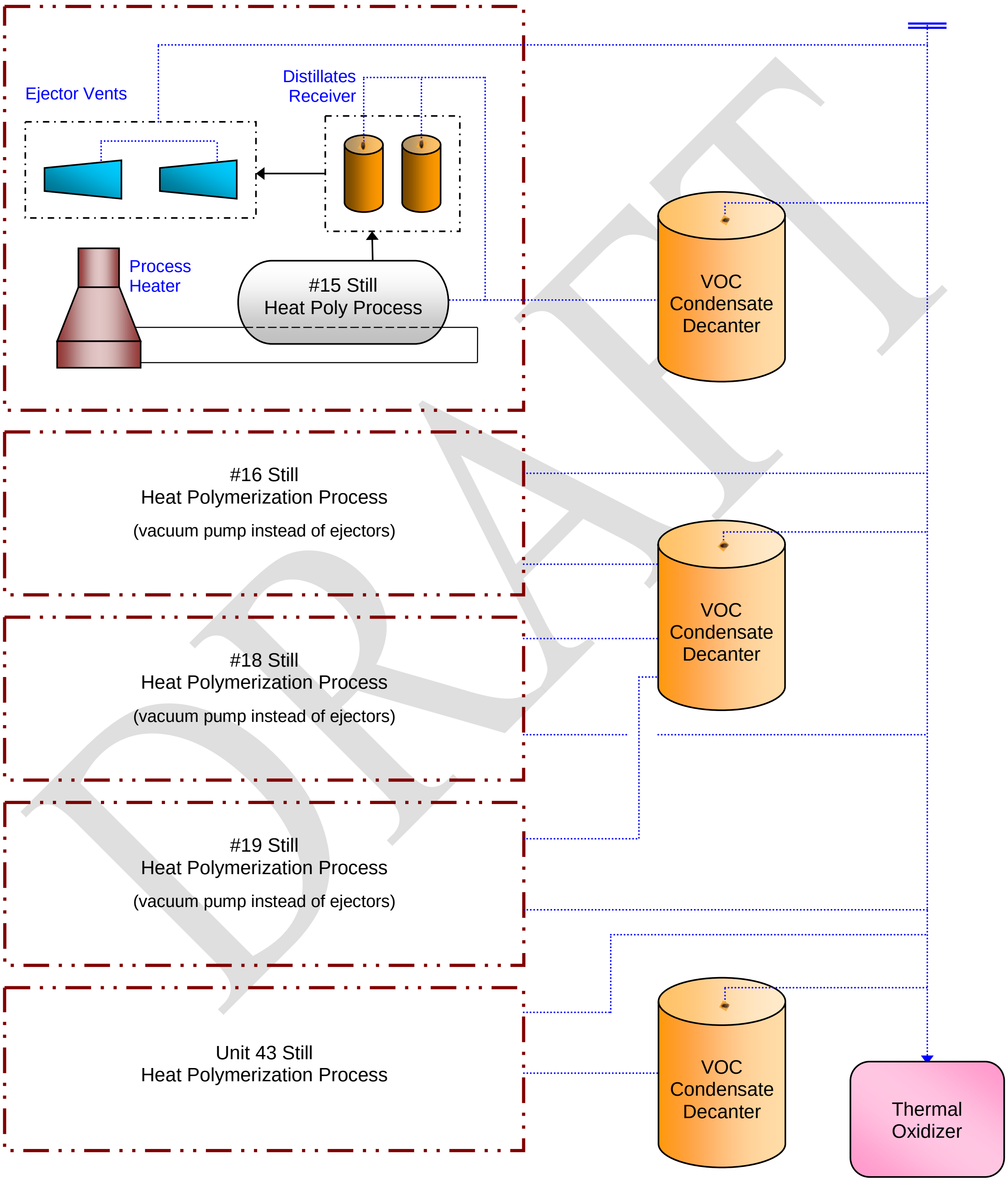
I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
D003	1018-1019	none	99,309 gal. ea.	Heat Poly Charge Stock	--
D003	2104, 2107, 2109	none	217,334 gal. ea.	Heat Poly Charge Stock	--
D003	1015	none	101,148 gal.	Heat Poly Charge Stock	--
D004	80	none	15,100 gal.	LX-1144 Charge Stock	--
D005	TA-13, TA-14	none	550 gal. ea.	Misc. – Water Treatment	--
D005	TA-15	none	1,050 gal.	Misc. – Water Treatment	--
D005	307	none	30,050 gal.	Misc. – Alpha Methylstyrene	--
D005	76	none	7,614 gal.	Misc. – BHT	--
D005	60SC	none	6,016 gal.	Misc. – Diesel Fuel	--
D005	147	none	500 gal.	Misc. – Mineral Spirits	--
D005	175	none	20,347 gal.	Misc. – Caustic	--
D005	9 Agitator	none	4,852 gal.	Misc. – Emulsion Breaker	--
D005	5003*	vent condenser	500,000 gal.	Misc. – Piperylene, Resin Former, Distillates	--
D006	1, 2	none	19,320 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D006	4	none	22,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	10	none	20,850 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	68	none	9,728 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	81	none	10,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	100	none	11,025 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	102	none	10,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	108	none	10,307 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	112	none	9,743 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	145	none	2,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	201-204	none	20,082 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D006	301-303	none	30,050 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D007	82-83	none	10,000 gal. ea.	NEVCHEM LR	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
D007	1005	none	101,516 gal.	NEVCHEM LR	--
D008	1008	none	100,989 gal.	Recovered Oil	
D009	1012-1013	none	100,674 gal. ea.	Resin Former	--
D009	8501-8506*	none	850,000 gal. ea.	Resin Former, Distillates	--
D009	6301-6302*	none	630,000 gal. ea.	Resin Former, Distillate	--
D010	93-94	none	28,201 gal. ea.	Resin Solutions	--
D010	135	none	2,010 gal.	Resin Solutions	--
D010	304-305, 312-313, 316-317	none	30,050 gal. ea.	Resin Solutions	--
D010	320	none	22,438 gal.	Resin Solutions	--
D010	330	none	30,913 gal.	Resin Solutions	--
D010	331-334	none	30,000 gal. ea.	Resin Solutions	--
D011	252	none	24,052 gal.	Unit 20 Feed Blend	--
D011	271-272	none	25,974 gal. ea.	Unit 20 Feed Blend	--
D012	2105-2106	none	217,334 gal. ea.	Unit 21 Feed Blend	--
Miscellaneous Sources					
F001	Roads and Vehicles	none	n/a	n/a	--
G001	Hydrolaser Water Blasting	none		pressurized water	--
G002	Parts Washing	none	2,500 gal/yr	degreasing materials	--
G003	R&D Laboratory Hoods	none			
G004	Tank Cleaning and Painting	none	2,000 gal/yr	sandblasting agents, primer, coatings	--

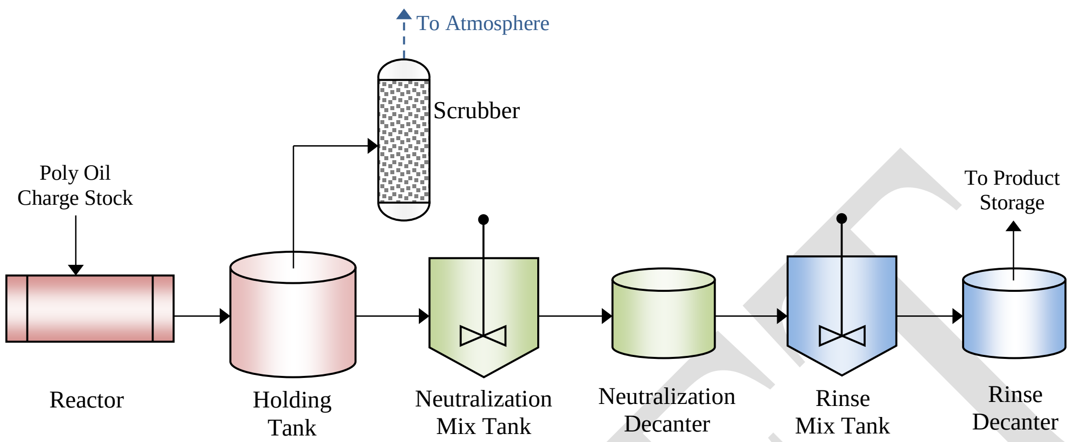
* Tanks 6301-6302, and 8501-8506 can be used to store distillate (D002) in addition to resin former (D009). Tank 5003 can be used to store distillate and resin former in addition to piperylene.

A. Process Flow Diagrams

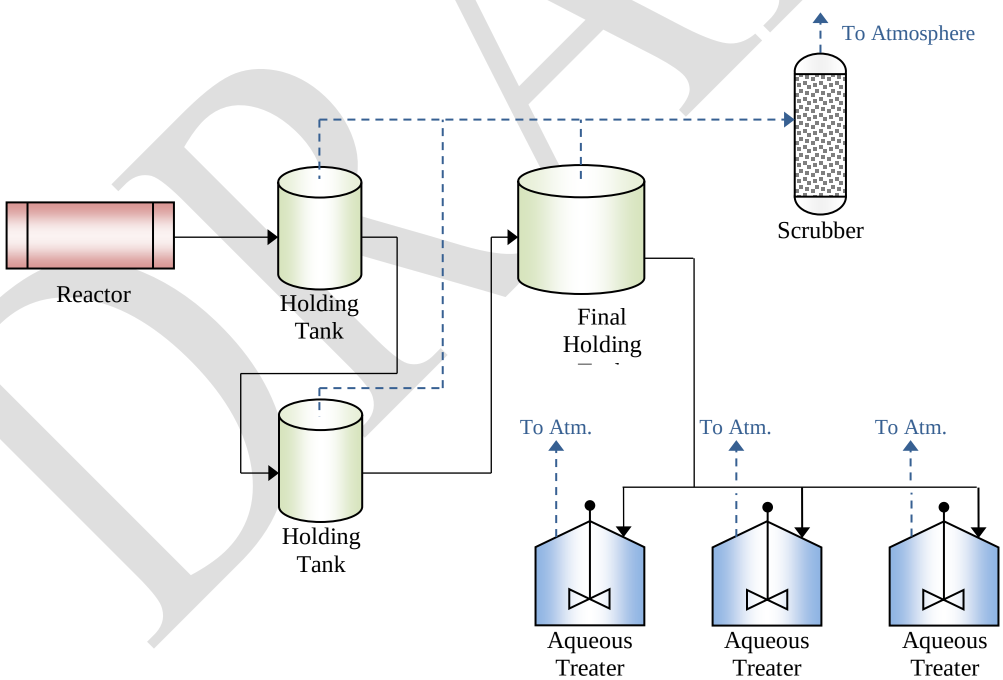
Heat Polymerization Stills
Section V.A.



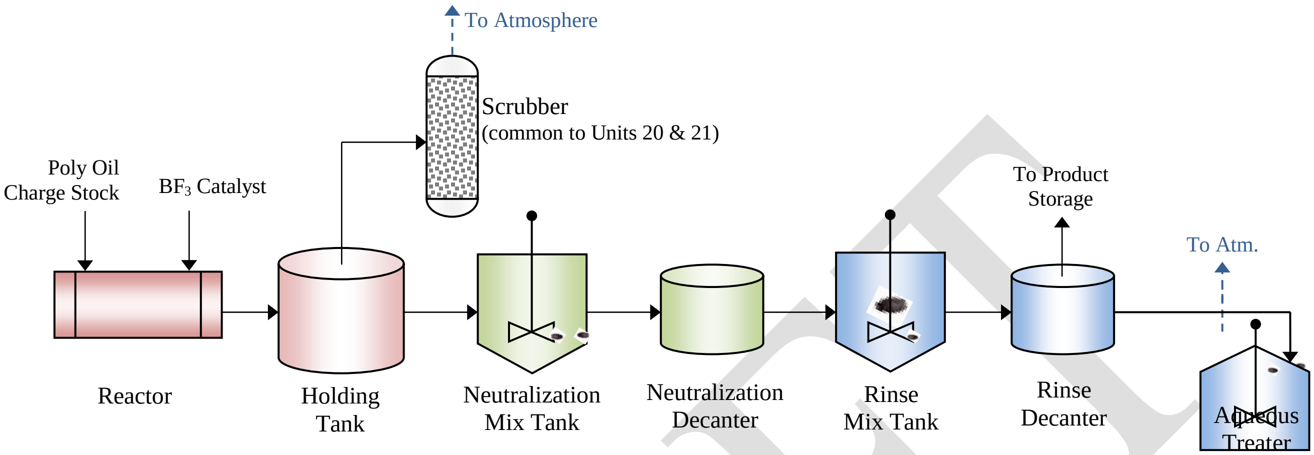
Unit #20 Catalytic Resin & Polyoil Neutralization
Section V.B.



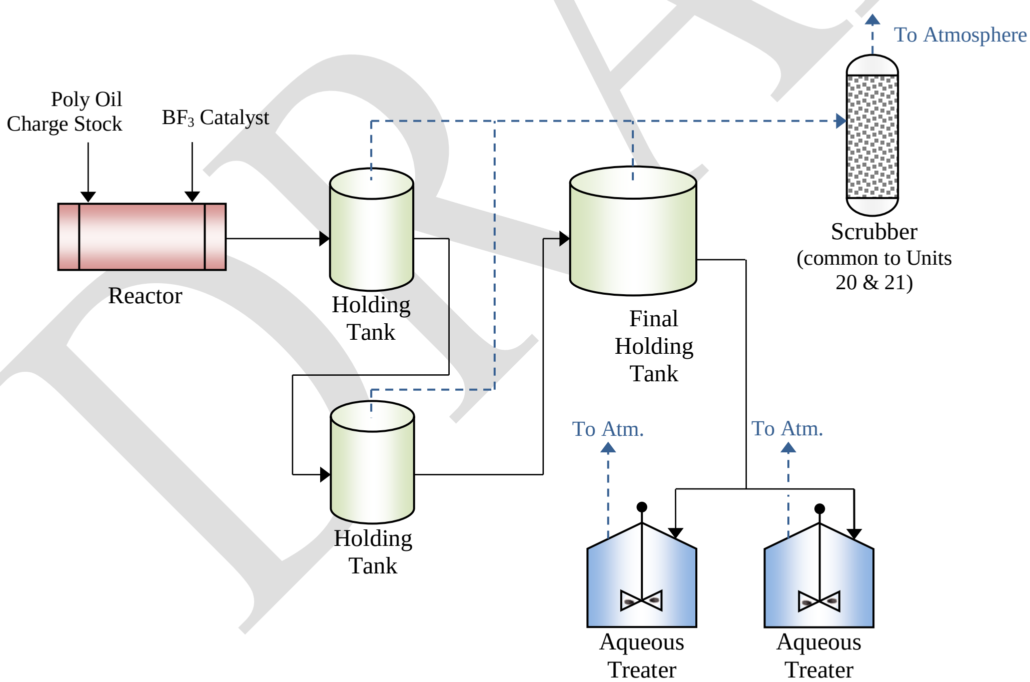
Unit #21 Catalytic Resin & Polyoil Neutralization
Section V.C.



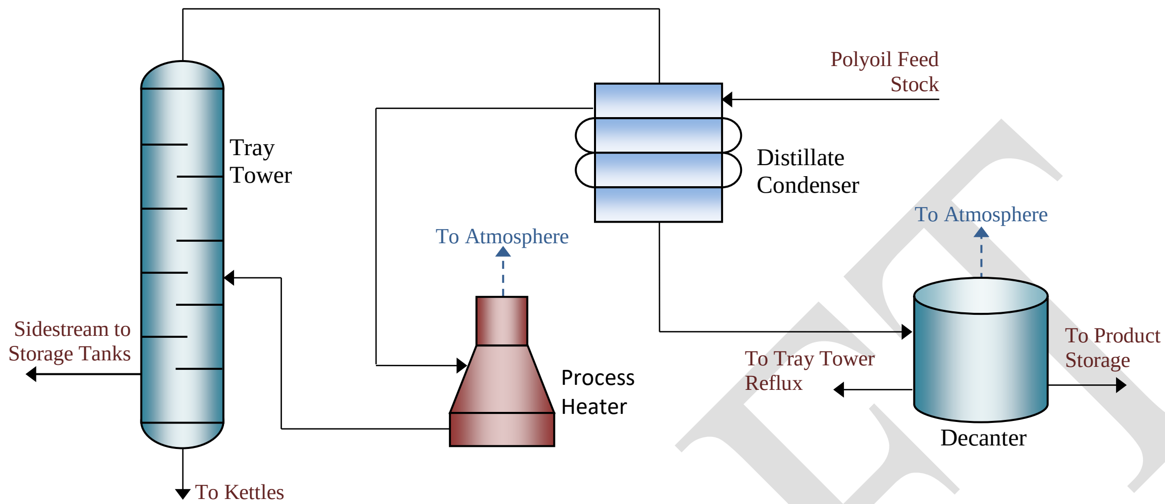
Unit #20 Catalytic Resin & Polyoil Neutralization (Alternative Operating Scenario)
Section VII.A.



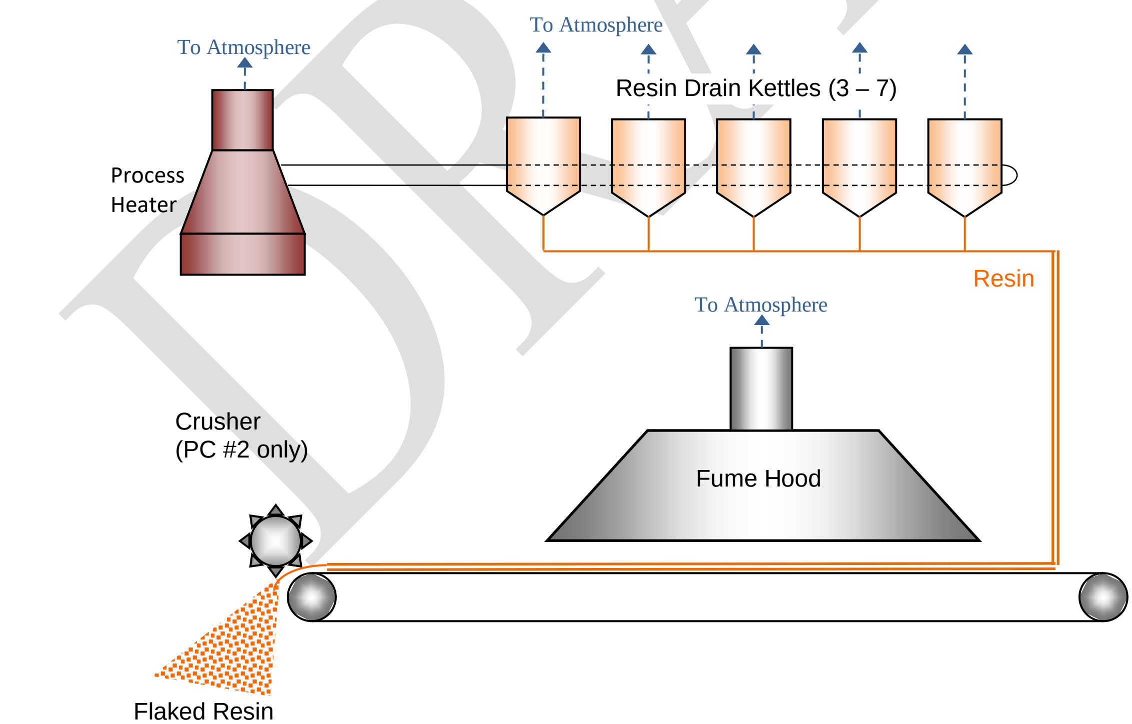
Unit #21 Catalytic Resin & Polyoil Neutralization (Alternative Operating Scenario)
Section VII.A.



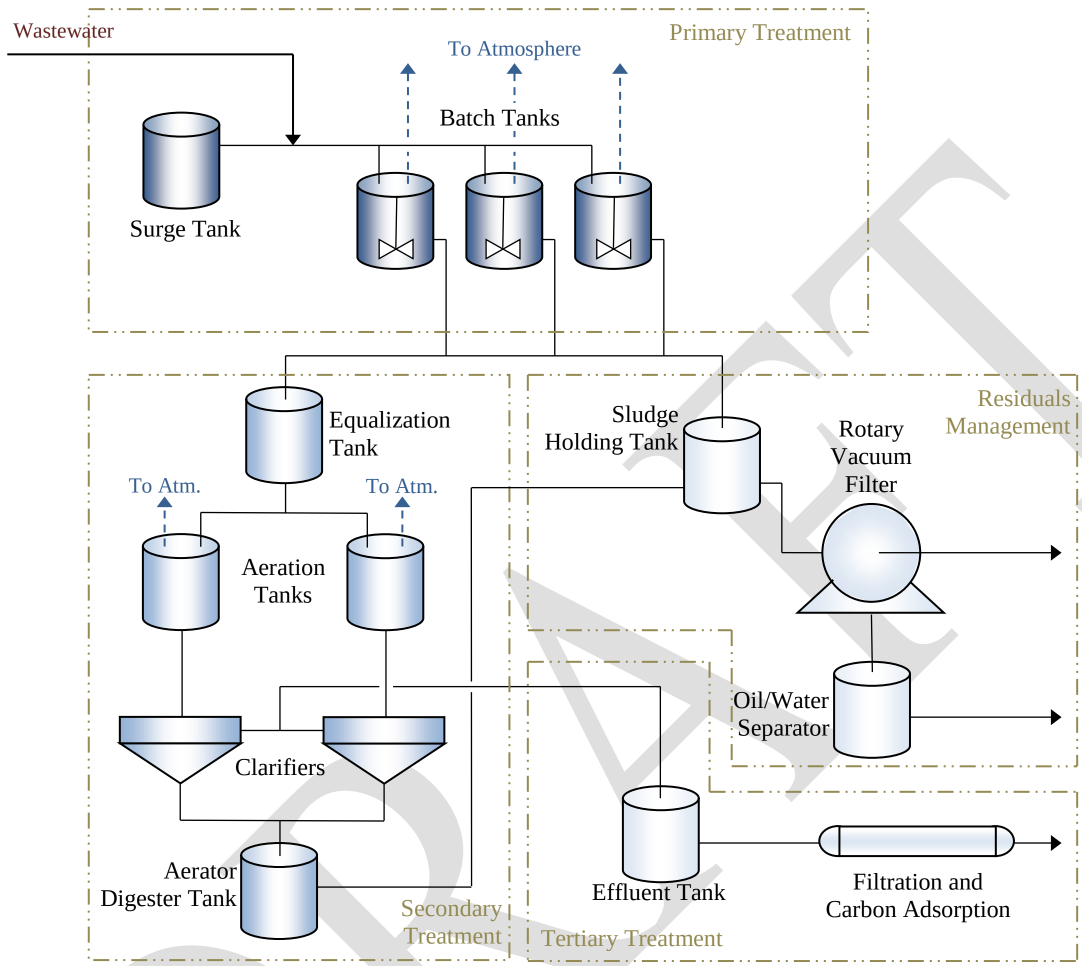
Continuous Stills
Section V.D.



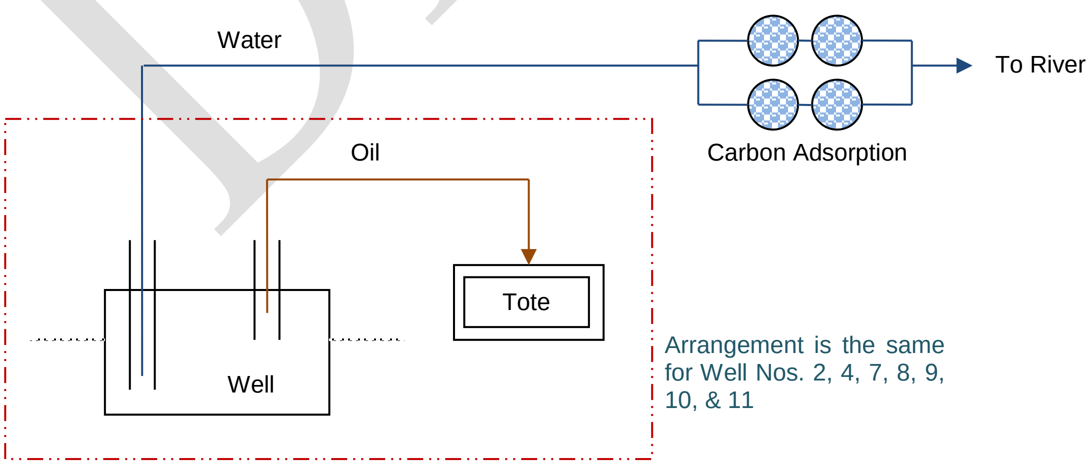
Packaging Centers
Sections V.E, V.F, and V.G.



Wastewater Collection, Conveyance, and Treatment
Section V.H.



Groundwater Remediation System
Section VI.A.



DECLARATION OF POLICY

Pollution prevention is recognized as the preferred strategy (over pollution control) for reducing risk to air resources. Accordingly, pollution prevention measures should be integrated into air pollution control programs wherever possible, and the adoption by sources of cost-effective compliance strategies, incorporating pollution prevention, is encouraged. The Department will give expedited consideration to any permit modification request based on pollution prevention principles.

The permittee is subject to the terms and conditions set forth below. These terms and conditions constitute provisions of *Allegheny County Health Department Rules and Regulations, Article XXI Air Pollution Control*. The subject equipment has been conditionally approved for operation. The equipment shall be operated in conformity with the plans, specifications, conditions, and instructions which are part of your application, and may be periodically inspected for compliance by the Department. In the event that the terms and conditions of this permit or the applicable provisions of Article XXI conflict with the application for this permit, these terms and conditions and the applicable provisions of Article XXI shall prevail. Additionally, nothing in this permit relieves the permittee from the obligation to comply with all applicable Federal, State and Local laws and regulations.

III. GENERAL CONDITIONS - Major Source

1. Prohibition of Air Pollution (§2101.11)

It shall be a violation of this permit to fail to comply with, or to cause or assist in the violation of, any requirement of this permit, or any order or permit issued pursuant to authority granted by Article XXI. The permittee shall not willfully, negligently, or through the failure to provide and operate necessary control equipment or to take necessary precautions, operate any source of air contaminants in such manner that emissions from such source:

a. Exceed the amounts permitted by this permit or by any order or permit issued pursuant to Article XXI;
b. Cause an exceedance of the ambient air quality standards established by Article XXI §2101.10; or
c. May reasonably be anticipated to endanger the public health, safety, or welfare.

2. Definitions (§2101.20)

a. Except as specifically provided in this permit, terms used retain the meaning accorded them under the applicable provisions and requirements of Article XXI. Whenever used in this permit, or in any action taken pursuant to this permit, the words and phrases shall have the meanings stated, unless the context clearly indicates otherwise.

b. Unless specified otherwise in this permit or in the applicable regulation, the term "*year*" shall mean any twelve (12) consecutive months.

3. Conditions (§2102.03.c)

It shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02, for any person to fail to comply with any terms or conditions set forth in this permit.

4. Certification (§2102.01)

Any report or compliance certification submitted under this permit shall contain written certification by a responsible official as to truth, accuracy, and completeness. This certification and any other certification required under this permit shall be signed by a responsible official of the source, and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

5. Transfers (§2102.03.e)

This permit shall not be transferrable from one person to another, except in accordance with Article XXI §2102.03.e and in cases of change-in-ownership which are documented to the satisfaction of the Department, and shall be valid only for the specific sources and equipment for which this permit was issued. The transfer of permits in the case of change-in-ownership may be made consistent with the administrative permit amendment procedure of Article XXI §2103.14.b. The required documentation and fee must be received by the Department at least 30 days before the intended transfer date.

6. Term (§2103.12.e, §2103.13.a)

a. This permit shall remain valid for five (5) years from the date of issuance, or such other shorter period if required by the Clean Air Act, unless revoked. The terms and conditions of an expired permit shall automatically continue pending issuance of a new operating permit provided the permittee has submitted a timely and complete application and paid applicable fees required under Article XXI Part C, and the Department through no fault of the permittee is unable to issue or deny a new permit before the expiration of the previous permit.

b. Expiration. Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted consistent with the requirements of Article XXI Part C.

7. Need to Halt or Reduce Activity Not a Defense (§2103.12.f.2)

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

8. Property Rights (§2103.12.f.4)

This permit does not convey any property rights of any sort, or any exclusive privilege.

9. Duty to Provide Information (§2103.12.f.5)

a. The permittee shall furnish to the Department in writing within a reasonable time, any information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of any records required to be kept by the permit.

b. Upon cause shown by the permittee the records, reports, or information, or a particular portion thereof, claimed by the permittee to be confidential shall be submitted to the Department in accordance with the requirements of Article XXI, §2101.07.d.4. Information submitted to the Department under a claim of confidentiality, shall be available to the US EPA and the PADEP upon request and without restriction. Upon request of the permittee the confidential information may be submitted to the USEPA and PADEP directly. Emission data or any portions of any draft, proposed, or issued permits shall not be considered confidential.

10. Modification of Section 112(b) Pollutants which are VOCs or PM10 (§2103.12.f.7)

Except where precluded under the Clean Air Act or federal regulations promulgated under the Clean Air Act, if this permit limits the emissions of VOCs or PM_{10} but does not limit the emissions of any hazardous air pollutants, the mixture of hazardous air pollutants which are VOCs or PM_{10} can be modified so long as no permit emission limitations are violated. A log of all mixtures and changes shall be kept and reported to the Department with the next report required after each change.

11. Right to Access (§2103.12.h.2)

Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized Department and other federal, state, county, and local government representatives to:

a. Enter upon the permittee's premises where a permitted source is located or an emissions-related activity is conducted, or where records are or should be kept under the conditions of the permit;
b. Have access to, copy and remove, at reasonable times, any records that must be kept under the conditions of the permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
d. As authorized by either Article XXI or the Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements.

12. Certification of Compliance (§2103.12.h.5, §2103.22.i.1)

a. The permittee shall submit on an annual basis, certification of compliance with all terms and conditions contained in this permit, including emission limitations, standards, or work practices. The certification of compliance shall be made consistent with General Condition 4 above and shall include the following information at a minimum:

1) The identification of each term or condition of the permit that is the basis of the certification;
2) The compliance status;
3) Whether any noncompliance was continuous or intermittent;
4) The method(s) used for determining the compliance status of the source, currently and over the reporting period consistent with the provisions of this permit; and
5) Such other facts as the Department may require to determine the compliance status of the source.

b. All certifications of compliance must be submitted to the Department by March 1 of each year for the time period beginning January 1 of the previous year and ending December 31 of the same year. The first report shall be due March 16, 2016 for the time period beginning on the issuance date of this permit through December 31, 2015. Compliance certifications may be emailed to the Administrator at R3 APD Permits@epa.gov in lieu of mailing a hard copy.

13. Record Keeping Requirements (§2103.12.j.1)

a. The permittee shall maintain records of required monitoring information that include the following:

1) The date, place as defined in the permit, and time of sampling or measurements;
2) The date(s) analyses were performed;
3) The company or entity that performed the analyses;
4) The analytical techniques or methods used;
5) The results of such analyses; and
6) The operating parameters existing at the time of sampling or measurement.

b. The permittee shall maintain and make available to the Department, upon request, records including computerized records that may be necessary to comply with the reporting and emission statements in Article XXI §2108.01.e. Such records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions.

14. Retention of Records (§2103.12.j.2)

The permittee shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

15. Reporting Requirements (§2103.12.k)

a. The permittee shall submit reports of any required monitoring at least every six (6) months. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by the Responsible Official.

b. Prompt reporting of deviations from permit requirements is required, including those attributable to upset conditions as defined in this permit and Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.

c. All reports submitted to the Department shall comply with the certification requirements of General Condition III.4 above.

d. Semiannual reports required by this permit shall be submitted to the Department as follows:
1) One semiannual report is due by July 31 of each year for the time period beginning January 1 and ending June 30.
2) One semiannual report is due by January 31 of each year for the time period beginning July 1 and ending December 31.
3) The first semiannual report shall be due July 31, 2018 for the time period beginning on the issuance date of this permit through June 30, 2018.

e. Reports may be submitted electronically to AQReports@alleghenycounty.us. Certification by the responsible official in accordance with General Condition III.4 above shall be provided separately via hard copy.

16. Severability Requirement (§2103.12.l)

The provisions of this permit are severable, and if any provision of this permit is determined by a court of competent jurisdiction to be invalid or unenforceable, such a determination will not affect the remaining provisions of this permit.

17. Existing Source Reactivations (§2103.13.d)

The permittee shall not reactivate any source that has been out of operation or production for a period of one year or more unless the permittee has submitted a reactivation plan request to, and received a written reactivation plan approval from, the Department. Existing source reactivations shall meet all requirements of Article XXI §2103.13.d.

18. Administrative Permit Amendment Procedures (§2103.14.b, §2103.24.b)

An administrative permit amendment may be made consistent with the procedures of Article XXI §2103.14.b and §2103.24.b. Administrative permit amendments are not authorized for any amendment precluded by the Clean Air Act or the regulations thereunder.

19. Revisions and Minor Permit Modification Procedures (§2103.14.c, §2103.24.a)

Sources may apply for revisions and minor permit modifications on an expedited basis in accordance with Article XXI §2103.14.c and §2103.24.a.

20. Significant Permit Modifications (§2103.14.d)

Significant permit modifications shall meet all requirements of the applicable subparts of Article XXI, Part C, including those for applications, fees, public participation, review by affected States, and review by EPA, as they apply to permit issuance and permit renewal. The approval of a significant permit modification, if the entire permit has been reopened for review, shall commence a new full five (5) year permit term. The Department shall take final action on all such permits within nine (9) months following receipt of a complete application.

21. Duty to Comply (§2103.12.f.1, §2103.22.g)

The permittee shall comply with all permit conditions and all other applicable requirements at all times. Any permit noncompliance constitutes a violation of the Clean Air Act, the Air Pollution Control Act, and Article XXI and is grounds for any and all enforcement action, including, but not limited to, permit termination, revocation and reissuance, or modification, and denial of a permit renewal application.

22. Renewals (§2103.13.b., §2103.23.a)

Renewal of this permit is subject to the same fees and procedural requirements, including those for public participation and affected State and EPA review, that apply to initial permit issuance. The application for renewal shall be submitted at least six (6) months but not more than eighteen (18) months prior to expiration of this permit. The application shall also include submission of a supplemental compliance review as required by Article XXI §2102.01.

23. Reopenings for Cause (§2103.15, §2103.25.a, §2103.12.f.3)

a. This permit shall be reopened and reissued under any of the following circumstances:

1) Additional requirements under the Clean Air Act become applicable to a major source with a remaining permit term of three (3) or more years. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended solely due to the failure of the Department to act on a permit renewal application in a timely fashion.
2) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into this permit.
3) The Department or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.
4) The Administrator or the Department determines that this permit must be reissued or revoked to assure compliance with the applicable requirements.

b. This permit may be modified; revoked, reopened, and reissued; or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes, for changes that are provided for in this permit.

24. Reopenings for Cause by the EPA (§2103.25.b)

This permit may be modified, reopened and reissued, revoked or terminated for cause by the EPA in accordance with procedures specified in Article XXI §2103.25.b.

25. Annual Operating Permit Administration Fee (§2103.40)

In each year during the term of this permit, on or before the last day of the month in which the application for this permit was submitted, the permittee shall submit to the Department, in addition to any other applicable administration fees, an Annual Operating Permit Administration Fee in accordance with §2103.40 by check or money order payable to the "Allegheny County Air Pollution Control Fund" in the amount specified in the fee schedule applicable at that time.

26. Annual Major Source Emissions Fees Requirements (§2103.41)

No later than September 1 of each year, the permittee shall pay an annual emission fee in accordance with Article XXI §2103.41 for each ton of a regulated pollutant (except for carbon monoxide) actually emitted from the source. The permittee shall not be required to pay an emission fee for emissions of more than 4,000 tons of each regulated pollutant. The emission fee shall be increased in each year after 1995 by the percentage, if any, by which the Consumer Price Index for the most recent calendar year exceeds the Consumer Price Index for the previous calendar year.

27. Other Requirements not Affected (§2104.08, §2105.02)

Compliance with the requirements of this permit shall not in any manner relieve any person from the duty to fully comply with any other applicable Federal, State, or County statute, rule, regulation, or the like, including but not limited to the odor emission standards under Article XXI §2104.04, any applicable NSPSs, NESHAPs, MACTs, or Generally Achievable Control Technology (GACT) standards now or hereafter established by the EPA, and any applicable requirements of BACT or LAER as provided by Article XXI, any condition contained in any applicable Installation or Operating Permit and/or any additional or more stringent requirements contained in an order issued to such person pursuant to Article XXI Part I.

28. Termination of Operation (§2108.01.a)

In the event that operation of any source of air contaminants is permanently terminated, the person responsible for such source shall so report, in writing, to the Department within 60 days of such termination.

29. Emissions Inventory Statements (§2108.01.e & g)

a. Emissions inventory statements in accordance with Article XXI §2108.01.e shall be submitted to the Department by March 15 of each year for the preceding calendar year. The Department may require more frequent submittals if the Department determines that more frequent submissions are required by the EPA or that analysis of the data on a more frequent basis is necessary to implement the requirements of Article XXI or the Clean Air Act.
b. The failure to submit any report or update within the time specified, the knowing submission of false information, or the willful failure to submit a complete report shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

30. Tests by the Department (§2108.02.d)

Notwithstanding any tests conducted pursuant to Article XXI §2108.02, the Department or another entity designated by the Department may conduct emissions testing on any source or air pollution control equipment. At the request of the Department, the person responsible for such source or equipment shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance of such tests.

31. Other Rights and Remedies Preserved (§2109.02.b)

Nothing in this permit shall be construed as impairing any right or remedy now existing or hereafter created in equity, common law or statutory law with respect to air pollution, nor shall any court be deprived of such jurisdiction for the reason that such air pollution constitutes a violation of this permit.

32. Enforcement and Emergency Orders (§2109.03, §2109.05)

a. The person responsible for this source shall be subject to any and all enforcement and emergency orders issued to it by the Department in accordance with Article XXI §2109.03, §2109.04 and §2109.05.

b. Upon request, any person aggrieved by an Enforcement Order or Emergency Order shall be granted a hearing as provided by Article XXI §2109.03.d; provided however, that an Emergency Order shall continue in full force and effect notwithstanding the pendency of any such appeal.

c. Failure to comply with an Enforcement Order or immediately comply with an Emergency Order shall be a violation of this permit thus giving rise to the remedies provided by Article XXI §2109.02.

33. Penalties, Fines, and Interest (§2109.07.a)

A source that fails to pay any fee required under this permit when due shall pay a civil penalty of 50% of the fee amount, plus interest on the fee amount computed in accordance with Article XXI §2109.06.a.4 from the date the fee was required to be paid. In addition, the source may have this permit revoked for failure to pay any fee required.

34. Appeals (§2109.10)

In accordance with State Law and County regulations and ordinances, any person aggrieved by an order or other final action of the Department issued pursuant to Article XXI or any unsuccessful petitioner to the Administrator under Article XXI Part C, Subpart 2, shall have the right to appeal the action to the Director in accordance with the applicable County regulations and ordinances.

35. Risk Management (§2104.08, 40 CFR Part 68)

This source, as defined in 40 CFR Part 68.3, is subject to Part 68. This stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. This stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification as required by *General Condition III.12* above.

36. Permit Shield (§2103.22)

a. The permittee's compliance with the conditions of this permit shall be deemed compliance with all major source applicable requirements as of the date of permit issuance, provided that:

1) Such major source applicable requirements are included and are specifically identified in the permit; or

2) The Department, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

b. Nothing in Article XXI §2103.22.e or the Title V Permit shall alter or affect the following:

1) The provisions of Section 303 of the Clean Air Act and the provisions of Article XXI regarding emergency orders, including the authority of the Administrator and the Department under such provisions;
2) The liability of any person who owns, operates, or allows to be operated, a source in violation of any major source applicable requirements prior to or at the time of permit issuance;
3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; or

4) The ability of the EPA or the County to obtain information from the permittee pursuant to Section 114 of the Clean Air Act, the provisions of Article XXI and State law.

c. Unless precluded by the Clean Air Act or regulations therein, final action by the Department on administrative amendments, minor and significant permit modifications, and operational flexibility changes shall be covered by the permit shield provided such amendments, modifications and changes meet the relevant requirements of Article XXI.

d. The permit shield authorized under Article XXI §2103.22 is in effect for the permit terms and conditions as identified in this permit.

37. Circumvention (§2101.14)

For purposes of determining compliance with the provisions of this permit and Article XXI, no credit shall be given to any person for any device or technique, including but not limited to the operation of any source with unnecessary amounts of air, the combining of separate sources except as specifically permitted by Article XXI and the Department, the use of stacks exceeding Good Engineering Practice height as defined by regulations promulgated by the US EPA at 40 CFR §§51.100 and 51.110 and Subpart I, and other dispersion techniques, which without reducing the amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise violate the provisions of this Article; except that, for purposes of determining compliance with Article §2104.04 concerning odors, credit for such devices or techniques, except for the use of a masking agent, may be given.

38. Duty to Supplement and Correct Relevant Facts (§2103.12.d.2)

a. The permittee shall provide additional information as necessary to address requirements that become applicable to the source after the date it files a complete application but prior to the Department taking action on the permit application.

b. The permittee shall provide supplementary fact or corrected information upon becoming aware that incorrect information has been submitted or relevant facts were not submitted.

c. Except as otherwise required by this permit and Article XXI, the Clean Air Act, or the regulations thereunder, the permittee shall submit additional information as necessary to address changes occurring at the source after the date it files a complete application but prior to the Department taking action on the permit application.

d. The applicant shall submit information requested by the Department which is reasonably necessary to evaluate the permit application.

39. Effect (§2102.03.g.)

Except as specifically otherwise provided under Article XXI, Part C, issuance of a permit pursuant to Article XXI Part B or Part C shall not in any manner relieve any person of the duty to fully comply with the requirements of this permit, Article XXI or any other provision of law, nor shall it in any manner preclude or affect the right of the Department to initiate any enforcement action whatsoever for violations of this permit or Article XXI, whether occurring before or after the issuance of such permit. Further, except as specifically otherwise provided under Article XXI Part C the issuance of a permit shall not be a defense to any nuisance action, nor shall such permit be construed as a certificate of compliance with the requirements of this permit or Article XXI.

40. Installation Permits (§2102.04.a.1.)

It shall be a violation of this permit giving rise to the remedies set forth in Article XXI Part I for any person to install, modify, replace, reconstruct, or reactivate any source or air pollution control equipment which would require an installation permit or permit modification in accordance with Article XXI Part B or Part C.

~PERMIT SHIELD IN EFFECT~

IV. SITE LEVEL TERMS AND CONDITIONS

1. Reporting of Upset Conditions (§2103.12.k.2)

The permittee shall promptly report all deviations from permit requirements, including those attributable to upset conditions as defined in Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.

2. Visible Emissions (§2104.01.a)

Except as provided for by Article XXI §2108.01.d pertaining to a cold start, no person shall operate, or allow to be operated, any source in such manner that the opacity of visible emissions from a flue or process fugitive emissions from such source, excluding uncombined water:

a. Equal or exceed an opacity of 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,
b. Equal or exceed an opacity of 60% at any time.

3. Odor Emissions (§2104.04) (County-only enforceable)

No person shall operate, or allow to be operated, any source in such manner that emissions of malodorous matter from such source are perceptible beyond the property line.

4. Materials Handling (§2104.05)

The permittee shall not conduct, or allow to be conducted, any materials handling operation in such manner that emissions from such operation are visible at or beyond the property line.

5. Operation and Maintenance (§2105.03)

All air pollution control equipment required by this permit or any order under Article XXI, and all equivalent compliance techniques approved by the Department, shall be properly installed, maintained, and operated consistently with good air pollution control practice.

6. Open Burning (§2105.50)

No person shall conduct, or allow to be conducted, the open burning of any material, except where the Department has issued an Open Burning Permit to such person in accordance with Article XXI §2105.50 or where the open burning is conducted solely for the purpose of non-commercial preparation of food for human consumption, recreation, light, ornament, or provision of warmth for outside workers, and in a manner which contributes a negligible amount of air contaminants.

7. Shutdown of Control Equipment (§2108.01.b)

a. In the event any air pollution control equipment is shut down for reasons other than a breakdown, the person responsible for such equipment shall report, in writing, to the Department the intent to shut down such equipment at least 24 hours prior to the planned shutdown. Notwithstanding the submission of such report, the equipment shall not be shut down until the approval of the Department is obtained; provided, however, that no such report shall be required if the source(s) served by such air pollution control equipment is also shut down at all times that such equipment is shut down.

b. The Department shall act on all requested shutdowns as promptly as possible. If the Department does not take action on such requests within ten (10) calendar days of receipt of the notice, the request shall be deemed denied, and upon request, the owner or operator of the affected source shall have a right to appeal in accordance with the provisions of Article XI.

c. The prior report required by Site Level Condition IV.7.a above shall include:

1) Identification of the specific equipment to be shut down, its location and permit number (if permitted), together with an identification of the source(s) affected;
2) The reasons for the shutdown;
3) The expected length of time that the equipment will be out of service;
4) Identification of the nature and quantity of emissions likely to occur during the shutdown;
5) Measures, including extra labor and equipment, which will be taken to minimize the length of the shutdown, the amount of air contaminants emitted, or the ambient effects of the emissions;
6) Measures which will be taken to shut down or curtail the affected source(s) or the reasons why it is impossible or impracticable to shut down or curtail the affected source(s) during the shutdown; and
7) Such other information as may be required by the Department.

8. Breakdowns (§2108.01.c)

a. In the event that any air pollution control equipment, process equipment, or other source of air contaminants breaks down in such manner as to have a substantial likelihood of causing the emission of air contaminants in violation of this permit, or of causing the emission into the open air of potentially toxic or hazardous materials, the person responsible for such equipment or source shall immediately, but in no event later than sixty (60) minutes after the commencement of the breakdown, notify the Department of such breakdown and shall, as expeditiously as possible but in no event later than seven (7) days after the original notification, provide written notice to the Department.

b. To the maximum extent possible, all oral and written notices required shall include all pertinent facts, including:

1) Identification of the specific equipment which has broken down, its location and permit number (if permitted), together with an identification of all related devices, equipment, and other sources which will be affected.
2) The nature and probable cause of the breakdown.
3) The expected length of time that the equipment will be inoperable or that the emissions will continue.
4) Identification of the specific material(s) which are being, or are likely to be emitted, together with a statement concerning its toxic qualities, including its qualities as an irritant, and its potential for causing illness, disability, or mortality.
5) The estimated quantity of each material being or likely to be emitted.
6) Measures, including extra labor and equipment, taken or to be taken to minimize the length of the breakdown, the amount of air contaminants emitted, or the ambient effects of the emissions, together with an implementation schedule.
7) Measures being taken to shut down or curtail the affected source(s) or the reasons why it is impossible or impractical to shut down the source(s), or any part thereof, during the breakdown.

c. Notices required shall be updated, in writing, as needed to advise the Department of changes in the information contained therein. In addition, any changes concerning potentially toxic or hazardous emissions shall be reported immediately. All additional information requested by the Department shall be submitted as expeditiously as practicable.

d. Unless otherwise directed by the Department, the Department shall be notified whenever the condition causing the breakdown is corrected or the equipment or other source is placed back in operation by no later than 9:00 AM on the next County business day. Within seven (7) days thereafter, written notice shall be submitted pursuant to Paragraphs a and b above.

e. Breakdown reporting shall not apply to breakdowns of air pollution control equipment which occur during the initial startup of said equipment, provided that emissions resulting from the breakdown are of the same nature and quantity as the emissions occurring prior to startup of the air pollution control equipment.

f. In no case shall the reporting of a breakdown prevent prosecution for any violation of this permit or Article XXI.

9. Cold Start (§2108.01.d)

In the event of a cold start on any fuel-burning or combustion equipment, except stationary internal combustion engines and combustion turbines used by utilities to meet peak load demands, the person responsible for such equipment shall report in writing to the Department the intent to perform such cold start at least 24 hours prior to the planned cold start. Such report shall identify the equipment and fuel(s) involved and shall include the expected time and duration of the startup. Upon written application from the person responsible for fuel-burning or combustion equipment which is routinely used to meet peak load demands and which is shown by experience not to be excessively emissive during a cold start, the Department may waive these requirements and may instead require periodic reports listing all cold starts which occurred during the report period. The Department shall make such waiver in writing, specifying such terms and conditions as are appropriate to achieve the purposes of Article XXI. Such waiver may be terminated by the Department at any time by written notice to the applicant.

10. Monitoring of Malodorous Matter Beyond Facility Boundaries (§2104.04) (County-only enforceable)

The permittee shall take all reasonable action as may be necessary to prevent malodorous matter from becoming perceptible beyond facility boundaries. Further, the permittee shall perform such observations as may be deemed necessary along facility boundaries to insure that malodorous matter beyond the facility boundary in accordance with Article XXI §2107.13 is not perceptible and record all findings and corrective action measures taken.

11. Orders (§2108.01.f)

In addition to meeting the requirements of General Condition III.28 and Site Level Conditions IV.7 through IV.10 above, inclusive, the person responsible for any source shall, upon order by the Department, report to the Department such information as the Department may require in order to assess the actual and potential contribution of the source to air quality. The order shall specify a reasonable time in which to make such a report.

12. Violations (§2108.01.g)

The failure to submit any report or update thereof required by General Condition III.28 and Site Level Conditions IV.7 through IV.11 above, inclusive, within the time specified, the knowing submission of false information, or the willful failure to submit a complete report shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

13. Emissions Testing (§2108.02)

a. On or before December 31, 1981, and at two-year intervals thereafter, any person who operates, or allows to be operated, any piece of equipment or process which has an allowable emission rate, of 100 or more tons per year of particulate matter, sulfur oxides or volatile organic compounds shall conduct, or cause to be conducted, for such equipment or process such emissions tests as are necessary to demonstrate compliance with the applicable emission limitation(s) of this permit and shall submit the results of such tests to the Department in writing. Emissions testing conducted pursuant to this section shall comply with all applicable requirements of Article XXI §2108.02.e.

b. **Orders.** In addition to meeting the requirements of Site Level Condition IV.13.a above, the person responsible for any source shall, upon order by the Department, conduct, or cause to be conducted, such emissions tests as specified by the Department within such reasonable time as is specified by the Department. Test results shall be submitted in writing to the Department within 20 days after completion of the tests, unless a different period is specified in the Department's order. Emissions testing shall comply with all applicable requirements of Article XXI §2108.02.e.

c. **Tests by the Department.** Notwithstanding any tests conducted pursuant to Site Level Conditions IV.13.a and IV.13.b above, the Department or another entity designated by the Department may conduct emissions testing on any source or air pollution control equipment. At the request of the Department, the person responsible for such source or equipment shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance of such tests.

d. **Testing Requirements.** No later than 45 days prior to conducting any tests required by this permit, the person responsible for the affected source shall submit for the Department's approval a written test protocol explaining the intended testing plan, including any deviations from standard testing procedures, the proposed operating conditions of the source during the test, calibration data for specific test equipment and a demonstration that the tests will be conducted under the direct supervision of persons qualified by training and experience satisfactory to the Department to conduct such tests. In addition, at least 30 days prior to conducting such tests, the person responsible shall notify the Department in writing of the time(s) and date(s) on which the tests will be conducted and shall allow Department personnel to observe such tests, record data, provide pre-weighed filters, analyze samples in a County laboratory and to take samples for independent analysis. Test results shall be comprehensively and accurately reported in the units of measurement specified by the applicable emission limitations of this permit.

e. Test methods and procedures shall conform to the applicable reference method set forth in this permit or Article XXI Part G, or where those methods are not applicable, to an alternative sampling and testing procedure approved by the Department consistent with Article XXI §2108.02.e.2.

f. **Violations**. The failure to perform tests as required by this permit or an order of the Department, the failure to submit test results within the time specified, the knowing submission of false information, the willful failure to submit complete results, or the refusal to allow the Department, upon presentation of a search warrant, to conduct tests, shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

14. Abrasive Blasting (§2105.51)

a. Except where such blasting is a part of a process requiring an operating permit , no person shall conduct or allow to be conducted, abrasive blasting or power tool cleaning of any surface, structure, or part thereof, which has a total area greater than 1,000 square feet unless such abrasive blasting complies with all applicable requirements of Article XXI §2105.51.

b. In addition to complying with all applicable provisions of §2105.51, no person shall conduct, or allow to be conducted, abrasive blasting of any surface unless such abrasive blasting also complies with all other applicable requirements of Article XXI unless such requirements are specifically addressed by §2105.51.

15. Asbestos Abatement (§2105.62, §2105.63)

In the event of removal, encasement, or encapsulation of Asbestos-Containing Material (ACM) at a facility or in the event of the demolition of any facility, the permittee shall comply with all applicable provisions of Article XXI §2105.62 and §2105.63.

16. Protection of Stratospheric Ozone (40 CFR Part 82)

a. Permittee shall comply with the standards for labeling of products using ozone-depleting substances pursuant to 40 CFR Part 82, Subpart E:
   1) All containers in which a Class I or Class II substance is stored or transported, all products containing a Class I substance, and all products directly manufactured with a process that uses a Class I substance must bear the required warning statement if it is being introduced into interstate commerce pursuant to §82.106;
   2) The placement of the required warning statement must comply with the requirements pursuant to §82.108;
   3) The form of the label bearing the required warning statement must comply with the requirements pursuant to §82.110; and
   4) No person may modify, remove or interfere with the required warning statement except as described in §82.112.

b. Permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F:
   1) Persons opening appliances for maintenance, service, repair or disposal must comply with the prohibitions and required practices pursuant to §82.154 and §82.156;
   2) Equipment used during the maintenance, service, repair or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158;
   3) Persons maintaining, servicing, repairing or disposing of appliances, must be certified by an approved technician certification program pursuant to §82.161;
   4) Persons maintaining, servicing, repairing or disposing of appliances must certify to the Administrator of the U.S. Environmental Protection Agency pursuant to §82.162;
   5) Persons disposing of small appliances, motor vehicle air conditioners (MVAC) and MVAC-like appliances, must comply with the record keeping requirements pursuant to §82.166;
   6) Owners of commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to §82.156; and

7) Owners or operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.

c. If the permittee manufactures, transforms, destroys, imports or exports a Class I or Class II substance, the Permittee is subject to all the requirements as specified in 40 CFR Part 82, Subpart A (Production and Consumption Controls).

d. If the permittee performs a service on a motor vehicle that involves an ozone-depleting substance, refrigerant or regulated substitute substance in the MVAC, the Permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B (Servicing of Motor Vehicle Air Conditioners).

e. The permittee may switch from any ozone-depleting substance to any alternative that is listed as acceptable in the Significant New Alternatives Policy (SNAP) program promulgated pursuant to 40 CFR Part 82, Subpart G.

17. Volatile Organic Compound Storage Tanks (§2105.12.a)

No person shall place or store, or allow to be placed or stored, a volatile organic compound having a vapor pressure of 1.5 psia or greater under actual storage conditions in any aboveground stationary storage tank having a capacity equal to or greater than 2,000 gallons but less than or equal to 40,000 gallons, unless there is in operation on such tank pressure relief valves which are set to release at the higher of 0.7 psig of pressure or 0.3 psig of vacuum or at the highest possible pressure and vacuum in accordance with State or local fire codes, National Fire Prevention Association guidelines, or other national consensus standard approved in writing by the Department. Petroleum liquid storage vessels that are used to store produced crude oil and condensate prior to lease custody transfer are exempt from these requirements.

18. Permit Source Premises (§2105.40)

a. **General.** No person shall operate, or allow to be operated, any source for which a permit is required by Article XXI Part C in such manner that emissions from any open land, roadway, haul road, yard, or other premises located upon the source or from any material being transported within such source or from any source-owned access road, haul road, or parking lot over five (5) parking spaces:

1) Are visible at or beyond the property line of such source;
2) Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or
3) Have an opacity of 60% or more at any time.

b. **Deposition on Other Premises.** Visible emissions from any solid or liquid material that has been deposited by any means from a source onto any other premises shall be considered emissions from such source within the meaning of Site Level Condition IV.18.a above.

19. Parking Lots and Roadways (§2105.42)

a. The permittee shall not maintain for use, or allow to be used, any parking lot over 50 parking spaces or used by more than 50 vehicles in any day or any other roadway carrying more than 100 vehicles in any day or 15 vehicles in any hour in such manner that emissions from such parking lot or roadway:

1) Are visible at or beyond the property line;
2) Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any 60 minute period; or
3) Have an opacity of 60% or more at any time.

b. Visible emissions from any solid or liquid material that has been deposited by any means from a parking lot or roadway onto any other premises shall be considered emissions from such parking lot or roadway.

c. Site Level Condition IV.19.a above shall apply during any repairs or maintenance done to such parking lot or roadway.

d. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.19 may be enforced by any municipal or local government unit having jurisdiction over the place where such parking lots or roadways are located. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.19.

20. Permit Source Transport (§2105.43)

a. No person shall transport, or allow to be transported, any solid or liquid material outside the boundary line of any source for which a permit is required by Article XXI Part C in such manner that there is any visible emission, leak, spill, or other escape of such material during transport.

b. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.20 may be enforced by any municipal or local government unit having jurisdiction over the place where such visible emission, leak, spill, or other escape of material during transport occurs. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violation of Site Level Condition IV.20.

21. Construction and Land Clearing (§2105.45)

a. No person shall conduct, or allow to be conducted, any construction or land clearing activities in such manner that the opacity of emissions from such activities:

1) Equal or exceed 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or
2) Equal or exceed 60% at any time.

b. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.21 may be enforced by any municipal or local government unit having jurisdiction over the place where such construction or land clearing activities occur. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.21.

22. Mining (§2105.46)

No person shall conduct, or allow to be conducted, any mining activities in such manner that emissions from such activities:

a. Are visible at or beyond the property line;
b. Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,
c. Have an opacity of 60% or more at any time.

23. Demolition (§2105.47)

a. No person shall conduct, or allow to be conducted, any demolition activities in such manner that the opacity of the emissions from such activities equal or exceed 20% for a period or periods aggregating more than three (3) minutes in any 60 minute period.

b. Notwithstanding any other provisions of this permit, the prohibitions of Site Level Condition IV.23 may be enforced by any municipal or local government unit having jurisdiction over the place where such demolition activities occur. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.23.

24. Fugitive Emissions (§2105.49)

The person responsible for a source of fugitive emissions, in addition to complying with all other applicable provisions of this permit shall take all reasonable actions to prevent fugitive air contaminants from becoming airborne. Such actions may include, but are not limited to:

a. The use of asphalt, oil, water, or suitable chemicals for dust control;
b. The paving and maintenance of roadways, parking lots and the like;
c. The prompt removal of earth or other material which has been deposited by leaks from transport, erosion or other means;
d. The adoption of work or other practices to minimize emissions;
e. Enclosure of the source; and
f. The proper hooding, venting, and collection of fugitive emissions.

25. Episode Plans (§2106.02)

The permittee shall upon written request of the Department, submit a source curtailment plan, consistent with good industrial practice and safe operating procedures, designed to reduce emissions of air contaminants during air pollution episodes. Such plans shall meet the requirements of Article XXI §2106.02.

26. New Source Performance Standards (§2105.05)

a. It shall be a violation of this permit giving rise to the remedies provided by §2109.02 of Article XXI for any person to operate, or allow to be operated, any source in a manner that does not comply with all requirements of any applicable NSPS now or hereafter established by the EPA, except if such person has obtained from EPA a waiver pursuant to Section 111 or Section 129 of the Clean Air Act or is otherwise lawfully temporarily relieved of the duty to comply with such requirements.

b. Any person who operates, or allows to be operated, any source subject to any NSPS shall conduct, or cause to be conducted, such tests, measurements, monitoring and the like as is required by such standard. All notices, reports, test results and the like as are required by such standard shall be submitted to the Department in the manner and time specified by such standard. All information, data and the like which is required to be maintained by such standard shall be made available to the Department upon request for inspection and copying.

27. National Emission Standards for Hazardous Air Pollutants (§2104.08)

a. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 61, Subpart FF – *National Emission Standard for Benzene Waste Operations*.

b. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines*.

c. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 63, Subpart GGGGG – *National Emission Standards for Hazardous Air Pollutants: Site Remediation*.

28. Greenhouse Gas Reporting (40 CFR Part 98)

If the facility emits 25,000 metric tons or more of carbon dioxide equivalent (CO_2e) in any 12-month period, the facility shall submit reports to the US EPA in accordance with 40 CFR Part 98.

29. Benzene Waste Operations – 40 CFR Part 61, Subpart FF (§2104.08)

a. The total annual benzene quantity from facility waste is the sum of the annual benzene quantity for each waste stream at the facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent. The benzene quantity in a waste stream is to be counted only once without multiple counting if other waste streams are mixed with or generated from the original waste stream. Other specific requirements for calculating the total annual benzene waste quantity are as follows: [§61.342(a)(2)-(4)]
1) The benzene in a material subject to 40 CFR Part 61, Subpart FF that is sold is included in the calculation of the total annual benzene quantity if the material has an annual average water content greater than 10 percent. [§61.342(a)(2)]
2) Benzene in wastes generated by remediation activities conducted at the facility, such as the excavation of contaminated soil, pumping and treatment of groundwater, and the recovery of product from soil or groundwater, is not included in the calculation of total annual benzene quantity for that facility.
3) The total annual benzene quantity is determined based upon the quantity of benzene in the waste before any waste treatment occurs to remove the benzene.

b. Compliance with 40 CFR Part 61, Subpart FF will be determined by review of facility records and results from tests and inspections using methods and procedures specified in §61.355(a)-(c) of Subpart FF. [§61.342(g)]

c. If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the permittee shall: [§61.355(a)(5)]

1) Comply with the recordkeeping requirements of condition IV.29.d and reporting requirements of condition IV.29.e below; and
2) Repeat the determination of total annual benzene quantity from facility waste whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.
3) The permittee shall calculate the total annual benzene quantity from facility waste according to the procedures outlined in 40 CFR Part 61, Subpart FF, §61.355(b) and (c).

d. The permittee shall maintain records that identify each waste stream at the facility subject to 40 CFR Part 61, Subpart FF, and indicate whether or not the waste stream is controlled for benzene emissions. In addition the permittee shall maintain the following records: [§61.356(b)(1)]
1) For each waste stream not controlled for benzene emissions, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

e. If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the permittee shall submit to the Department a report that updates the information listed in the following paragraphs whenever there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more. [§61.357(b); §61.357(a)(3)(i)-(vi)]
1) Whether or not the water content of the waste stream is greater than 10 percent;
2) Whether or not the waste stream is a process wastewater stream, product tank drawdown, or landfill leachate;
3) Annual waste quantity for the waste stream;
4) Range of benzene concentrations for the waste stream;
5) Annual average flow-weighted benzene concentration for the waste stream; and
6) Annual benzene quantity for the waste stream.

30. Leak Detection and Repair (§2105.06, Plan Approval Order and Agreement Upon Consent Number 230, dated December 13, 1996)

a. The permittee shall conduct a Leak Detection and Repair (LDAR) program at the facility at all times when facility operations may result in fugitive emissions of VOCs. Such LDAR program shall consist of the following: [RACT Order #230, 1.8]
1) Components applicable to the LDAR program shall be all accessible valves, pumps, and safety pressure relief valves in light oil service.
2) The subject components shall be monitored visually and with a VOC analyzer, and shall be tagged or labeled using Neville's component identification system.
3) Initially, each non difficult/unsafe subject component shall be monitored on a monthly basis. Any component for which a leak is not detected for two successive months shall be monitored on a quarterly basis. Any component for which a leak is not detected for two successive quarters shall then be monitored on an annual basis. Difficult/unsafe components shall be monitored annually.
4) Visual leaks are determined if the component is visually leaking or dripping product from the component. Leaks determined using the analytical test method are an instrument reading exceeding 10,000 parts per million by volume.
5) If a component is designated as leaking by either the visual or analytical method, the component

will not be designated as a "leaker". Instead:

a) A first attempt of repair of the component will be performed for the purposes of stopping or reducing leakage, using best available practices, until the component can achieve non-leaking status.
b) Should this attempt fail, the component will be repaired or replaced and the monitoring will revert to the previous inspection schedule. Two successful monitoring events will allow the new or repaired component to again move up the progression of monthly, quarterly, and annual inspection frequency.

6) Recordkeeping of labeled or tagged monitoring components will be maintained, and include the type of component with available specifications, dates of monitoring, instrument readings, and location of the component.

b. The permittee shall maintain all appropriate records to demonstrate compliance with the requirements of both §2105.06 of Article XXI and RACT Order #230. Such records shall provide sufficient data to clearly demonstrate that all requirements of both §2105.06 of Article XXI and RACT Order #230 are being met. [RACT Order #230, 1.9]

c. The facility shall retain all records required by both §2105.06 of Article XXI and RACT Order #230 for at least 2 years, and shall make the same available to the Department upon request. [RACT Order #230, 1.10]

31. HAP LDAR Implementation (§2103.20.b.4)

a. Upon issuance of this permit the permittee shall continue to implement a Hazardous Air Pollutant Leak Detection and Repair (HAP LDAR) program to monitor equipment in HAP service throughout the facility. Such HAP LDAR program shall consist of the following:

1) The permittee shall maintain an electronic registry to identify all components in HAP service.
2) Monitoring shall be conducted on a different set of one-third of all components every 12-month period, in accordance with condition IV.31.b below. All components shall be tested at least once every three (3) years.
3) If, for each component type where the average percent leaking value is greater than or equal to 2%, the facility shall increase the monitoring frequency for that component type to once every 12-month period for all components of that type. This monitoring frequency shall be maintained until the leak rate for that component type is demonstrated to be less than 2% over a 24-month period, at which time the permittee may return to the monitoring schedule in condition IV.31.a.2) above.
4) For each type of component, a leak is defined as follows:
   a) valves: 500 ppm_v
   b) pump seals: 1,000 ppm_v
   c) pressure relief valves: 500 ppm_v
   d) agitator seals: 10,000 ppm_v
   e) flanges: 500 ppm_v
   f) screw connectors: 500 ppm_v
   g) manways: 500 ppm_v
   h) gauge hatches: 500 ppm_v
   i) instruments: 500 ppm_v
   j) open-ended lines: 500 ppm_v

b. Monitoring of all components shall be conducted in accordance with Method 21 of 40 CFR Part 60, Appendix A.

1) The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21;
2) Monitoring shall be performed when the applicable equipment is in HAP material service.

c. When a leak is detected, the permittee shall attach a weatherproof and readily visible identification to the leaking component. The identification may be removed after the component has been repaired and the component is demonstrated as having no leak.

d. The permittee shall repair each leak detected as soon as practical, but not later than 15 calendar days after it is detected, except as provided in condition IV.31.e below. A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

e. The permittee may delay repair of leaking components under the following conditions:
1) It is technically infeasible to repair the leak without a process unit or facility shutdown, in which case the leak shall be repaired during the next shutdown;
2) The equipment is isolated from the process and does not remain in regulated material service;
3) The permittee determines that emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair;
4) The component is designated unsafe-to-repair.

f. Mass emissions of HAP shall be calculated using the *Correlation Approach* methods in the US EPA document "Protocol for Equipment Leak Emissions Estimates", EPA-453/R-95-017, November 1995, with an applied calculated HAP content (as a percent of total VOC), or other method approved by the Department.

g. For each leak detected, the following information shall be recorded:
1) The date of first attempt to repair the leak.
2) The date of successful repair of the leak.
3) Maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A at the time the leak is successfully repaired or determined to be nonrepairable.
4) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak as specified in conditions a) and b) below:
   a) The permittee may develop a written procedure that identifies the conditions that justify a delay of repair as outlined in condition IV.31.e above.
   b) If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.
5) Dates of shutdowns that occur while the equipment is unrepaired.

h. The permittee shall keep records of the number and types of components subject to the HAP LDAR program.

i. The permittee shall report the following HAP LDAR information for any monitoring event conducted during the applicable period in the semiannual report required under General Condition III.15 above:
1) For each type of equipment listed under condition IV.31.a.4) above, report in a summary format by equipment type, the number of components for which leaks were detected and for valves, pumps and connectors show the percent leakers, and the total number of components monitored. Also include the number of leaking components that were not repaired as required by condition IV.31.d above, and for valves and connectors, identify the number of components

that are determined to be nonrepairable.

2) Where any delay of repair is utilized pursuant to condition IV.31.e above, report that delay of repair has occurred and report the number of instances of delay of repair.
3) The estimated fugitive HAP emissions as determined under condition IV.31.f above.

~PERMIT SHIELD IN EFFECT~

V. EMISSION UNIT LEVEL TERMS AND CONDITIONS

A. Process P001: Heat Polymerization Stills #15, #16, #18, #19, & Unit 43

Process Description: Heat Polymerization Units
Facility ID: Heat Poly Stills #15, #16, #18, #19, and Unit 43
Raw Materials: resin-forming feedstock, additives
Control Device: 18.9 MMBtu/hr natural gas-fired thermal oxidizer (AEI Econ-Abator System)

As identified above, Process P001 consists of the equipment listed under the heading "Heat Polymerization Stills" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate, or allow to be operated, Nos. 15, 16, 18, and 19 Stills and Unit 43 unless all vapors from the ejector stack or vacuum pump vent, the two receiver vents, and the barometric sump vent are piped to the thermal oxidizer. [IP #0060-I006, V.A.1.a; §2103.12.a.2.B]

b. The thermal oxidizer shall be properly operated and maintained according to good engineering practices, manufacturer's recommendations, and the following conditions at all times while treating process emissions: [IP #0060-I001, V.A.1.b-d; IP #0060-I006, V.A.1.c; §2103.12.a.2.B]
1) The minimum VOC and HAP destruction efficiency shall be 98% by weight;
2) The minimum residence time shall be 0.5 seconds;
3) The minimum operating temperature shall be 1,400 °F at all times.

c. Emissions from the thermal oxidizer stack S101 shall not exceed the emissions limitations in Table V-A-1 below: [IP #0060-I001, V.A.1.a; OP #4051008-000-42507; OP #4051008-000-42505; OP #4051008-000-76201; #4051008-000-76202]

TABLE V-A-1 Thermal Oxidizer Emission Limitations

Pollutant	Short-term Limits (lb/hr[1])		Long-term Limits (tpy[2])
	Natural Gas	Propane	
Particulate Matter[3]	0.15	0.17	0.73
Particulate Matter <10 µm (PM_{10})[3]	0.15	0.17	0.73
Particulate Matter <2.5 µm ($PM_{2.5}$)[3]	0.15	0.17	0.73
Nitrogen Oxides (NO_X)	2.13	3.09	13.53
Sulfur Oxides (SO_X)	0.02	0.01	0.06
Carbon Monoxide (CO)	1.79	1.79	7.84
Volatile Organic Compounds (VOC)	2.92	3.04	4.87
Hazardous Air Pollutants (HAP)	0.11	0.12	0.28

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

d. The permittee shall not operate, nor allow to be operated, the thermal oxidizer using a fuel other than utility-grade natural gas, except in the case of emergencies when propane may be used. [IP #0060-I006, V.A.1.d; §2103.12.a.2.B]

2. Testing Requirements:

a. Sufficient test ports shall be installed and located in the ductwork from each Unit to the thermal oxidizer, such that the emissions from each process unit (Units 15, 16, 18, 19, and 43) may be sampled separately in accordance with Article XXI §2108.02 procedures. The permittee may propose an alternate method of determining the emissions from an individual unit for Department approval. If the alternate method is insufficient to determine emissions due to operation of a specific unit, then the test ports must be installed. [IP #0060-I006, V.A.2.a; §2103.12.h.1]

b. No later than 45 days prior to conducting the compliance test, a written test protocol shall be submitted for the Department's approval explaining the intended testing plan, in accordance with the requirements of Article XXI, §2108.02.e, including any deviations from standard testing procedures. In addition, at least thirty (30) days prior to conducting such test, the Department shall be notified in writing of the time(s) and date(s) on which the compliance testing will be conducted. The Department shall be allowed to observe such tests, record data, provide pre-weighted filters, analyze samples in a County laboratory, and to take samples for independent analysis. [IP #0060-I001, V.A.1.e.2); §2108.02.e]

c. Emissions testing shall be performed once every five (5) years in accordance with Site Level Condition IV.13 ("Emissions Testing") and §2108.02 as follows: [IP #0060-I006, V.A.1.e.4); IP #0060-I006, V.A.2.b-c; §2103.12.h; §2108.02]
   1) Testing shall be performed simultaneously at the inlet and the outlet of the thermal oxidizer to demonstrate compliance with the VOC and HAP destruction efficiency required by condition V.A.1.b.1) above.
   2) Testing (inlet and outlet) shall consist of three one-hour test runs conducted at maximum VOC and HAP emission production and maximum gas flow through the thermal oxidizer.
   3) The thermal oxidizer operating temperature, inlet and outlet gas flow rate and VOC & HAP inlet and outlet emissions shall be continuously monitored and recorded during the emissions testing.
   4) EPA Test Method 18 or Method 25A shall be used to determine the thermal oxidizer inlet and outlet concentrations of VOC.
   5) EPA Test Method 18 shall be used to determine the thermal oxidizer inlet and outlet concentrations of ethylbenzene, styrene, naphthalene, xylenes, and total HAPs.
   6) Testing shall be conducted to demonstrate that a minimum residence time of 0.5 seconds or greater will be maintained at the thermal oxidizer under all operating conditions of the Units.

d. The comprehensive and accurate compliance test results shall be reported in units of measurement specified by the applicable emission limitations of this permit to the Department within thirty (30) days of completion of the aforementioned compliance test. [IP #0060-I001, V.A.1.e.3); §2108.02.c]

e. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Article XXI §2108.02. [§2103.12.h.1]

3. **Monitoring Requirements:**

a. The permittee shall inspect the thermal oxidizer and associated ductwork weekly for proper operation as well as for integrity of the thermal oxidizer, process equipment, and gaseous collection systems. [IP #0060-I001, V.A.2.a; IP #0060-I006, V.A.3.a; §2103.12.i]

b. The thermal oxidizer shall be equipped with instrumentation that continuously monitors the thermal oxidizer combustion chamber temperature to within ±10°F of the actual temperature, and records to within ½°F of the measured temperature at all times when the thermal oxidizer is controlling emissions from the stills. The permittee shall calibrate and at all times properly maintain the continuous temperature monitor and recorder in accordance with manufacturer's specifications or documented preventive maintenance and quality assurance practices. [IP #0060-I006, V.A.1.e, V.A.3.b; §2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall keep and maintain the following data for Nos. 15, 16, 18, and 19 Stills, Unit 43, thermal oxidizer, associated process equipment, and gaseous collection systems: [IP #0060-I001, V.A.3.a; IP #0060-I006, V.A.4.a; RACT Order #230, 1.9; §2103.12.j]
1) All data obtained under condition V.A.3.b above;
2) Results of inspections required by condition V.A.3.a above;
3) Date and times of any period when the continuous temperature monitor required by condition V.A.3.b above is not in operation;
4) Batch cycle times;
5) Batch yield;
6) Raw material per batch;
7) Stack test protocols and reports; and
8) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [IP #0060-I006, V.A.4.b; §2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10]

5. **Reporting Requirements:**

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [IP #0060-I001, V.A.4.a; IP #0060-I006, V.A.5.a; §2103.12.k]
1) Calendar dates covered in the reporting period;
2) Total number of batches and total batch operating time per month; and
3) Monthly high, monthly low, and monthly average thermal oxidizer temperatures.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2108.01.c]

6. Work Practice Standards:

a. The permittee shall do the following for the Nos. 15, 16, 18, and 19 Stills, Unit 43, and the associated thermal oxidizer: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Nos. 15, 16, 18, and 19 Stills, Unit 43, and the associated thermal oxidizer shall be: [RACT Order #230, 1.1; §2105.03]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

B. Process P006: Unit 20

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 20
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Process P006 consists of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 20 unless the Reactor is vented to the Holding Tank, and the Holding Tank is equipped with a conservation vent set at a minimum of 1.3 inches of water column. [§2103.12.a.2.B]

b. Total throughput through Unit 20 shall not exceed 66,600,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 96 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 20 process shall not exceed the emissions limitations in Table V-B-1 below: [§2103.12.a.2.B]

TABLE V-B-1: Unit 20 Emissions Limitations

Pollutant	Unit 20 Total (for all process phases)	
	lb/product change[1]	tpy[2]
Volatile Organic Compounds (VOC)	37.32	1.93
Hazardous Air Pollutants (HAP)	4.44	0.23

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. The permittee shall not use boron trifluoride (BF_3) as a catalyst in Unit 20 unless all BF_3 emissions from the Unit 20 Reactor and Holding Tank are being controlled by a packed-bed scrubber. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall visually inspect the BF_3 scrubber required under condition V.B.1.d at least once per shift for visible emissions. If visible emissions are detected inside of the scrubber, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for the Unit 20 Reactor and associated equipment: [RACT Order #230, 1.9; §2103.12.j]
   1) Number of product changes per month and the rolling 12-month total;
   2) Poly oil addition rate (lb/hr) and the rolling 12-month total;
   3) Type of poly oil used per batch; and
   4) If the rolling 12-month total throughput of poly oil exceeds 60,000,000 lbs or if the rolling 12-month total number of product changes exceeds 86, the calculated estimated emissions per month.

b. The permittee shall keep and maintain records of any compositional analyses of poly oil processed in Unit 20. [RACT Order #230, 1.9; §2103.12.j]

c. The permittee shall keep and maintain the following data for the packed-bed scrubber: [§2103.12.j]
   1) The amount of BF_3 catalyst used in the reactor per batch; and
   2) A log of the monitoring required under condition V.B.3 indicating the time and date of the inspection.

d. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

e. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) All batch information required to be recorded under condition V.B.4.a above; and
   3) Packed-bed scrubber information required to be recorded under condition V.B.4.c.1) above.

b. The permittee shall notify the Department within 15 days any time a poly oil with a HAP composition other than the ones listed below is used. The notification shall include a copy of the analysis performed under condition V.B.4.b above: [§2103.12.k]
   1) Nevchem
   2) Nevpene
   3) FT-11-134
   4) NI-100

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for Unit 20 and all associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. Unit 20 and all associated equipment shall be: [RACT Order #230, 1.1; §2105.03]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

C. Process P007: Unit 21

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Process P007 consists of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 21 unless the Aqueous Treaters are equipped with conservation vents. Each conservation vent shall have a set point above the maximum vapor pressure of the material being processed. [§2103.12.a.2.B]

b. Total throughput through Unit 21 shall not exceed 89,400,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table V-C-1 below: [§2103.12.a.2.B]

TABLE V-C-1: Unit 21 Holding Tower and Holding Tank Emission Limitations

Pollutant	Unit 21 Holding Towers & Tank	
	Short-term (lb/product change[1])	Long-term (tpy[2])
Volatile Organic Compounds (VOC)	21.09	**0.55**
Hazardous Air Pollutants (HAP)	10.55	**0.28**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table V-C-2 below: [§2103.12.a.2.B]

TABLE V-C-2: Unit 21 Aqueous Treater Emission Limitations

Pollutant	Unit 21 Aqueous Treaters			
	Treater #4 (lb/batch)[1]	Treater #10 (lb/batch)[1]	Treater #11 (lb/batch)[1]	Long-term (tpy)[2,3]
Volatile Organic Compounds (VOC)	22.13	10.26	12.99	**6.23**
Hazardous Air Pollutants (HAP)	12.41	5.75	7.28	**3.50**

1. Maximum emissions based on material charging.
2. A year is defined as any consecutive 12-month period.
3. Total for all three aqueous treaters.

e. The permittee shall not use boron trifluoride (BF_3) as a catalyst in Unit 21 unless all BF_3 emissions from the Holding Towers and Final Holding Tank are being controlled by a packed-bed scrubber.

[§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall visually inspect the BF_3 scrubber required under condition V.C.1.e at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for the Unit 21 Holding Towers and Final Holding Tank: [RACT Order #230, 1.9; §2103.12.j]
   1) Number of product changes per month and the rolling 12-month total;
   2) Poly oil addition rate (lb/hr) and the rolling 12-month total;
   3) Number of solvent flushes per batch; and
   4) If the rolling 12-month total throughput of poly oil exceeds 80,500,000 lbs or if the rolling 12-month total number of product changes exceeds 47, the calculated estimated emissions per month.

b. The permittee shall keep and maintain the following data for the Unit 21 Aqueous Treaters: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
   1) Number of batch fillings per treater per month and the rolling 12-month total;
   2) Amount of water used per treater per batch;
   3) Number of washings per treater per batch; and
   4) If the rolling 12-month total of batches exceeds any of the following, the calculated estimated emissions per month:
      a) Treater #4, 221 batches;
      b) Treater #10, 363 batches; or
      c) Treater #11, 296 batches.

c. The permittee shall keep and maintain records of any compositional analyses of poly oil processed in Unit 21. [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]

d. The permittee shall keep and maintain the following data for the packed-bed scrubber: [§2103.12.j]
   1) The amount of BF_3 catalyst used in the reactor per batch; and
   2) A log of the monitoring required under condition V.C.3.

e. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2102.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance

with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
1) Calendar dates covered in the reporting period;
2) All batch information required to be recorded under conditions V.C.4.a and V.C.4.b above; and
3) Packed-bed scrubber information required to be recorded under condition V.C.4.d.1) above.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for Unit 21 and all associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Unit 21 and all associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

D. Processes P008 & P009: Continuous Stills #3 and #4

Process Description: Continuous Stills
Facility ID: No. 3 Continuous Still & No. 4 Continuous Still
Raw Materials: polyoil, resin-forming feedstock, additives
Control Device: none

As identified above, Processes P008 & P009 consist of the equipment listed under the heading "Continuous Stills" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The number of product changes shall be limited to 365 in any 12-month period in each continous still. [§2103.12.a.2.B]

b. The No. 3 and No. 4 Continuous Stills shall not exceed the emissions limitations in Table V-D-1 below: [§2103.12.a.2.B]

TABLE V-D-1: No. 3 & No. 4 Continuous Still Emission Limitations

Pollutant	No. 3 Continuous Still		No. 4 Continuous Still	
	Short-term (lb/prod. change)[1]	Long-term (tpy)[2]	Short-term (lb/prod. change)[1]	Long-term (tpy)[2]
Volatile Organic Compounds (VOC)	14.00	**2.56**	76.00	**13.87**
Hazardous Air Pollutants (HAP)	1.66	**0.31**	6.13	**1.12**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for both the No. 3 and No. 4 Continuous Stills and associated equipment: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
1) Number of product changes per month and the rolling 12-month total;
2) Total operating times;
3) Type and amount of daily raw materials used;
4) Type and amount of daily resins produced; and
5) For each still, if the rolling 12-month total number of product changes exceeds 330, the calculated estimated emissions per month.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
   1) Calendar dates covered in the reporting period; and
   2) Total number of product changes and operating time per month.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 3 and No. 4 Continuous Stills and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. The No. 3 and No. 4 Continuous Stills and associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

E. Process P011: No. 2 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 2 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P011 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 2 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I007a, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I007a, V.A.1.b; §2103.12.a.2.B]

c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I007a, V.A.1.c; §2103.12.a.2.B]

d. Fugitive emission from pumps, valves, compressors, and safety pressure relief valves in the No. 2 Packaging Center shall not exceed 1.49 tons/yr of VOCs. [IP #0060-I007a, V.A.1.e; §2103.12.a.2.B]

e. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.1.f; §2103.12.a.2.B]

f. Emissions from the No. 2 Packaging Center shall not exceed the following at any time: [IP #0060-I007a, V.A.1.g; §2103.12.a.2.B]

Table V-E-1: No. 2 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[4]	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
$PM_{10}^{(4)}$	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
$PM_{2.5}^{(4)}$	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
VOC	Resin Drain Kettles[3]	0.51	**15.56**
	No. 2 Flaking Belt	1.86	**8.14**
HAP	Resin Drain Kettles[3]	0.01	**0.36**
	No. 2 Flaking Belt	0.04	**0.19**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months.
3. Short-term emissions are per kettle (lb/hr per kettle). There are seven (7) total drain kettles.
4. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 ("Emissions Testing) and §2108.02. [IP #0060-I007a, V.A.2.a-b; §2103.12.h]

1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.E.1.f above;
2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
5) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
6) Any alternative test methods approved by the Department.

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [IP #0060-I007a, V.A.3.a; §2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.3.b; §2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [IP #0060-I007a, V.A.3.c; §2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 2 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I007a, V.A.3.d; §2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 2 Packaging Center to demonstrate

compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I007a, V.A.4.a; §2103.12.j; 25 PA Code §129.100]

1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month)**;**
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.E.3.d above.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [IP #0060-I007a, V.A.4.c; §2103.12.j.2; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I007a, V.A.5.a; §2103.12.k]

b. The semiannual report shall include the following information at a minimum: [IP #0060-I007a, V.A.5.b; §2103.12.k]

1) Calendar dates covered in the reporting period;
2) Monthly data required by conditions V.E.4.a.1), 3), and 4) above; and
3) Reasons for any non-compliance with the emission standards.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I007a, V.A.5.c; §2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 2 Packaging Center and associated equipment: [§2105.03]

1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I007a, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

F. Process P012: No. 3 Packaging Center

Process Description: Pastillating and Packaging
Facility ID: No. 3 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P012 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 3 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Pastillating Belt shall not exceed 0.51 lbs of VOC per ton of resin produced. [§2103.12.a.2.B]

c. Emissions from the Resin Pastillating Belt shall not exceed 0.02 lbs of HAP per ton of resin produced. [§2103.12.a.2.B]

d. The permittee shall not operate the bagging stations unless all emissions are directed to the No. 3 Packaging Center baghouse. [2103.12.a.2.B]

e. Emissions from the No. 3 Packaging Center shall not exceed the following at any time: [§2103.12.a.2.B]

TABLE V-F-1: No. 3 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[5]	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
PM_{10}[(5)]	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
$PM_{2.5}$[(5)]	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
VOC	Resin Drain Kettles[3]	0.71	**21.78**
	No. 3 Pastillating Belt	1.53	**6.69**
	Pouring[4]	0.94	**1.96**
HAP	Resin Drain Kettles[3]	0.03	**0.71**
	No. 3 Pastillating Belt	0.05	**0.22**
	Pouring[4]	0.03	**0.08**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months. There are seven (7) total drain kettles.

3. Short-term emissions are per kettle (lb/hr per kettle).
4. Product is either poured, pastillated, or loaded under Section V.J.
5. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. An emissions test shall be performed within 18 months after issuance of this permit in accordance with Site Level condition IV.13 ("Emissions Testing") and §2108.02. [§2103.12.h]
   1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the pastillating belt VOC emission limits in condition V.F.1.e above;
   2) Testing shall be conducted at maximum pastillating belt production and shall consist of three (3) 1-hour test runs;
   3) The outlet gas flow rate and VOC emissions shall be continuously monitored and recorded during the emissions testing;
   4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
   5) Any alternative test methods approved by the Department.

b. Emissions testing for VOC and HAP shall be performed within six (6) months after actual throughput of resin on the pastillating belt first exceeds 24,000,000 pounds in any rolling 12-month period and every five (5) years thereafter. [§2103.12.h; 25 PA Code §129.100]
   1) Emissions testing of VOC shall be in accordance with condition V.F.2.a above;
   2) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs.

c. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 3 Packaging Center baghouse. [§2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 3 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 3 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [§2103.12.j; 25 PA Code §129.100]
1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
2) Date of kettle fillings, amount filled, and type of fill (resin or resin solution) for the reporting period;
3) Total amount of throughput on the pastillating belt (daily, monthly, and 12-month);
4) Total amount of final product packaged at the bagging areas (monthly and 12-month);
5) Total amount of final product from the pouring station (monthly and 12-month);
6) Total calculated VOC and HAP emissions from the resin drain kettles, pastillating belt, and pouring station, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals)
7) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.F.3.d above.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
1) Calendar dates covered in the reporting period; and
2) Monthly and 12-month data required by conditions V.F.4.a.1), 4), 5), and 6) above.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 3 Packaging Center and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

G. Process P013: No. 5 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 5 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P013 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 5 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I008, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I008, V.A.1.b; §2103.12.a.2.B]

c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I008, V.A.1.c; §2103.12.a.2.B]

d. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 5 Packaging Center baghouse. [2103.12.a.2.B]

e. Emissions from the No. 5 Packaging Center shall not exceed the following at any time: [IP #0060-I008, V.A.1.e; OP #4051008-000-66500; §2103.12.a.2.B]

TABLE V-G-1: No. 5 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[4]	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
PM_{10}(4)	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
$PM_{2.5}$(4)	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
VOC	Resin Drain Kettles[3]	1.07	**14.00**
	No. 5 Flaking Belt	1.67	**7.33**
HAP	Resin Drain Kettles[3]	0.04	**0.46**
	No. 5 Flaking Belt	0.04	**0.17**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months.
3. Short-term emissions are per kettle (lb/hr/kettle). There are three (3) total drain kettles.
4. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 ("Emissions Testing") and §2108.02. [IP #0060-I008, V.A.2.a & b; §2103.12.h; 25 PA Code §129.100]

1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.G.1.e above;
2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
4) Molten resin feed rate and finished resin produced shall be recorded for each test run;
5) Type of resin produced shall be recorded for each test run;
6) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
7) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
8) Any alternative test methods approved by the Department.

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 5 Packaging Center baghouse. [§2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 5 Flaking Belt, exhaust hood, and associated duct work once per week to ensure the equipment is operating properly, and that the integrity of the system is not compromised by damage, malfunction or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I008, V.A.3; §2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 5 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I008, V.A.4.a; §2103.12.j; 25 PA Code §129.100]

1) Process operation time, raw material usage, and production records (daily, monthly, and 12-

month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month);
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.G.3.d above.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I008, V.A.5.a; §2103.12.k]

b. The semiannual report shall include the following information: [IP #0060-I008, V.A.5.b; §2103.12.k]
1) Calendar dates covered in the reporting period; and
2) Monthly and 12-month data required by conditions V.G.4.a.1), 3), and 4) above;
3) Non-compliance information required by condition V.G.4.b above, and
4) Reasons for any non-compliance with the emission standards.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 5 Packaging Center and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I008, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

H. Process P014: Wastewater Collection, Conveyance, and Treatment

Facility ID: Wastewater Collection System
Raw Materials: industrial process wastewaters, water treatment chemicals, biological treatment nutrients, storm waters
Control Device(s): none

As identified above, Process P014 consists of equipment listed under the heading "Other Processes – Wastewater Collection, Conveyance, and Treatment" in Table II-1 in the Facility Description, Section II, as well as all catch basins and other water collection locations within the facility.

1. Restrictions:

a. The permittee shall not operate or allow to be operated the Surge Tank (#5001), Batch Tanks (#2011-2013), and Sludge Holding Tank (#2010) unless each is covered with a fixed roof. [§2103.12.a.2.B]

b. Emissions from the wastewater collection and conveyance system shall not exceed the following at any time: [§2103.12.a.2.B]

TABLE V-H-1: Wastewater Conveyance System Emission Limitations

POLLUTANT	Yearly Emissions (tons/yr)[1]
Volatile Organic Compounds (VOCs)	**3.36**
Hazardous Air Pollutants (HAPs)	**1.08**

1. A year is defined as any consecutive 12-month period.

c. Emissions from the batch tanks, equalization tank, biological treatment system, and other vessels in the wastewater treatment system shall not exceed the following at any time: [§2103.12.a.2.B; IP #90-I-0058-P]

TABLE V-H-2: Wastewater Treatment System Emission Limitations

POLLUTANT	Batch Tanks	Equalization Tank	Aeration Tanks
	tpy[1]	tpy[1]	tpy[1]
Volatile Organic Compounds (VOCs)	**10.28**	**1.79**	**1.37**
Hazardous Air Pollutants (HAPs)	**1.52**	**0.73**	**0.87**

1. A year is defined as any consecutive 12-month period.

d. The permittee shall not operate or allow to be operated the Rotary Vacuum Filter unless Boiler #6 is in operation. The Rotary Vacuum Filter shall not be operated unless all emissions from the vacuum pump are vented to Boiler #6. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition

IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall take monthly Photo Ionization Detector (PID) readings (or equivalent monitoring device as approved by the Department) of each manhole/catch basin for the contaminated water system just below the manhole/catch basin opening for VOCs and HAPs. [§2103.12.i]

b. The permittee may reduce the frequency of manhole/catch basin PID readings from monthly to quarterly if total emissions from the contaminated water conveyance system do not exceed the limits in condition V.H.1.b above for twelve (12) consecutive monthly readings. [§2103.12.i]
   1) The permittee may reduce the frequency from quarterly to semiannually if total emissions do not exceed the limits in condition V.H.1.b above for three (3) consecutive years.
   2) If emissions exceed the limits in condition V.H.1.b above, the permittee shall resume more frequent readings.

c. The PID monitoring device shall be calibrated using isobutylene gas in order to generate readings that have the same "PID or Isobutylene Units" as the PID readings from the "Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) Emission Estimate for Wastewater Conveyance and Treatment" report (published by Malcolm Pirnie, Inc., January 2008). [§2103.12.i]

d. The permittee shall measure the VOC and total HAP concentrations of the wastewater influent to the Equalization Tank on a quarterly basis. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep rolling 12-month records of VOC and HAP emission calculations for the wastewater conveyance system based on the PID readings required by conditions V.H.3.a and V.H.3.b above and the emission factors determined in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c above, or other factors approved by the Department. [§2103.12.j]

b. The permittee shall keep records of the following for the wastewater treatment system: [§2103.12.j]
   1) A table of all PID readings conducted.
   2) Daily, monthly, and rolling 12-month wastewater flow volume treated.
   3) Quarterly wastewater influent concentrations samples required under condition V.H.3.d above.

c. If the recorded values of the quarterly wastewater concentrations in condition V.H.4.b.3) exceed the values in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c, the permittee shall re-evaluate the emissions estimate using TOXCHEM or other model program as approved by the Department. [§2103.12.j]

d. The permittee shall record all instances of operation of the Rotary Vacuum Filter, including date, time, and duration of operation and total throughput of wastewater to the unit. [§2103.12.j]

e. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
1) Calendar dates covered in the reporting period.
2) Estimated VOC and HAP emissions from the wastewater conveyance system required under condition V.H.4.a above.
3) A summary of the PID readings required to be maintained under condition V.H.4.b.1) above.
4) The monthly wastewater volume recorded under condition V.H.4.b.2) above.
5) Estimated VOC and HAP emissions from the wastewater treatment system.
6) All information for the Rotary Vacuum Filter required to be recorded by condition V.H.4.d above for the time period of the report.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Wastewater Collection, Conveyance, and Treatment system: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Wastewater Collection, Conveyance, and Treatment system shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

I. Process P015: Resin Rework Tanks

Facility ID: Tanks N2 and N4
Raw Materials: resins, rosins, distillate oils
Control Device(s): double-pipe surface condenser

1. Restrictions:

a. The permittee shall not operate or allow to be operated the resin rework tanks N2 and N4 unless all emissions are vented through a condenser. [RACT Order #230, §1.3; §2103.12.a.2.B; 25 PA Code §129.99]

b. Emissions from the resin rework tanks at the exit of the condenser shall not exceed the emissions limitations in Table V-I-1 below: [§2103.12.a.B]

TABLE V-I-1: Resin Rework Tank Emission Limitations

POLLUTANT	Hourly Emissions (lb/hr)[1]	Yearly Emissions (tons/yr)[2]
Volatile Organic Compounds (VOCs)	3.78	**16.55**
Hazardous Air Pollutants (HAPs)	0.08	**0.32**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.

c. The average monthly inlet coolant temperature on the condenser shall not exceed 90 °F. [RACT Order #230, §1.3.a; §2103.12.a.2.B]

2. Testing Requirements:

a. The permittee shall perform an one-time test within 24-months of the issuance date of this permit in accordance with Site Level Condition IV.13 ("Emissions Testing") and Article XXI §2108.02. [§2102.12.h; §2108.02]

b. Emissions testing shall be performed at the outlet of the condenser for VOC in accordance with EPA Reference Methods 25 and the Allegheny County Health Department Source Testing Manual, or any alternative test method as approved by the Department. Testing shall be performed during the period of maximum emissions from the process and shall consist of three (3) test runs, each performed over the entire vessel loading period. The following information shall be reported as part of the emissions test report: [§2103.12.h; §2108.02]
1) VOC emissions (in lb/hr);
2) Vessel loading duration;
3) Coolant inlet temperature (continuous);
4) Outlet vapor temperature (continuous); and
5) Resin production rate (gallons/batch; lb/batch)

c. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall install, operate, and maintain a condenser coolant inlet temperature instrument that continuously monitors the coolant inlet temperature to a standard accuracy of the greater of ±2.2 °C or ±0.75% of the temperature measured. The permittee shall at all times properly maintain and calibrate the continuous temperature monitor and recorder in accordance with manufacturer's specifications and good engineering practices. [§2103.12.i]

b. Monitoring data recorded during periods of monitoring system breakdowns, repairs, preventive maintenance, calibration checks, zero (low-level) and high-level adjustments, periods of non-operation of the process unit (or portion thereof) resulting in cessation of the emissions to which the monitoring applies, shall not be included in any average to determine compliance, except monitoring data is to be collected during periods of startup, shutdown and malfunction. [§2103.12.i]

c. The permittee shall seek Department approval of any alternative monitoring systems. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall maintain the following records for the condenser: [§2103.12.j; 25 PA Code §129.100]
   1) A record of condenser coolant inlet temperature values measured at least once every 15 minutes; or
   2) A record of block average values for 15-minute or shorter periods calculated from all measured coolant inlet temperature values during each period or from at least one measured data value per minute if measure more frequently than once per minute;
   3) Hours of operation;
   4) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment; and
   5) Resin production data.

b. The permittee shall record the following information any time the coolant inlet temperature monitor required by condition V.I.3.a above is offline while the Resin Rework Tanks are in operation: [§2103.12.j]
   1) Date and time the unit went offline;
   2) Duration of offline status; and
   3) Cause of offline status.

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall report the following information to the Department semiannually in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [§2103.12.k]

1) Calendar dates covered in the reporting period;
2) Hours of operation; and
3) Any instances of non-compliance

b. The permittee shall report all information in condition V.I.4.b regarding the coolant inlet temperature monitor in the semiannual report. [§2103.12.k]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Resin Rework Tanks and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Resin Rework Tanks and condenser shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1, 1.3; §2105.03; 25 PA Code §129.100]

~PERMIT SHIELD IN EFFECT~

J. Process P016: Final Product Loading

Facility ID: LX-830 Fuel Oil Barge Loading and Final Product Tankcar & Tank Wagon Loading
Raw Materials: Petroleum hydrocarbon resins, distillate fuel oils, and distillate oils
Control Device(s): none

1. Restrictions:

a. Emissions from the Final Product Loading process shall not exceed the emissions limits in Table V-J-1 below: [§2103.12.a.2.B]

TABLE V-J-1: Final Product Loading Emission Limitations

POLLUTANT	Barge Loading		Tankcar & Tank Wagon Loading		Total
	lb/hr[1]	tpy[2]	lb/hr[1]	tpy[2]	tpy[2]
Volatile Organic Compounds (VOCs)	13.30	0.79	22.52	18.24	**19.03**
Hazardous Air Pollutants	0.64	0.04	0.26	0.21	**0.25**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.

b. The rate of barge loading shall not exceed 850 gallons per minute, and total transfer of material transferred to barges shall not exceed 6.0 million gallons in any 12-month period. [§2103.12.a.2.B]

c. The rate of tankcar/tank wagon loading shall not exceed 250 gallons per minute, and total transfer of material transferred to tankcars or tank wagons shall not exceed 24.3 million gallons in any 12-month period. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records for each batch of product loaded: [§2103.12.j; 25 PA Code §129.100]
1) Date and time of loading operations;
2) Type of loading (barge or tankcar);
3) Amount of material transferred;
4) Type of material transferred; and
5) Temperature of material during loading of tankcars or tank wagons.

b. The permittee shall record the calculated estimated emissions per month if the total amount of material loaded to barges exceeds 5.4 million gallons in any rolling 12-month period, or if the total amount of material loaded to tankcars or tank wagons exceeds 21.9 million gallons in any rolling 12-month period. [§2103.12.j]

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
   1) Calendar dates covered in the reporting period; and
   2) All loading information required to be recorded under condition V.J.4.a above;
   3) In lieu of the actual temperatures recorded under condition V.J.4.a.5) above, the permittee may report the temperature of the material at the storage tank.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the product loading systems and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. The Barge Loading and Tankcar & Tank Wagon Loading processes shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

K. B001, B002, B003, B004, & B015: Heat Poly Still Process Heaters

Process Description:	Heat Poly Still Process Heaters				
Facility ID:	#15 Still Process Heater (B001)	#16 Still Process Heater (B002)	#18 Still Process Heater (B003)	#19 Still Process Heater (B004)	Unit 43 Process Heater (B015)
Max. Design Rate:	7.5 MMBtu/hr	6.1 MMBtu/hr	8.0 MMBtu/hr	7.5 MMBtu/hr	7.5 MMBtu/hr
Fuel(s):	natural gas, liquid propane				
Control Device:	none				

1. Restrictions:

a. Only natural gas shall be combusted in the Still Process Heaters except in the case of emergencies when liquid propane may be used. [§2103.12.a.2.B]

b. The amount of fuel combusted in the Still Process Heaters shall not exceed the following: [§2103.12.a.2.B]
1) No. 15 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane;
2) No. 16 Still Process Heater: 5,980 scf/hr or 52.4 mmscf/yr of natural gas, and 66.7 gal/hr or 33,340 gal/yr of propane;
3) No. 18 Still Process Heater: 7,850 scf/hr or 68.7 mmscf/yr of natural gas, and 87.4 gal/hr or 43,750 gal/yr of propane;
4) No. 19 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane; and
5) Unit 43 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane.

c. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

d. Emissions from the No. 15, No. 16, No. 18, and No. 19 Still Process Heaters shall not exceed the emissions limitations in Table V-K-1 below: [OP #4051008-000-23903; OP #4051008-000-00904, OP #4051008-000-24100; OP #4051008-000-23902; §2104.02.a.1.A]

TABLE V-K-1: No. 15, No. 16, No. 18 & No. 19 Still Process Heater Emission Limitations

Pollutant	No. 15 Heater			No. 16 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.27**	0.05	0.06	**0.22**
PM_{10}(3)	0.06	0.07	**0.27**	0.05	0.06	**0.22**
$PM_{2.5}$(3)	0.06	0.07	**0.27**	0.05	0.06	**0.22**
Nitrogen Oxides (NO_X)	0.85	1.23	**3.80**	0.69	1.00	**3.09**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.71	0.71	**3.11**	0.58	0.58	**2.53**
VOC	0.05	0.10	**0.22**	0.04	0.08	**0.18**

Pollutant	No. 18 Heater			No. 19 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.28**	0.06	0.07	**0.27**
PM_{10}[(3)]	0.06	0.07	**0.28**	0.06	0.07	**0.27**
$PM_{2.5}$[(3)]	0.06	0.07	**0.28**	0.06	0.07	**0.27**
Nitrogen Oxides (NO_X)	0.90	1.32	**4.05**	0.85	1.23	**3.80**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.76	0.75	**3.32**	0.71	0.71	**3.11**
VOC	0.05	0.10	**0.23**	0.05	0.10	**0.22**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

e. Emissions from the Unit 43 Process Heater shall not exceed the emissions limitations in Table V-K-2 below: [IP #0060-I001; §2104.02.a.1.A]

TABLE V-K-2: Unit 43 Process Heater Emission Limitations

Pollutant	Unit 43 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.27**
PM_{10}[(3)]	0.06	0.07	**0.27**
$PM_{2.5}$[(3)]	0.06	0.07	**0.27**
Nitrogen Oxides (NO_X)	0.85	1.23	**3.80**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.71	0.71	**3.11**
VOC	0.05	0.10	**0.22**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
   1) Monthly fuel usage;
   2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) The records of fuel combustion required under condition V.K.4.a above;
   3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.K.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Heat Polymerization Still Process Heaters and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Heat Polymerization Still Process Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

L. B006 & B007: Continuous Still Process Heaters

Process Description:	Continuous Still Process Heaters	
Facility ID:	No. 3 Continuous Still Process Heater (B006)	No. 4 Continuous Still Process Heater (B007)
Max. Design Rate:	5.25 MMBtu/hr	10.5 MMBtu/hr
Fuel(s):	natural gas, liquid propane (No. 4)	
Control Device:	none	

1. Restrictions:

a. The permittee shall submit a written "Reactivation Plan" to the Department for approval prior to restarting the No. 4 Continuous Still Process Heater in accordance with General Condition III.17. [§2103.13.d]

b. Only natural gas shall be combusted in the Continuous Still Process Heaters except in the case of emergencies when liquid propane may be used in the No.4 Heater. [§2103.12.a.2.B]

c. The amount of fuel combusted in the Continuous Still Process Heaters shall not exceed the following: [§2103.12.a.2.B]
   1) No. 3 Continuous Still Process Heater: 5,150 scf/hr or 45.1 mmscf/yr of natural gas; and
   2) No. 4 Continuous Still Process Heater: 10,300 scf/hr or 90.2 mmscf/yr of natural gas, and 114.8 gal/hr or 57,380 gal/yr of propane.

d. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

e. Emissions from the No. 3 and No. 4 Continuous Still Process Heaters shall not exceed the emissions limitations in Table V-L-1 below: [§2103.12.a.1.A; §2104.02.a.1.A]

TABLE V-L-1: No. 3 & No. 4 Continuous Still Process Heater Emission Limitations

Pollutant	No. 3 Cont. Still Heater		No. 4 Cont. Still Heater		
	lb/hr[1] (nat. gas)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.04	**0.18**	0.09	0.10	**0.37**
PM_{10}[(3)]	0.04	**0.18**	0.09	0.10	**0.37**
$PM_{2.5}$[(3)]	0.04	**0.18**	0.09	0.10	**0.37**
Nitrogen Oxides (NO_X)	0.59	**2.59**	1.19	1.72	**5.32**
Sulfur Oxides (SO_X)	0.01	**0.02**	0.01	0.01	**0.03**
Carbon Monoxide (CO)	0.50	**2.18**	1.00	0.99	**4.36**
VOC	0.03	**0.14**	0.07	0.14	**0.31**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
   1) Monthly fuel usage;
   2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) The records of fuel combustion required under condition V.L.4.a above;
   3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.L.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Continuous Still Process Heaters and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Continuous Still Process Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

M. B009, B010, & B011: Packaging Center Heaters

Process Description:	Packaging Center Heaters		
Facility ID:	No. 2 Packaging Center Heater (B009)	No. 3 Packaging Center Heater (B010)	No. 5 Packaging Center Heater (B011)
Max. Design Rate:	5.0 MMBtu/hr	3.91 MMBtu/hr	3.0 MMBtu/hr
Fuel(s):	natural gas, liquid propane		
Control Device:	none		

1. Restrictions:

a. Only natural gas shall be combusted in the Packaging Center Heaters except in the case of emergencies when liquid propane may be used. [§2103.12.a.2.B]

b. The amount of fuel combusted in the Packaging Center Heaters shall not exceed the following: [§2103.12.a.2.B]
1) No. 2 Packaging Center Heater: 4,910 scf/hr or 42.9 mmscf/yr of natural gas, and 54.6 gal/hr or 27,330 gal/yr of propane;
2) No. 3 Packaging Center Heater: 3,840 scf/hr or 33.6 mmscf/yr of natural gas, and 42.7 gal/hr or 21,370 gal/yr of propane; and
3) No. 5 Packaging Center Heater: 2,950 scf/hr or 25.8 mmscf/yr of natural gas, and 32.8 gal/hr or 16,400 gal/yr of propane.

c. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

d. Emissions from the Packaging Center Heaters shall not exceed the emissions limitations in Table V-M-1 below: [OP #4051008-000-00905; OP #4051008-000-00901; §2104.02.a.1.A]

TABLE V-M-1: Packaging Center Heater Emission Limitations

Pollutant	**No. 2 Packaging Center Heater**			**No. 3 Packaging Center Heater**			**No. 5 Packaging Center Heater**		
	lb/hr[1] *nat. gas*	**lb/hr**[1] *propane*	**tpy**[2]	**lb/hr**[1] *nat. gas*	**lb/hr**[1] *propane*	**tpy**[2]	**lb/hr**[1] *nat. gas*	**lb/hr**[1] *propane*	**tpy**[2]
Particulate Matter[3]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
PM_{10}[(3)]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
$PM_{2.5}$[(3)]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
Nitrogen Oxides (NO_X)	0.57	0.82	**2.54**	0.44	0.64	**1.98**	0.34	0.49	**1.52**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.01**	0.01	0.01	**0.01**
Carbon Monoxide (CO)	0.48	0.47	**2.08**	0.37	0.37	**1.62**	0.29	0.29	**1.25**
VOC	0.03	0.07	**0.15**	0.03	0.05	**0.12**	0.02	0.04	**0.09**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
   1) Monthly fuel usage;
   2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) The records of fuel combustion required under condition V.M.4.a above;
   3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.M.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Packaging Center Heaters and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Packaging Center Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1, 1.5; §2105.03]

~PERMIT SHIELD IN EFFECT~

N. B013: No. 6 Boiler

Facility ID: No. 6 Boiler
Max. Design Rate: 49.4 MMBtu/hr
Primary Fuel: Natural Gas
Secondary Fuel: none
Control Device(s): none

1. Restrictions:

a. At no time shall the permittee operate Boiler No. 6 using any fuel other than only utility-grade natural gas. [IP #0060-I009, V.A.1.a; §2103.12.a.2.B]

b. The amount of natural gas combusted shall not exceed 47,050 scf per hour or 412.2 mmscf in any consecutive 12-month period. [§2103.12.a.2.B]

c. Emissions of particulate matter from Boiler No. 6 shall not exceed 0.008 lb/MMBtu. [IP #0060-I009, V.A.1.b; §2104.02.a.1.A]

d. Emissions from Boiler No. 6 shall not exceed the limitation in Table V-N-1 below: [IP #0060-I009, V.A.1.c; §2104.02.a.1.A]

TABLE V-N-1: Boiler #6 Emission Limitations

POLLUTANT	Short-Term	Long-Term
	lb/hr[1]	tpy[2]
Particulate Matter[3]	0.395	**1.73**
Particulate Matter < 10 µm[3]	0.395	**1.73**
Particulate Matter < 2.5 µm[3]	0.395	**1.73**
Nitrogen Oxides (NO_X)	5.411	**23.70**
Sulfur Oxides (SO_X)	0.033	**0.14**
Carbon Monoxide (CO)	4.545	**19.91**
Volatile Organic Compounds (VOCs)	0.280	**1.30**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. The permittee shall perform an emissions test on Boiler No. 6 within six (6) months after the amount of natural gas combusted in any rolling 12-month period first exceeds 206 mmscf to determine compliance with the NO_X limits in condition V.N.1.d above and every five (5) years thereafter. [§2103.12.h]
   1) Compliance shall be determined by an average of three (3) 1-hour test runs. Testing shall be conducted in accordance with Site Level Condition IV.13 (“Emissions Testing”) and U.S. EPA Test Method 7 or other test methods approved by the Department: [§2103.12.h]

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall perform an annual adjustment or "tune-up" on Boiler No. 6 once every 12 months. Such annual tune-ups shall include: [IP #0060-I009, V.A.3.a; RACT Order #230, 1.6; §2105.06.d.2]
   1) Inspection, adjustment, cleaning, or necessary replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation;
   2) Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions or NO_X, and to the extent practicable, minimize emissions of carbon monoxide; and
   3) Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation.

4. Record Keeping Requirements:

a. The permittee shall maintain all appropriate records to demonstrate compliance with the requirements of both Article XXI §2105.06 and RACT Order #230. Such records shall provide sufficient data to clearly demonstrate that all requirements of Article XXI §2105.06 and RACT Order #230 are being met. [IP #0060-I009, V.A.4.a; RACT Order #230, 1.9; §2103.12.j]

b. For the annual tune-up required under condition V.N.3.a above, the permittee shall maintain the following records: [IP #0060-I009, V.A.4.b; RACT Order #230, 1.6; §2103.12.j]
   1) The date of the annual tune-up;
   2) The name of the service company and/or individuals performing the annual tune-up;
   3) The CO and NO_X emission rate before and after the annual tune-up; and
   4) The excess oxygen rate after the annual tune-up.

c. The permittee shall maintain records of fuel usage for Boiler No. 6. [IP #0060-I009, V.A.4.c; RACT Order #230, 1.7; §2103.12.j]

d. All records shall be retained by the facility for at least five (5) years. These records shall be made available to the Department upon request for inspection and/or copying. [IP #0060-I009, V.A.1.a; RACT Order #230, 1.10; §2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [IP #0060-I009, V.A.5.a; §2103.12.k.1]
   1) Records of the annual tune-up required under condition V.N.4.b above; and
   2) Records of the fuel use required under condition V.N.4.c above.

b. Until terminated by written notice from the Department, the requirement for the permittee to report cold starts 24-hours in advance in accordance with Site Level Condition IV.9 is waived and the permittee may report all cold starts in the semiannual report required under condition V.N.5.a above. [§2103.12.k; §2108.01.d]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I009, V.A.5.b; §2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 6 Boiler: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Boiler No. 6 shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [IP #0060-I009, V.A.6; RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

O. B012: No. 8 Boiler

Facility ID: No. 8 Boiler
Max. Design Rate: 29.5 MMBtu/hr
Primary Fuel: Natural Gas
Secondary Fuel: none
Control Device(s): Induced Flue Gas Recirculation

1. Restrictions:

a. Emissions of particulate matter from Boiler No. 8 shall not exceed 0.008 lb/MMBtu. [IP #0060-I003a, V.1.a; §2104.02.a.1.A]

b. The amount of natural gas combusted shall not exceed 28,922 scf per hour or 253.4 mmscf in any consecutive 12-month period. [§2103.12.a.2.B]

c. At no time shall the permittee operate Boiler No. 8 using any fuel other than utility-grade natural gas. [IP #0060-I003a, V.1.b; §2103.12.a.2.B]

d. Emissions from Boiler No. 8 shall not exceed the limitations in Table V-O-1. below: [IP #0060-I003a, V.1.c; §2104.02.a.1.A]

TABLE V-O-1: Boiler #8 Emission Limitations

POLLUTANT	Hourly Emissions (lb/hr)[1]	Yearly Emissions (tons/yr)[2]
Particulate Matter[3]	0.24	**1.03**
Particulate Matter < 10 µm[3]	0.24	**1.03**
Particulate Matter < 2.5 µm[3]	0.24	**1.03**
Nitrogen Oxides (NO_X)	1.66	**7.28**
Sulfur Oxides (SO_X)	0.02	**0.09**
Carbon Monoxide (CO)	2.79	**12.24**
Volatile Organic Compounds (VOCs)	0.18	**0.80**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. Record Keeping Requirements:

a. Records shall be kept of the amount of natural gas used monthly. [IP #0060-I003a, V.4.a; §60.48c(g)]

b. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [IP #0060-I003a, V.4.b; §2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall submit reports of monthly fuel use required by condition V.O.4.a above to the Department semiannually in accordance with General Condition III.15. [IP #0060-I003a, V.5.a; §2103.12.k]

b. Until terminated by written notice from the Department, the requirement for the permittee to report cold starts 24-hours in advance in accordance with Site Level Condition IV.9 is waived and the permittee may report all cold starts in the semiannual report required under condition V.O.5.a above. [§2103.12.k; §2108.01.d]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I003a, V.5.c; §2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 8 Boiler: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Boiler No. 8 shall be: [IP #0060-I003a, V.6.a; §2105.03]
   1) Operated in such a manner as not to cause air pollution;
   2) Operated and maintained in a manner consistent with good operating and maintenance practices.
   3) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

P. D001-D012: Storage Tanks

Process Description	Storage Tanks					
Facility ID	D001	D002	D003	D004	D005	D006
Stored Materials	Catalytic & Misc. Poly Oil	Distillates	Heat Poly Charge Stock	LX-1144 Charge Stock	Misc.	Naphthenic/Ink /Vegetable Oil
Process Description	**Storage Tanks**					
Facility ID	D007	D008	D009	D010	D011	D012
Stored Materials	Nevchem LR	Recovered Oil	Resin Former	Resin Solutions	Unit 20 Feed Blend	Unit 21 Feed Blend

Control(s): Vapor balancing during barge off-loading on Tanks #5003 (included under D005); vent condenser and nitrogen blanketing on Tank #5003

As identified above, the storage tanks consist of the tanks listed under the heading "Storage Tanks" in Table-II in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall store all materials in accordance with Site Level Condition IV.17. [§2103.12.a.2.B; §2105.12.a]

b. Emissions from the storage tanks shall not exceed the values in Table V-P-1 at any time: [§2103.12.a.2.B]

TABLE V-P-1: Storage Tanks Emission Limitations

Storage Tank Category		VOC Emissions (tons/yr)[1]	HAP Emissions (tons/yr)[1]
D001	Catalytic & Misc. Poly Oil	3.79	0.09
D002	Distillates	5.37	0.91
D003	Heat Poly Charge Stock	4.48	0.24
D004	LX-1144 Charge Stock	0.01	0.01
D005	Miscellaneous	1.45	0.01
D006	Naphthenic/Ink/Vegetable Oil	0.12	0.01
D007	Nevchem LR	0.07	0.01
D008	Recovered Oil	0.11	0.02
D009	Resin Former[2]	1.55	0.26
D010	Resin Solutions	21.59	0.01
D011	Unit 20 Feed Blend	0.73	0.16
D012	Unit 21 Feed Blend	2.74	0.08
Total		**42.01**	**1.77**

1. A year is defined as any consecutive 12-month period.
2. Does not include emissions from Tanks #8501-#8506. Emissions from those tanks may be found in Table V-P-2 below. See condition V.P.1.c below.

c. Combined emissions from Tanks #8501-8506 shall not exceed the limits in Table V-P-2: [IP #0060-I004, V.A.1.a; §2103.12.a.2.B]

Table V-P-2: Tanks #8501-#8506 Emissions Limitations

Pollutant	Annual Emissions (tons/yr)[1]
Volatile Organic Compounds (VOC)	3.4
Hazardous Air Pollutants (HAP)	0.6

1. A year is defined as any consecutive 12-month period.

d. The permittee shall not operate or allow to be operated Tank #5003 unless the vapor recovery system is in place. [§2103.12.a.2.B]

e. The permittee shall limit the quantity of materials transferred into Tanks #8501-8506 to no more than 12,000,000 gallons per any 12 month period.

f. The permittee shall not store or allow to be stored in Tanks #6301-6302 and #8501-8506 any liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa at a temperature equal to the local maximum monthly average temperature as reported by the National Weather Service. The maximum true vapor pressure shall be determined as follows: [IP #0060-I004, V.A.1.d; §60.110b(b); §2103.12.a.2.B]
   1) In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss from External Floating Roof Tanks"; or
   2) As obtained from standard reference texts; or
   3) As determined by ASTM Method D2879-97; or
   4) Any other method approved by the Department.

g. The permittee shall not operate or allow to be operated Tanks #6301-6302 and #8501-8506 unless the operating parameters for the conservation and vacuum vents for each tank are a minimum of 0.58 psig and 0.05 psig respectively. [IP #0060-I004, V.A.1.e; §2103.012.a.2.B]

h. The permittee shall not store or allow to be stored any material in Tank #601 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §60.113]

i. The permittee shall not store or allow to be stored any material in Tanks #1005 and #2102 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §60.115a(d)(1)]

j. The permittee shall not operate or allow to be operated the Piperylene Tank #5003 unless a nitrogen blanketing system is in place and the vent condenser is in operation. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall monitor the coolant temperature at the outlet of the vent condenser on the Piperylene Tank #5003. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep readily accessible records showing the dimension of the storage vessel and analysis showing the capacity of the storage vessel for the life of the source. [IP #0060-I004, V.A.3.b; §2103.12.j]

b. The permittee shall maintain a record of the volatile organic liquid (VOL) stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period. The permittee shall determine the vapor pressure using one of the methods in condition V.P.1.f above and shall indicate which method was used. [IP #0060-I004, V.A.3.c; §2103.12.j]

c. The permittee shall record and maintain records of the total yearly throughput of material and the number of turnovers in each tank. [IP #0060-I004, V.A.4.a.1; §2103.12.j]

d. The permittee shall record and maintain records of the outlet coolant temperature on the vent condenser for the Piperylene Tank #5003. [§2103.12.j]

e. The permittee shall maintain records of the calculated VOC and HAP emissions from the storage tanks on a calendar year basis. If the actual throughput of resin formers (measured as receipts) exceeds 18.7 mmgal in any rolling 12-month period, the permittee shall calculate and report the VOC and HAP emissions from the storage tanks for the 12-month period. [§2103.12.j]

f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall notify the Department within thirty (30) days of when the maximum true vapor pressure of the liquid stored in Tanks #6301-6302 or #8501-8506 exceeds 3.5 kPa. [IP #0060-I004, V.A.4.d; §2103.12.k]

b. The permittee shall submit notification of intent to store any new material in Tanks #6301-6302 or #8501-8506 other than resin forming feedstocks or fuel oil to the Department a minimum of ten (10) working days prior to the intended store date. This notification shall at a minimum include the Material Safety Data Sheet (MSDS) and emission calculation for the new material. [IP #0060-I004, V.A.5.a.2; §2103.12.k]

c. The permittee shall report to the Department the calculated VOC and HAP emissions from the storage tanks in the previous 12-month period within 30 days upon request by the Department. [§2103.12.k]

d. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for all storage tanks and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The storage tanks shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

VI. MISCELLANEOUS

A. Process P017: Groundwater Remediation

Process Description: Groundwater Remediation System
Facility ID: Groundwater & Oil Recovery Wells #2, #4, #7-11; #2 Dry Well; #8 Well
Max. Design Rate: 165,000 gallons of recovered oil
Raw Materials: contaminated groundwater; recovered oil
Control Device: carbon adsorption for recovered water

1. Restrictions:

a. The permittee shall collect recovered oil in containers using Container Level 2 controls meeting one of the following definitions: [§2104.08.a; 40 CFR Part 63, Subpart GGGGG, §63.7900(b)(2); §63.7901(d)(1); Subpart PP, §63.923(b)]
   1) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in §63.923(f).
   2) A container that has been demonstrated to operate with no detectable organic emissions as defined in §63.921.
   3) A container that has been demonstrated within the preceding 12 months to be vapor-tight by using Method 27 in appendix A of 40 CFR part 60 in accordance with the procedure specified in §63.925(b) of this subpart.

b. Transfer of regulated-material in to or out of a container using Container Level 2 controls shall be conducted in such a manner as to minimize exposure of the remediated material to the atmosphere, to the extent practical, considering the physical properties of the remediated material and good engineering and safety practices for handling flammable, ignitable, explosive, or other hazardous materials. Examples of container loading procedures that meet the requirements of this paragraph include using any one of the following: [§2104.08.a; §63.7901(d)(2); §63.923(c)]
   1) A submerged-fill pipe or other submerged-fill method to load liquids into the container;
   2) A vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operations; or
   3) A fitted opening in the top of a container through which the remediated material is filled, with subsequent purging of the transfer line before removing it from the container opening.

c. The permittee shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows: [§2104.08(a); §63.7901(d)(3); §63.923(d)]
   1) Opening of a closure device or cover is allowed for the purpose of adding material to the container as follows:
      a) In the case when the container is filled to the intended final level in one continuous operation, the permittee shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.
      b) In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the permittee shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level, the completion of a batch loading after which no additional material will be added to the container within 15 minutes, the person performing the loading operation leaves the immediate vicinity of the container, or the

shutdown of the process generating the material being added to the container, whichever condition occurs first.

2) Opening of a closure device or cover is allowed for the purpose of removing material from the container as follows:
   a) An empty container may be open to the atmosphere at any time (e.g., covers and closure devices are not required to be secured in the closed position on an empty container).
   b) In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container, the permittee shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.
3) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of regulated-material. Examples of such activities include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.
4) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the container internal pressure in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the container internal pressure is within the internal pressure operating range determined by the permittee based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, combustible, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the container internal pressure exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.
5) Opening of a safety device is allowed at any time conditions require it to do so to avoid an unsafe condition

d. The permittee shall transfer the remediated material to one of the following facilities: [§2104.08.a; §63.7936(b)]
   1) A facility where the remediated material will be directly disposed in a landfill or other land disposal unit according to all applicable Federal and State requirements.
   2) A facility subject to 40 CFR part 63, subpart DD where the exemption under §63.680(b)(2)(iii) is waived and air emissions from the management of remediated material at the facility are controlled according to all applicable requirements in the subpart for an off-site material. Prior to sending the remediated material, the permittee shall obtain a written statement from the owner or operator of the facility to which the remediated material is sent acknowledging that the exemption under §63.680(b)(2)(iii) will be waived for all remediated material received at the facility from the permittee and the remediated material will be managed as an off-site material at the facility according to all applicable requirements. This statement must be signed by the responsible official of the receiving facility, provide the name and address of the

receiving facility, and a copy sent to the EPA Regional Office listed under Contact Information, Section I.

3) A facility where the remediated material will be managed according to all applicable requirements under 40 CFR Part 63, Subpart GGGGG.

   a) The permittee shall prepare and include a notice with each shipment or transport of remediated material from the site. This notice must state that the remediated material contains organic HAP that are to be treated according to the provisions of Subpart GGGGG. When the transport is continuous or ongoing (for example, discharge to a publicly owned treatment works), the notice must be submitted to the receiving facility owner or operator initially and whenever there is a change in the required treatment.

   b) The permittee shall not transfer the remediated material unless the owner or operator of the facility receiving the remediated material has submitted to the EPA a written certification that he or she will manage remediated material received from the facility according to the requirements of Subpart GGGGG. The receiving facility owner or operator may revoke the written certification by sending a written statement to the EPA and to the permittee providing at least 90 days notice that they rescind acceptance of responsibility for compliance with the regulatory provisions listed in Subpart GGGGG. Upon expiration of the notice period, the permittee may not transfer the remediated material to the facility.

e. The permittee shall develop a written startup, shutdown, and malfunction plan (SSMP) according to the provisions in §63.6(e)(3). [§2104.08.a; §63.7935(c)]

f. The permittee shall control equipment leaks according to all applicable requirements under 40 CFR Part 63, Subpart UU: *National Emission Standards for Equipment Leaks – Control Level 2*. [§2104.08.a; §63.7920(b)]

g. The permittee shall identify the equipment subject to control according to the requirements in §63.1022, including equipment designated as unsafe to monitor, and have records supporting the determinations with a written plan for monitoring the equipment according to the requirements in §63.1022(c)(4). [§2104.08.a; §63.7921(c)]

2. Testing Requirements:

a. The permittee shall conduct a test to demonstrate that each container operates with no detectable organic emissions or that the container is vapor-tight. The permittee shall conduct the test using Method 21 (40 CFR part 60, appendix A) and the procedures in §63.925(a) to demonstrate that each container operates with no detectable organic emissions or Method 27 (40 CFR part 60, appendix A) and the procedures in §63.925(b) to demonstrate that each container is vapor-tight. [§2104.08.a; §63.7941(i)]

b. Testing of containers in accordance with condition VI.A.2.a above shall be conducted at least once every 12-months, or any time a new or repaired container is brought into service. [§2103.12.h]

c. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall inspect all remediated material containers as follows: [§2104.08(a); §63.7901(d)(1); §63.923(e); §63.926(a)]

1) In the case when a container filled or partially filled with remediated material remains unopened at the facility site for a period of 1 year or more, the container and its cover and closure devices shall be visually inspected by the permittee initially and thereafter, at least once every calendar year, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of condition VI.A.3.a.2) below.

2) When a defect is detected for the container, cover, or closure devices, the permittee must either empty the remediated material from the defective container or repair the defective container.

a) If the permittee elects to empty the waste from the defective container, the permittee must remove the remediated material from the defective container to meet the conditions for an empty container and transfer the removed remediated material to a container that meets the applicable standards under this permit. Transfer of the remediated material must be completed no later than 5 calendar days after detection of the defect. The emptied defective container must be either repaired, destroyed, or used for purposes other than management of regulated-material.

b) If the permittee elects not to empty the remediated material from the defective container, the permittee must repair the defective container. First efforts at repair of the defect must be made no later than 24 hours after detection and repair must be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the remediated material must be emptied from the container and the container must not be used to manage regulated-material until the defect is repaired.

b. The permittee shall demonstrate continuous compliance with the equipment leak standards required by condition VI.A.1.f by inspecting, monitoring, repairing, and maintaining records according to the requirements in §§63.1021 through 63.1039, as applicable. [§2104.08; §63.7922(c)]

4. Record Keeping Requirements:

a. The permittee shall demonstrate continuous compliance by keeping the following records: [§2104.08.a; §63.7903(b), (d)(6); §63.7922(d)]

1) The quantity and design capacity for each type of container used for remediated material remediation;
2) Date of each inspection;
3) If a defect is detected during an inspection, the location of the defect, a description of the defect, the date of detection, the corrective action taken to repair the defect, and if repair is delayed, the reason for any delay and the date completion of the repair is expected.
4) Keeping records to document compliance with the requirements according to the requirements in condition VI.A.4.c below.

b. The permittee shall maintain records of the following: [§2104.08.a; §63.7901(d)(4)]

1) That each container meets the applicable U.S. Department of Transportation regulations; or
2) The permittee shall conduct an initial test of each container for no detectable organic emissions using the procedures in §63.925(a), and have records documenting the test results; or
3) The permittee shall have demonstrated within the last 12 months that each container is vapor-tight according to the procedures in §63.925(a) and have records documenting the test results.

c. The permittee shall keep the following records: [§2104.08.a; §63.7952(a)]
   1) A copy of each notification and report submitted to comply with this permit, including all documentation supporting any Initial Notification or Notification of Compliance Status that is submitted, according to the requirements in §63.10(b)(1) and (b)(2)(xiv).
   2) The records in §63.6(e)(3)(iii) through (v) related to startups, shutdowns, and malfunctions

d. The permittee shall keep records of the total quantity of remediated material collected in each 12-month period. [§2103.12.j]

e. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. Records shall be kept on-site for at least 2 years after the date of each occurrence. Records may be kept off-site for the remaining 3 years. [§2103.12.j.2; §63.7953(b)-(c)]

5. Reporting Requirements:

a. The permittee shall submit compliance reports semiannually to the Department in accordance with General Condition III.15. [§2103.12.k; §63.7951(a)(5)]

b. Each compliance report shall include the following information: [§2104.08.a; §63.7951(b)]
   1) Company name and address.
   2) Statement by a responsible official, with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.
   3) Date of report and beginning and ending dates of the reporting period.
   4) If there was a startup, shutdown, or malfunction during the reporting period the permittee took action consistent with the startup, shutdown, and malfunction plan, the compliance report must include the information in §63.10(d)(5)(i).
   5) If there were no deviations from any emissions limitations (including operating limit), work practice standards, or operation and maintenance requirements, a statement that there were no deviations from the emissions limitations, work practice standards, or operation and maintenance requirements during the reporting period.
   6) Information on equipment leaks required in periodic reports by §63.1018(a) or §63.1039(b).

c. The permittee shall report each instance in which each emissions limitation and each operating limit was not met. This includes periods of startup, shutdown, and malfunction. The permittee shall also report each instance in which the requirements for work practice standards were not met. [§2104.08.a; §63.7935(e)]

d. If there is a startup, shutdown, or malfunction during the semiannual reporting period that was not consistent with the startup, shutdown, and malfunction plan required under condition VI.A.1.e, the permittee shall submit an immediate startup, shutdown, and malfunction report according to the requirements of §63.10(d)(5)(ii) . [§2104.08.a; §63.7951(c)]

e. The permittee shall report to the Department the 12-month rolling total of remediated material collected as required under condition VI.A.4.d. [§2103.12.k]

f. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Groundwater Remediation System: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Groundwater Remediation System and all associated equipment shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

B. Emergency Generators

Process Description:	Emergency Generators							
Facility ID:	WWTP	Heat Poly	Unit 43	BH	Building 50	Building 19A	QTL	Building 50 ICT
Max. Design Rate:	600 hp	600 hp	691 hp	242 hp	31 hp	10 hp	12 hp	29.5 hp
Type:	4SLB	4SRB	4SLB	4SLB	4SLB	4SLB	4SLB	4SLB
Fuel(s):	natural gas							
Control Device(s):	none							

1. Restrictions:

a. The permittee shall not operate or allow to be operated any emergency generator using a fuel other than utility-grade natural gas. [§2103.12.a.2.B]

b. The permittee shall not operate or allow to be operated any emergency generator in such manner that emissions of particulate matter exceed 0.012 lb/MMBtu. [§2104.02.a.1.B]

c. Each emergency generator shall not be operated for more than 500 hours, including operation for maintenance checks and readiness testing, in any 12-month period. [§2103.12.a.2.B]

d. The generators shall be fired only during emergency conditions and for a maximum of 100 hours per year each for maintenance checks and readiness testing. [§2103.12.a.2.B, C; §63.6640(f)(2)]

e. The permittee may operate each generator up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted towards the 100 hours per year provided for maintenance and testing under condition VI.B.1.d above. The 50 hours per year cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. [§2103.12.a.2.B, C; §63.6640(f)(4)]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install a non-resettable hour meter on all emergency generators. [§2103.12.a.2.B, C; §63.6625(f)]

4. Record Keeping Requirements:

a. The permittee shall record hours of operation recorded through the non-resettable hour meters required under condition VI.B.3. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. [§2103.12.j; §2103.12.a.2.B, C; §63.6655(f)]

b. The permittee shall keep records of the maintenance conducted on the emergency generators. [§2103.12a.2.B, C; §63.6655(e)]

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall report the hours of operation required to be recorded by Condition VI.B.4.a above to the Department semi-annually in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report. [§2103.12.k]

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall not use an emergency generator for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [§2103.12.a.2.B, C; §63.6640(f)(3)]

b. The permittee shall perform the following maintenance on each generator: [§2103.12.a.2.B, C; §63.6603(a), Table 2.d.5]
1) Change oil and filter every 500 hours of operation or annually, whichever comes first;
2) Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

c. The emergency generators shall be properly operated and maintained at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. [§2105.03; §63.6605(b)]

d. The permittee shall operate and maintain the emergency generators according to the manufacturer's emission-related written instructions or shall develop a maintenance plan. This plan shall provide to the extent practicable for the maintenance and operation of each generator in a manner consistent with good air pollution control practice for minimizing emissions. [§2103.12.a.2.B, C; §63.6625(e)]

~PERMIT SHIELD IN EFFECT~

C. Sources of Minor Significance

Facility ID	Source Description	Reason for Determination of Minor Significance
G001	Hydrolaser Water Blasting/Cleaning	Maximum PTE is <1.0 tpy of particulate; no VOC or HAP is emitted
G002	Parts Washing	Maximum PTE is <2.0 tpy of VOC; HAPs are negligible
G003	R&D Laboratory Hoods	Laboratory equipment used exclusively for chemical or physical analyses
G004	Tank Cleaning & Painting	Maximum PTE is <3.75 tpy of VOC
F001	Parking Lots & Roadways	Maximum PTE is <3.4 tpy of particulate

1. Restrictions:

a. The permittee shall not exceed 2,500 gallons per year of cleaner in the Parts Washing process. [§2103.12.a.2.B]

b. The permittee shall not use or allow to be used any halogen-containing cleaners in the Parts Washing process. [§2103.12.a.2.B]

c. The permittee shall not exceed 2,000 gallons per year of coatings in the Tank Cleaning & Painting process. [§2103.12.a.2.B]

d. The permittee shall use only coatings compliant with Article XXI, §2105.10.c in the Tank Cleaning & Painting process. [§2103.12.a.2.B]

e. For the parts washing process, the permittee shall keep and maintain records of the total amount and type of cleaner used. [§2103.12.j]

f. For the Tank Cleaning & Painting process, the permittee shall keep and maintain records of the total amount and type of all thinners and coatings used. [§2103.12.j; §2105.10.c; 25 PA Code §129.100]

~PERMIT SHIELD IN EFFECT~

VII. ALTERNATIVE OPERATING SCENARIOS

A. Processes P006 and P007 (Alternative): Unit 20 and Unit 21

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 20 and Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Processes P006 and P007 consist of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II. Under the alternative operating scenario, the #4 Aqueous Treater/Agitator is moved from Unit 21 and placed in operation after the Rinse Decanter in Unit 20. The #4 Aqueous Treater/Agitator is not heated in this alternative scenario.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 20 and Unit 21 under the alternative operating scenario unless all conditions from Section V.B.1 and V.C.1 are met. [§2103.12.a.2.B]

b. Total throughput through Unit 20 shall not exceed 66,600,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 96 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 20 process shall not exceed the emissions limitations in Table VI-A-1 below: [§2103.12.a.2.B]

TABLE VI-A-1: Unit 20 Emissions Limitations

Pollutant	Unit 20 Total (for all process phases)	
	lb/product change[1]	tpy[2]
Volatile Organic Compounds (VOC)	75.28	3.76
Hazardous Air Pollutants (HAP)	8.17	0.40

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. Total throughput through Unit 21 shall not exceed 53,640,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]

e. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table VI-A-2 below: [§2103.12.a.2.B]

TABLE VI-A-2: Unit 21 Holding Tower and Holding Tank Emission Limitations

Pollutant	Unit 21 Holding Towers & Tank	
	Short-term (lb/product change[1])	Long-term (tpy[2])
Volatile Organic Compounds (VOC)	21.09	**0.55**
Hazardous Air Pollutants (HAP)	10.55	**0.28**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

f. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table VI-A-3 below: [§2103.12.a.2.B]

TABLE VI-A-3: Unit 21 Aqueous Treater Emission Limitations

Pollutant	Unit 21 Aqueous Treaters		
	Treater #10 (lb/batch)[1]	Treater #11 (lb/batch)[1]	Long-term (tpy)[2,3]
Volatile Organic Compounds (VOC)	10.26	12.99	**3.78**
Hazardous Air Pollutants (HAP)	5.75	7.28	**2.12**

1. Maximum emissions based on material charging.
2. A year is defined as any consecutive 12-month period.
3. Total for all three aqueous treaters.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall visually inspect the BF_3 scrubber required under conditions V.B.1.d and V.C.1.e at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. Record Keeping Requirements:

The permittee shall keep and maintain all records required under sections V.B.4 and V.C.4 and indicate that the records were obtained while operating under the alternative operating scenario. [§2103.12.j]

5. Reporting Requirements:

The permittee shall submit reports to the Department in accordance with General Condition III.15. The reports shall contain all information required under sections V.B.5 and V.C.5 and indicate that the information pertains to operation under the alternative operating scenario. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for the Unit 20 and Unit 21 and all associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Unit 20 and Unit 21 and all associated equipment shall be properly operated and maintained at all times while operating under the alternative operating scenario according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

VIII. EMISSIONS LIMITATIONS SUMMARY

[This section is provided for informational purposes only and is not intended to be an applicable requirement.]

The tons per year emission limitations in this permit for the Neville Chemical Company facility are summarized in the following table:

TABLE VIII-1
Emission Limitations

Pollutant	Total (tpy*)
Particulate Matter	**13.981**
Particulate Matter <10 µm	**10.941**
Particulate Matter <2.5 µm ($PM_{2.5}$)	**10.091**
Nitrogen Oxides (NO_X)	**78.526**
Sulfur Oxides (SO_X)	**0.465**
Carbon Monoxide (CO)	**68.548**
Volatile Organic Compounds (VOC)	**214.523**
Hazardous Air Pollutants (HAP)	**16.339**
Benzene	**0.467**
Ethylbenzene	**2.080**
Naphthalene	**1.691**
Styrene	**1.483**
Xylenes	**6.299**
Greenhouse Gases (CO_2e)	**83,119**

* A year is defined as any consecutive 12-month period.

ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

January 8, 2019

SUBJECT: **Reasonable Available Control Technology (RACT II) Determination**
Neville Chemical Company
2800 Neville Road
Pittsburgh, PA 15225-1496
Allegheny County

Title V Operating Permit No. 0060c

TO: JoAnn Truchan, P.E.
Section Chief, Engineering

FROM: Helen O. Gurvich
Air Quality Engineer

I. Executive Summary

Neville Chemical Company is defined as a major source of VOC emissions and was subjected to a Reasonable Achievable Control Technology (RACT II) review by the Allegheny County Health Department (ACHD) required for the 1997 and 2008 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the facility has few technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton removed.

These findings are based on the following documents:

- RACT analysis performed by ERG (Neville Chemical_RACT_8-7-15.docx)
- RACT analysis performed by Neville Chemical Company (0060c2014-02-10ract.pdf)
- Title V Operating Permit (see Permit No. 0060b dated 12/22/2017)

II. Regulatory Basis

ACHD requested all major sources of NO_X (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_X and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. Neville Chemical requested a case by case RACT II determination under 25 Pa Code 129.99 for the emission units listed in Table 1 below. This document is the result of ACHD's determination of RACT for these emission sources at Neville Chemical based on the materials submitted by the subject source and other relevant information.

III. Facility Description, Existing RACT I and Sources of VOC

Neville Chemical Company manufactures synthetic hydrocarbon resins, plasticizers, and plasticizing oils. The facility also operates a groundwater remediation system and wastewater treatment system. Also located at the facility are three (3) resin flaking and packaging centers and two natural gas-fired boiler. The facility is a major source of volatile organic compounds (VOCs) and a minor source of nitrogen oxides (NO_X) emissions. Therefore, this RACT evaluation pertains only to control of VOC emissions.

Table 1 Facility Sources Subject to Case-by-Case RACT II and Their Existing RACT I Limits

Source ID	Description	Rating	VOC PTE (TPY)	VOC Presumptive Limit (RACT II)	VOC Limit (RACT I) – Consent Order No. 230
P007	Unit 21: three aqueous treaters - Uncontrolled	89.4 MM lb/yr	6.23	25 Pa Code 129.99	Good operating practices
P009	Still #4: tray tower, distillate condenser, decanter, and vapor surge tank - Uncontrolled	219.8 MM lb/yr	13.87	25 Pa Code 129.99	Good operating practices
P011	No. 2 Packaging Center: seven drain kettles - Uncontrolled	86.7 MM lb/yr	15.56	25 Pa Code 129.99	Good operating practices
	No. 2 Packaging Center: flaking belt, packaging station - Uncontrolled		8.14	25 Pa Code 129.99	Good operating practices
P012	No. 3 Packaging Center: seven drain kettles - Uncontrolled	122.6 MM lb/yr	21.78	25 Pa Code 129.99	Good operating practices
	No. 3 Packaging Center: pastillating belt - Uncontrolled		6.69	25 Pa Code 129.99	Good operating practices
P013	No. 5 Packaging Center: three drain kettles - Uncontrolled	78.8 MM lb/yr	14.00	25 Pa Code 129.99	Good operating practices
	No. 5 Packaging Center: flaking belt, packaging station - Uncontrolled		7.33	25 Pa Code 129.99	Good operating practices
P014	Wastewater Conveyance System - Uncontrolled	105 MM gal/yr	3.36	25 Pa Code 129.99	Good operating practices
	Wastewater Treatment System: 3 batch tanks - Uncontrolled		10.28	25 Pa Code 129.99	Good operating practices
P015	Resin Rework Tanks: two resin rework tanks (N2 and N4 with condenser), and a distillate receiver (uncontrolled)	1.8 MM gal/yr	16.55	25 Pa Code 129.99	Good operating practices
P016	Final Product Loading: Final Product Tankcar & Tankwagon Loading	24.3 MM gal/yr	18.24	25 Pa Code 129.99	Good operating practices
D001	Tanks 1001, 1002, 1016, 1017	101,148-gal ea.	3.79	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
	Tank 2101	215,777 gal			
	Tank 2102	214,944 gal			
D002	Tank 9	2,477 gal.	5.37	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
	Tanks 11-12	19,320 gal. ea.			
	Tanks 13-14	20,305 gal. ea.			
	Tank 69	9,728 gal.			
	Tank 85 (part of No. 3 Continuous Still, P008)	3,900 gal.			
	Tank 172	16,900 gal.			
	Tanks 178-179	16,120 gal. ea.			
	Tanks 211-212	20,078 gal. ea.			
	Tanks 273-278	25,974 gal. ea.			
	Tanks 308-311, 314-315	30,050 gal. ea.			
	Tans 601	60,918 gal.			
	Tank 2108	217,334 gal.			
	Tank 3 (Still Wash Tank)	3,900 gal.			
D003	Tanks 176-177	16,120 gal. ea.	4.48	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
	Tanks 205-206	20,160 gal. ea.			
	Tank 1014	100,674 gal.			
	Tanks 1018-1019	99,309 gal. ea.			
	Tanks 2104, 2107, 2109	217,334 gal. ea.			
	Tank 1015	101,148 gal.			
D009	Tanks 8501-8506	850,000 gal. ea.	3.4	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
D010	Tanks 93-94	28,201 gal. ea.	21.59	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
	Tank 135	2,010 gal.			
	Tanks 304-305, 312-313, 316- 317	30,050 gal. ea.			
	Tank 320	22,438 gal.			
	Tank 330	30,913 gal.			
	Tanks 331-334	30,000 gal. ea.			

Source ID	Description	Rating	VOC PTE (TPY)	VOC Presumptive Limit (RACT II)	VOC Limit (RACT I) – Consent Order No. 230
D012	Tanks 2105-2106	217,334 gal. ea.	2.74	25 Pa Code 129.99	Compliance with Article XXI, §2105.12
G004	Tank Cleaning and Painting	2,000 gal/yr	3.74	25 Pa Code 129.99	Good operating practices
	Fugitive Emissions from Equipment Leaks (valves, pumps, pipe connectors, etc.)	N/A	3.75	25 Pa Code 129.99	LDAR program
P006	Unit 20 (alternative)	66.6 MM lb/yr	3.76	25 Pa Code 129.99	Good operating practices
P007	Unit 21 (alternative: aqueous treater)	NA	3.78	25 Pa Code 129.99	Good operating practices

Table 2 Facility Sources Subject to Presumptive RACT II per PA Code 129.97

Source ID	Description	Rating	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
P001	Thermal Oxidizer	18.9 MM Btu/hr	1.04	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P006	Unit 20: reactor, two mix tanks, two decanters, holding tank	66.6 MM lb/yr	1.93	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P008	Still #3: tray tower, distillate condenser, decanter, batch/flush tank, and sidestream oil tank (T-85)	67.2 MM lb/yr	2.56	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P012	No.3 Packaging Center: pouring station	122.6 MM lb/yr	1.96	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P014	Wastewater Treatment System: equalization tank	105 MM gal/yr	1.79	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P014	Wastewater Treatment System: 2 biological treatment aeration tanks		1.37	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P017	Groundwater Remediation System: 7 groundwater wells, 7 oil recovery wells, a number 2 drywell pump and treat system, and an old number 8 water well pump and treat system	165,000 gal/yr	1.46	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B013	Boiler #6	49.4 MM Btu/hr	1.30	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
D005	Tanks TA-13, TA-14	550 gal. ea.	1.45	< 2.7 TPY VOC	Compliance with Article XXI, §2105.12
	Tank TA-15	1,050 gal.			
	Tank 307	30,050 gal.			
	Tank 76	7,614 gal.			
	Tank 60SC	6,016 gal.			
	Tank 147	500 gal.			
	Tank 175	20,347 gal.			
	Tank 9 Agitator	4,852 gal.			
	Tank 5003	500,000 gal.			

Source ID	Description	Rating	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
D009	Tanks 1012-1013	100,674 gal. ea.	1.55	< 2.7 TPY VOC	Compliance with Article XXI, §2105.12
	Tanks 6301-6302	630,000 gal. ea.			
G002	Parts Washing	2,500 gal/yr	2.00	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices

Table 3 Facility Sources Exempt from RACT II per PA Code 129.96(c) [< 1 TPY VOC]

Source ID	Description	Rating	VOC PTE (TPY)
P001	Heat Polymerization Still #15: reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	18 MM lb/yr	0.559
P001	Heat Polymerization Still #16: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	21 MM lb/yr	0.796
P001	Heat Polymerization Still #18: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	26.28 MM lb/yr	0.846
P001	Heat Polymerization Still #19: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.803
P001	Heat Polymerization Still #43: a reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.803
P007	Unit 21: reactor, four holding towers, one final holding tank	89.4 MM lb/yr	0.55
P016	Final Product Loading: LX-830 Fuel Oil Barge Loading	6 MM gal/yr	0.79
B001	No.15 Still process heater	7.5 MM Btu/hr	0.22
B002	No.16 Still process heater	6.1 MM Btu/hr	0.18
B003	No.18 Still process heater	8.0 MM Btu/hr	0.23
B004	No.19 Still process heater	7.5 MM Btu/hr	0.22
B006	No. 3 Continuous Still Process Heater	5.25 MM Btu/hr	0.14
B007	No. 4 Continuous Still Process Heater	10.5 MM Btu/hr	0.31
B009	No. 2 Packaging Center Heater	5.0 MM Btu/hr	0.15
B010	No. 3 Packaging Center Heater	3.91 MM Btu/hr	0.12
B011	No. 5 Packaging Center Heater	3.0 MM Btu/hr	0.09
B012	Boiler #8	29.5 MM Btu/hr	0.80
B015	Heat Polymerization Still #43: Process Heater	7.5 MM Btu/hr	0.22
	Eight (8) Emergency Generators	0.03 to 1.76 MM Btu/hr	0.15
D004	Tank 80	15,100 gal	0.01
D006	Tanks 1, 2	19,320 gal. ea.	0.13
	Tank 4	22,000 gal.	
	Tank 10	20,850 gal.	
	Tank 68	9,728 gal.	
	Tank 81	10,000 gal.	
	Tank 100	11,025 gal.	
	Tank 102	10,000 gal.	
	Tank 108	10,307 gal.	
	Tank 112	9,743 gal.	
	Tank 145	2,000 gal.	
	Tanks 201-204	20,082 gal. ea.	
	Tanks 301-303	30,050 gal. ea.	
D007	Tanks 82-83	10,000 gal. ea.	0.07
	Tank 1005	101,516 gal.	
D008	Tanks 1008	100,989 gal.	0.11
D011	Tank 252	24,052 gal.	0.73
	Tanks 271-272	25,974 gal. ea.	
P007	Unit 21 (alternative)	53.64 MM lb/yr	0.55

IV. RACT Determination

Two detailed RACT Reviews were performed to evaluate the Neville Chemical facility; one was performed by Neville Chemical Co., and one by Allegheny County Health Department (ACHD). Both submissions were considered in the final RACT disposition for the Facility and findings from each were incorporated into the ACHD RACT II Determination.

The Technically Feasible Control Options for Neville Chemical are detailed in Table 4.

Table 4 – Technically Feasible VOC Control Cost Comparisons[1]

Control Option		P007 (Unit 21)	P009 (still #4)	P011 (resin kettles)	P011 (belt, packaging)	P012 (resin kettles)	P012 (pastillating belt)
Thermal Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$262,000	$218,000	$157,000	$80,000	$243,000	$516,000
	$/ton	42,900	16,000	10,300	10,300	11,400	78,200
Catalytic Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$183,000	$140,000	$114,000	$58,500	$162,000	$312,000
	$/ton	30,000	10,300	7,500	7,500	7,600	47,200
Carbon Adsorption (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$256,000	$260,000	$181,000	$93,000	$213,000	$183,000
	$/ton	42,000	19,100	11,900	11,900	10,000	27,700
Concentrator/ Oxidation (98%)	tpy VOC Removed	6.1	13.6	15.2	7.8	21.3	6.6
	Cost	$185,000	$185,000	$102,000	$52,000	$162,000	$222,000
	$/ton	30,400	13,600	6,700	6,700	7,600	33,600
Condensation (90%)	tpy VOC Removed	5.6	12.5	14.00	7.3	19.6	6.0
	Cost	$372,000	$217,000	$370,000	$193,000	$425,000	$846,000
	$/ton	66,500	17,400	26,400	26,400	21,700	141,000

[1]Each of the units being evaluated for case by case RACT have separate stacks.

Table 4 – Technically Feasible VOC Control Cost Comparisons (continue)[1]

Control Option		P013 (resin kettles)	P013 (belt, packaging)	P014 (conveyance system)	P014 (batch tanks)	P015 (rework tanks)	P016 (product loading)
Thermal Oxidation (98%)	tpy VOC Removed	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$141,000	$74,000	$64,000	$197,000	$165,000	$160,000
	$/ton	10,300	10,300	19,500	19,500	10,200	8,940
Catalytic Oxidation (98%)	tpy VOC Removed	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$103,000	$54,000	$45,000	$137,000	$159,000	$154,000
	$/ton	7,500	7,500	13,600	13,600	9,790	8,590
Carbon Adsorption (98%)	tpy VOC Removed	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$163,000	$86,000	$64,000	$196,000	$266,000	$261,000
	$/ton	11,900	11,900	19,400	19,400	16,400	14,600

Control Option		P013 (resin kettles)	P013 (belt, packaging)	P014 (conveyance system)	P014 (batch tanks)	P015 (rework tanks)	P016 (product loading)
Concentrator/ Oxidation (98%)	tpy VOC Removed	13.7	7.2	3.3	10.1	16.2	17.9
	Cost	$92,000	$48,000	$46,000	$139,000	$168,000	$168,000
	$/ton	6,700	6,700	13,800	13,800	10,400	9,390
Condensation (90%)	tpy VOC Removed	12.6	6.6	3.0	9.3	14.9	16.4
	Cost	$333,000	$174,000	$100,000	$305,000	$297,000	$290,000
	$/ton	26,400	26,400	30,200	30,200	19,900	17,700

[1]Each of the units being evaluated for case by case RACT have separate stacks.

ACHD has determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the processes of the Neville Chemical facility, but they are deemed financially infeasible due to their high cost per ton removed.

All costs, except for the capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the "EPA Air Pollution Control Cost Manual, Sixth Edition" (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA.

V. RACT Summary

Based on the findings in this RACT analysis, the Neville Chemical facility has few technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton removed. The new RACT II conditions will not result in any additional reductions in VOC from the Neville Chemical Facility. The conditions of Plan Approval Order and Agreement #230 (RACT I), issued December 13, 1996, have been superseded by the case-by-case and presumptive RACT II conditions in this proposed permit. The RACT II conditions are at least as stringent as those from RACT I.

VI. New and Revised RACT II OP Permit Conditions

Source ID	Description	Permit Condition TVOP 0060b	Regulations
P007	Unit 21	Condition V.C.4.b Condition V.C.4.c Condition V.C.4.e Condition V.C.6.b	25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P009	Continuous Still #4	Condition V.D.4.a Condition V.D.4.b Condition V.D.6.b	25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P011	No. 2 Packaging Center	Condition V.E.1.a Condition V.E.4.a Condition V.E.4.b Condition V.E.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P012	No. 3 Packaging Center	Condition V.F.1.a Condition V.F.2.b Condition V.F.4.a Condition V.F.4.c Condition V.F.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.99
P013	No. 5 Packaging Center	Condition V.G.1.a Condition V.G.2.a Condition V.G.4.a Condition V.G.4.c	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100

Source ID	Description	Permit Condition TVOP 0060b	Regulations
		Condition V.G.6.b	25 PA Code §129.99
P014	Wastewater Collection, Conveyance, and Treatment System	Condition V.H.6.b	25 PA Code §129.99
P015	Resin Rework Tanks	Condition V.I.1.a Condition V.I.4.a Condition V.I.4.d Condition V.I.6.b	25 PA Code §129.99 25 PA Code §129.100 25 PA Code §129.100 25 PA Code §129.100
P016	Final Product Loading	Condition V.J.4.a Condition V.J.6.b	25 PA Code §129.100 25 PA Code §129.99
D001-D012	Storage Tanks	Condition V.P.6.b	25 PA Code §129.99
G004	Tank Cleaning and Painting	Condition VI.C.1.f	25 PA Code §129.100
P006	Unit 20 (alternative)	Condition VII.A.6.b	25 PA Code §129.99
P007	Unit 21 (alternative: aqueous treater)	Condition VII.A.6.b	25 PA Code §129.99

Allegheny County Health Department
Office of Air Quality

Technical Support Document (TSD) -
REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) DETERMINATION

Source Information

Source Name:	Neville Chemical Company
Source Location:	2800 Neville Road, Neville Township, PA 15225
Mailing Address:	2800 Neville Road, Neville Township, PA 15225
County:	Allegheny County
SIC Code:	2821, 2869, 2899 (Plastics Materials and Resins, Industrial Organic Chemicals, Nec)
Part 70 Permit No.:	0060
Major Source:	VOC
Permit Reviewer:	ERG/ST

The Allegheny County Health Department (ACHD) has performed the following Reasonably Available Control Technology (RACT) analyses for a major source of VOC relating to a chemical plant engaged in manufacturing synthetic hydrocarbon resins, plasticizers, and plasticizing oils, located in Neville Township, Pennsylvania.

Background

Allegheny County was designated marginal nonattainment for the 2008 8-hour ozone on April 30, 2012 (published in 77 FR 30160, May 21, 2012). In order to implement the 2008 NAAQS for ozone, EPA issued a proposed rulemaking in June 2013 to provide steps and standards for states to develop and submit certain materials, dependent on each state's attainment status. Although Allegheny County is designated marginal nonattainment, Pennsylvania is also a part of the Ozone Transport Region (OTR), which must meet more stringent requirements, including submitting a RACT SIP for EPA approval. As such, Allegheny County must reevaluate the NOx and VOC RACT in the existing RACT SIP for the eight-hour ozone NAAQS.

ACHD requested all major sources of NOx (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NOx and/or VOC RACT for incorporation into Allegheny County's portion of the PA State Implementation Plan (SIP). This document is the result of ACHD's review of the RACT re-evaluations submitted by the subject source and supplemented with additional information as needed by ACHD.

RACT Summary

VOC RACT evaluations were conducted for several equipment and operations at Neville Chemical Company. The RACT determinations are summarized in Table 1.

Table 1. Summary of RACT Evaluations

Unit Description	RACT	VOC PTE Before RACT (tpy)	VOC PTE After RACT (tpy)
Continuous Stills #3 and #4	Continued compliance with current requirements.	13.87	13.87
Unit 21 Treater Vessels	Continued compliance with current requirements.	6.23	6.23
No. 3 Packaging Center	Installation of a Catalytic Oxidizer or Concentrator/Oxidizer. Continue compliance with other permitting and regulatory requirements.	21.78 tpy (Resin Kettles), 17.10 tpy (Flaking Belt), 1.96 tpy (Pouring Operation)	0.44 tpy (Resin Kettles), 17.10 tpy (Flaking Belt), 1.96 tpy (Pouring Operation)
Resin Kettles in the No. 2 and No. 5 Packaging Centers	Installation of a Catalytic Oxidizer or Concentrator/Oxidizer. Continue compliance with other permitting and regulatory requirements.	15.56 tpy (No. 2 Kettles), 14.00 tpy (No. 5 Kettles)	0.31 tpy (No. 2 Kettles), 0.28 tpy (No. 5 Kettles)
Resin Rework Tanks N2 and N4	Continued compliance with current requirements.	16.55	16.55
Final Product Loading Processes	Continued compliance with current requirements.	18.24	18.24
Wastewater Conveyance and Treatment System	Continued compliance with current requirements.	13.64	13.64
Total:		**141.49**	**91.19**
Emission Reductions			**50.3**

There are no provisions of the Proposed Pennsylvania Presumptive RACT that directly address VOC emissions from the emission units at Neville Chemical.

Detailed documentation of the RACT evaluation is provided in the following document.

RACT Evaluations

RACT is “the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” (44 FR 53761, 9/17/1979)

ACHD provided the following guidance to the major sources of NOx and VOC in Allegheny County for performing the RACT analyses:

1. The analysis shall address all reasonably possible controls of VOCs and NOx including changes in operation and work practices.

2. All control technology that is found to be technically infeasible must be accompanied by detailed and documented reason(s) as to why the technology is not feasible. General statements about the non-applicability of control technology to your industry will not be sufficient.

3. All changes in operation and work practices that are found not to be feasible require the same documentation as the controls in step #2 above.

4. All feasible control technology, changes in operation, work practices, etc. that are found to be cost prohibitive require a cost analysis demonstrating the cost per ton of pollutant controlled.

5. The analysis shall be done according to the procedures in EPA's OAQPS Cost Manual, EPA's cost spreadsheets are recommended where applicable. The manual and spreadsheets may be found on the CATC/RBLC web page on EPA's Technology Transfer Network (TTN) at http://www.epa.gov/ttn/catc/.

6. All data used in cost estimates, such as exhaust flow rates or the amount of ductwork used need proper documentation. If vendor quotes are used in the analysis for equipment costs, they are required to be supplied. Old analyses increased for inflation will not be acceptable. VATAVUK Air Pollution Control Cost Indexes shall be used with the aforementioned cost spreadsheets.

Each RACT analysis section is organized by the following 4 steps, which incorporate the guidance elements provided by Allegheny:

Step 1 – Identify Control Options (guidance element 1)
Step 2 – Eliminate Technically Infeasible Control Options (guidance elements 2 and 3)
Step 3 – Evaluate Control Options, including costs and emission reductions (guidance elements 4, 5, and 6)
Step 4 – Select RACT (guidance element 1)

Source/Process Description

Neville Chemical Company, located at 2800 Neville Road, Neville Township, PA, is a chemical plant engaged in manufacturing synthetic hydrocarbon resins, plasticizers, and plasticizing oils. Emissions from the source are primarily the result of resin and plasticizer production and packaging operations.

Detailed descriptions of the relevant emissions units are provided in the following sections. Table 2 shows the emission units at this source.

Table 2: Listing of Emission Units That Emit VOC

Process I.D.	PROCESS DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.	PTE (tpy VOC)	RACT
P001	Heat Polymerization Still #15: a reactor, two distillate receivers, two ejector vents, and a decanter.	Thermal oxidizer	18MM lb/yr	Resin-forming feedstock, additives	S101	4.87	No
P001	Heat Polymerization Still #16: a reactor, two distillate receivers, a vacuum pump, and a decanter.	Thermal oxidizer	21MM lb/yr	Resin-forming feedstock, additives	S101	4.87	No
P001	Heat Polymerization Still #18: a reactor, two distillate receivers, a vacuum pump, and a decanter.	Thermal oxidizer	26.28MM lb/yr	Resin-forming feedstock, additives	S101	4.87	No
P001	Heat Polymerization Still #19: a reactor, two distillate receivers, a vacuum pump, and a decanter.	Thermal oxidizer	25MM lb/yr	Resin-forming feedstock, additives	S101	4.87	No
P001	Heat Polymerization Still #43: a reactor, two distillate receivers, two ejector vents, and a decanter.	Thermal oxidizer	25MM lb/yr	Resin-forming feedstock, additives	S101	4.87	No
P008	No. 3 Continuous Still: a tray tower, a distillate condenser, a decanter, a batch/flush tank, and a sidestream oil tank (T-85)	None	67.2MM lb/yr	Polyoil, resin-forming feedstock, additives	S026	2.56	Yes
P009	No. 4 Continuous Still: a tray tower, a distillate condenser, a decanter, and a vapor surge tank	None	219.8MM lb/yr	Polyoil, resin-forming feedstock, additives	S028	13.87	Yes
P006	Catalytic Resin and Polyoil Neutralization Unit 20: a reactor, two mix tanks, two decanters, and a holding tank	Packed bed scrubber	66.6MM lb/yr	Ethylene-cracking products, resin-forming feedstock, additives	S020, S021	2.10 (3.76)[a]	No
P007	Catalytic Resin and Polyoil Neutralization Unit 21: reactor, four holding towers, one final holding tank	Packed bed scrubber	89.4MM lb/yr	Ethylene-cracking products, resin-forming feedstock, additives	S025a, S025b, S025c	0.55 (0.55)[a]	No
P007	Catalytic Resin and Polyoil Neutralization Unit 21: three aqueous treaters	Packed bed scrubber	89.4MM lb/yr	Ethylene-cracking products, resin-forming feedstock, additives	S025a, S025b, S025c	6.23 (3.78)[a]	Yes
P011	No. 2 Packaging Center: seven drain kettles	None	86.7MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S042-49	15.56	Yes
P011	No. 2 Packaging Center: flaking belt, packaging station	None	86.7MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S050a, S051	8.14	No
P012	No. 3 Packaging Center: seven drain kettles	None	122.6MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S054-60, S061a-c, S062-3	21.78	Yes
P012	No. 3 Packaging Center: flaking belt, packaging station	None	122.6MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S054-60, S061a-c, S062-3	17.1	Yes
P012	No. 3 Packaging Center: pouring station	None	122.6MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S054-60, S061a-c, S062-3	1.96	No
P013	No. 5 Packaging Center: three drain kettles	None	78.8MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S065-67, S068a-c, S069	14.0	Yes
P013	No. 5 Packaging Center: flaking belt, packaging station	None	78.8MM lb/yr	Liquid hydrocarbon resins, solid flaked hydrocarbon resins	S065-67, S068a-c, S069	7.33	No
P015	Resin Rework Tanks: two resin rework tanks (N2 and N4), and a distillate receiver	Condenser	1.8MM gal/yr	Resins, rosins, distillate oils	S079	16.55	Yes
P016	Final Product Loading: LX-830 Fuel Oil Barge Loading	None	6MM gal/yr	Petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--	0.79	No
P016	Final Product Loading: Final Product Tankcar & Tankwagon Loading	None	24.3MM gal/yr	Petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--		Yes

Process I.D.	PROCESS DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.	PTE (tpy VOC)	RACT
P017	Groundwater Remediation System: seven groundwater wells, seven oil recovery wells, a number 2 drywell pump and treat system, and an old number 8 water well pump and treat system	None	165,000 gal/yr (recovered oil)	Groundwater, recovered oils	--	< 2	No
P014	Wastewater Conveyance System	None	105MM gal/yr	Wastewater	--	3.36	Yes
	Wastewater Treatment System: 3 batch tanks					10.28	Yes
	Wastewater Treatment System: equalization tank					1.79	No
	Wastewater Treatment System: 2 biological treatment aeration tanks					1.37	No
D001	Tanks 1001-1002, 1016-1017	none	101,148 gal. ea.	Catalytic & Misc. Polymer Oil	--	3.79	No
	Tank 2101	none	215,777 gal.		--		No
	Tank 2102	none	214,944 gal.		--		No
D002	Tank 9	none	2,477 gal.	Distillates	--	5.37	No
	Tanks 11-12	none	19,320 gal. ea.		--		No
	Tanks 13-14	none	20,305 gal. ea.		--		No
	Tank 69	none	9,728 gal.		--		No
	Tank 85 *(part of No. 3 Continuous Still, P008)*	none	3,900 gal.		--		No
	Tank 172	none	16,900 gal.		--		No
	Tanks 178-179	none	16,120 gal. ea.		--		No
	Tanks 211-212	none	20,078 gal. ea.		--		No
	Tanks 273-278	none	25,974 gal. ea.		--		No
	Tanks 308-311, 314-315	none	30,050 gal. ea.		--		No
	Tans 601	none	60,918 gal.		--		No
	Tank 2108	none	217,334 gal.		--		No
	Tank 3 (Still Wash Tank)	none	3,900 gal.		--		No
D003	Tanks 176-177	none	16,120 gal. ea.	Heat Poly Charge Stock	--	4.49	No
	Tanks 205-206	none	20,160 gal. ea.		--		No
	Tank 1014	none	100,674 gal.		--		No
	Tanks 1018-1019	none	99,309 gal. ea.		--		No
	Tanks 2104, 2107, 2109	none	217,334 gal. ea.		--		No
	Tank 1015	none	101,148 gal.		--		No
D004	Tank 80	none	15,100 gal.	LX-1144 Charge Stock	--	0.02	No
D005	Tanks TA-13, TA-14	none	550 gal. ea.	Misc. – Water Treatment	--	1.45	No
	Tank TA-15	none	1,050 gal.		--		No

Process I.D.	PROCESS DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.	PTE (tpy VOC)	RACT
	Tank 307	none	30,050 gal.	Misc. – Alpha Methylstyrene	--		No
	Tank 76	none	7,614 gal.	Misc. – BHT	--		No
	Tank 60SC	none	6,016 gal.	Misc. – Diesel Fuel	--		No
	Tank 147	none	500 gal.	Misc. – Mineral Spirits	--		No
	Tank 175	none	20,347 gal.	Misc. – Caustic	--		No
	Tank 9 Agitator	none	4,852 gal.	Misc. – Emulsion Breaker	--		No
	Tank 5003	vent condenser, nitrogen blanketing	500,000 gal.	Misc. – Piperylene	--		No
D006	Tanks 1, 2	none	19,320 gal. ea.	Naphthenic/ Ink/ Vegetable Oil	--	0.13	No
	Tank 4	none	22,000 gal.		--		No
	Tank 10	none	20,850 gal.		--		No
	Tank 68	none	9,728 gal.		--		No
	Tank 81	none	10,000 gal.		--		No
	Tank 100	none	11,025 gal.		--		No
	Tank 102	none	10,000 gal.		--		No
	Tank 108	none	10,307 gal.		--		No
	Tank 112	none	9,743 gal.		--		No
	Tank 145	none	2,000 gal.		--		No
	Tanks 201-204	none	20,082 gal. ea.		--		No
	Tanks 301-303	none	30,050 gal. ea.		--		No
D007	Tanks 82-83	none	10,000 gal. ea.	NEVCHEM LR	--	0.07	No
	Tank 1005	none	101,516 gal.		--		No
D008	Tanks 1008	none	100,989 gal.	Recovered Oil	--	0.11	No
D009	Tanks 1012-1013	none	100,674 gal. ea.	Resin Former	--	1.55	No
	Tanks 6301-6302	none	630,000 gal. ea.		--		No
	Tanks 8501-8506	vapor return	850,000 gal. ea.		--	3.4	No
D010	Tanks 93-94	none	28,201 gal. ea.	Resin Solutions	--	21.6	No
	Tank 135	none	2,010 gal.		--		No
	Tanks 304-305, 312-313, 316- 317	none	30,050 gal. ea.		--		No
	Tank 320	none	22,438 gal.		--		No
	Tank 330	none	30,913 gal.		--		No
	Tanks 331-334	none	30,000 gal. ea.		--		No
D011	Tank 252	none	24,052 gal.	Unit 20 Feed Blend	--	0.73	No
	Tanks 271-272	none	25,974 gal. ea.		--		No

Process I.D.	PROCESS DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.	PTE (tpy VOC)	RACT
D012	Tanks 2105-2106	none	217,334 gal. ea.	Unit 21 Feed Blend	--	2.74	No
G002	Parts Washing	none	2,500 gal/yr	Degreasing materials	--	< 2	No
G004	Tank Cleaning and Painting	None	--	--	--	< 3.75	No
B001 – B004	Heat Polymerization Still #15, #16, #18, #19: Process Heater	None	28.3 MMBtu/hr total	Natural gas		0.84	No
B006	No. 3 Continuous Still Process Heater	None	5.25 MMBtu/hr	Natural gas		0.14	No
B007	No. 4 Continuous Still Process Heater	None	10.5 MMBtu/hr	Natural gas		0.31	No
B009	No. 2 Packaging Center Heater	None	5.0 MMBtu/hr	Natural gas		0.15	No
B010	No. 3 Packaging Center Heater	None	3.9 MMBtu/hr	Natural gas		0.12	No
B011	No. 5 Packaging Center Heater	None	3.0 MMBtu/hr	Natural gas		0.09	No
B012	Boiler #8	None	29.5 MMBtu/hr	Natural gas		0.80	No
B013	Boiler #6	None	49.4 MMBtu/hr	Natural gas		1.30	No
B015	Heat Polymerization Still #43: Process Heater	None	7.5 MMBtu/hr	Natural gas		0.22	No
-	Emergency Generators	Less than 500 hrs/yr	0.03 to 1.76 MMBtu/hr	Natural gas		0.153	No
-	Fugitive Emissions from Equipment Leaks (valves, pumps, pipe connectors, etc.)	LDAR Program	-	-	-	-	No

[a] Alternative Operating Scenario limit.

RACT Analyses in this Document

This source is a major source of VOC but is not a major source of NOx; therefore, only VOC RACT analyses have been conducted and are provided in this document. The table in the previous section identifies which emission units are included in the RACT analyses.

A VOC RACT evaluation has not been conducted for the Heat Polymerization Stills (Nos. 15, 16, 18, 19, and 43) because they are already controlled with a thermal oxidizer achieving 98% emissions reduction. Also, ACHD determined that a double belt flaking system was BACT in 2010. Both the No. 2 and No. 5 Packaging Centers have double belt flaking systems. A VOC RACT evaluation was not conducted for these flaking systems since RACT is at least as stringent as a current BACT level of control.

The remaining emission units, in which a RACT evaluation was not conducted (as noted in the last column in Table 2) all have relatively low potentials to emit. ACHD considers it unlikely that additional controls would be technically and/or economically feasible for these emission units.

The RACT evaluations that were conducted are included in the sections indicated below:

A. RACT for VOC – Continuous Stills #3 and #4
B. RACT for VOC – Unit 21 Treater Vessels
C. RACT for VOC – No. 3 Packaging Center
D. RACT for VOC – Resin Kettles in the No. 2 and No. 5 Packaging Centers
E. RACT for VOC – Resin Rework Tanks N2 and N4
F. RACT for VOC – Final Product Loading Processes

G. RACT for VOC – Wastewater Conveyance and Treatment System

A. RACT for VOC – Continuous Still #3 and #4

Continuous Stills #3 and #4 are continuous resin distillation processes. In these two processes, polyoil, resin-forming feedstock, and additives are processed through a process heater, a tray tower, a distillate condenser, a decanter, a batch/flush tank, and a sidestream oil tank. Emissions from the Continuous Stills #3 and #4 occur from charging and condenser losses. The VOC emissions from these tanks are characterized by: low volume, intermittent flow, low VOC concentration, and multiple emission constituents. VOC emissions from Continuous Stills #3 and #4 are limited in the Title V permit (issued September 28,2015)[1] as shown in Table 3.

Table 3. Continuous Stills #3 and #4 Emission Limits

	Continuous Still #3	Continuous Still #4
Emission Limit (lb/batch)	14.0	76.0
Emission Limit (tons per year)	2.56	13.87

The current Title V permit requires that the No. 3 and No. 4 Continuous Stills and associated equipment be properly operated and maintained at all times according to good engineering practices and in accordance with the manufacturer's specifications [RACT Order #230, 1.1; §2105.03].

This RACT evaluates the feasibility of controlling both continuous stills with the same control device.

<u>Step 1 – Identify Control Options</u>

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[2]and *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry*[3], VOC emissions from the Continuous Stills #3 and #4 could be controlled with a capture and control system using any number of controls including:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/oxidation
(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies follows.

(a) Thermal oxidizers are refractory lined enclosures with one or more burners in which the waste gas stream is routed through a high temperature combustion zone where it is heated, and the combustible materials are burned. Thermal oxidizers typically operate at 1200 to 2100 degrees Fahrenheit with residence times typically ranging from 0.5 to 2 seconds. An efficient thermal oxidizer design must provide adequate residence time for complete combustion, sufficiently high temperatures for VOC destruction, and adequate velocities to ensure proper mixing without quenching combustion. The types of burners and their arrangements affect combustion rates and residence times; the more thorough the contact between the flame and VOC, the shorter the time required for complete combustion. Natural

[1] Title V Operating Permit 0060, issued September 28, 2015.
[2] US EPA, EPA 453/R-92-018, op. cit.
[3] US EPA, EPA-450/4-91-031, op. cit.

gas is required to ignite the flue gas mixtures and maintain combustion temperatures. Thermal oxidizers achieve 98% or more VOC reduction.

(b) Catalytic oxidizers are similar to thermal oxidizers in that the units are enclosed structures that use heat to oxidize the combustible materials. However, in a catalytic oxidizer, a catalyst is used to lower the operating temperature needed to oxidize the VOCs by lowering the activation energy for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of the VOC without being permanently altered itself. Note that steps must be taken to ensure complete combustion. The types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese, and nickel. These catalysts are deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic. VOC destruction efficiency is dependent upon VOC composition and concentration, operating temperature, and the velocity of the gas passing through the bed. As the velocity increases, VOC destruction efficiency decreases. As temperature increases, VOC destruction efficiency increases. Catalytic oxidizers can achieve 98% or more VOC reduction.

(c) Carbon adsorption is a process by which VOC is retained on a granular carbon surface, which is highly porous and has a very large surface-to-volume ratio. Organic vapors retained on the adsorbent are thereafter desorbed and both the adsorbate and absorbent are recovered. Carbon adsorption systems operate in two phases: adsorption and desorption. Adsorption is rapid and removes most of the VOC in the stream. Eventually, the adsorbent becomes saturated with the vapors, and the system's efficiency drops. Regulatory considerations dictate that the adsorbent be regenerated or replaced soon after efficiency begins to decline. In regenerative systems, the adsorbent is reactivated with steam or hot air, and the absorbate (solvent) is recovered for reuse or disposal. Non-regenerative systems require the removal of the adsorbent and replacement with fresh or previously regenerated carbon. Carbon adsorbers achieve 98% or more VOC reduction.

(d) Concentrator/oxidation systems combine the actions of carbon adsorption systems with thermal oxidizers and are used when vent gas has a low concentration of organics. Vapors pass through an adsorbing surface, and are collected. When the adsorber is saturated, the surface is desorbed, and the absorbate is oxidized in a thermal oxidizer. Concentrator/oxidation systems can achieve 98% or more VOC reduction.

(e) A refrigerated condenser is a control device that is used to cool an emission stream having organic vapors in it and to change the vapors to a liquid. The condensed organic vapors can be recovered, refined, and might be reused, preventing their release to the ambient air. A refrigerated condenser works best on emission streams containing high concentrations of volatile organic emissions. A refrigerated condenser works best in situations where the air stream is saturated with the organic compound, the organic vapor containment system limits air flow, and the required air flow does not overload a refrigeration system with heat. The removal efficiency of a condenser is directly related to lowest temperature that can be achieved in the condenser. Removal efficiencies range from 50-98%.

(f) Absorption devices work by dissolving the soluble components of a gaseous mixture in a liquid. A gas may be removed from an emissions stream by entering into solution or by chemically-reacting with the absorbing solvent. The absorbing liquids (solvents) used must be carefully chosen for high solute (VOC) solubility and include liquids such as water, mineral oils, non-volatile hydrocarbon oils, and aqueous solutions of oxidizing agents like sodium carbonate and sodium hydroxide. Absorption may occur in spray towers, venturi scrubbers, packed columns, and plate columns. High removal efficiencies occur when the ratio of solvent to solute is high, and the surface area for reactions is high. In absorption systems, the solvent must be stripped of solute prior to reuse. Absorption devices can achieve 70% or more VOC reduction.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, concentrator/oxidation, and condensation are technically feasible control options for controlling VOC emissions at Continuous Stills #3 and #4. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to not be technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The Continuous Stills #3 and #4 have a potential to emit VOC as shown in Table 3 above. These potential emissions are based on limits in the current Title V permit. The technically feasible control options with their estimated control efficiencies are as shown in the Table 4.

Table 4. Technically Feasible Control Options for Continuous Stills #3 and #4

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of each of the technically feasible control options for the process heaters, tray towers, distillate condensers, decanters, batch/flush tanks, and sidestream oil tanks comprising the Continuous Stills #3 and #4 was conducted. See Appendix A for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for the capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 5.

Table 5. Cost Analysis Summary for Continuous Stills #3 and #4

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	317,200	217,800	13.6	16,000
Concentrator/Oxidation	424,200	184,500	13.6	13,600
Catalytic Oxidation	245,000	140,100	13.6	10,300
Carbon Adsorption	634,100	259,800	13.6	19,100
Condensation	486,300	217,000	12.5	17,400

Step 4 – Select RACT

Requiring the installation of thermal oxidation, concentrator/oxidation, catalytic oxidation, carbon adsorption, or condensation to control VOC emissions from the process heaters, tray towers, distillate condensers, decanters, batch/flush tanks, and sidestream oil tanks comprising the Continuous Stills #3 and #4 is not cost-effective.

The RACT for control of VOC emissions from Continuous Stills #3 and #4 shall be to continue to comply with existing regulatory requirements and the current Title V permit which requires that the No. 3 and No. 4 Continuous Stills meet a VOC limit of 13.87 tpy and associated equipment be properly operated and maintained at all times according to good engineering practices, and in accordance with the manufacturer's specifications [RACT Order #230, 1.1; §2105.03].

B. RACT for VOC – Unit 21 Treater Vessels

The Unit 21 Catalytic Resin and Polyoil Neutralization Process is operated as a continuous polymerization process using petroleum based resin oils as the primary raw materials. During the manufacturing process, raw materials are continuously charged through a reactor where a catalyst is added. Portions of the raw material react to form resin. This reacted material is continuously transferred through a series of three holding tanks to one of three aqueous treater vessels (Treater #4, Treater #10, and Treater #11) operating in parallel. In the treater vessels, the reacted material is neutralized in a batch process. Emissions occur from these holding tanks and treater vessels as the liquid level in the vessels increase, and the air, which is saturated with organic vapor, is expelled from the vessels. The treater vessels are fixed roof process tanks. Emissions from the holding tanks are treated in a packed bed scrubber and released to the atmosphere. Emissions from the aqueous treater vessels are controlled with conservation vents and released to the atmosphere. The VOC emissions from these tanks are characterized by: a low volume, intermittent flow, a low VOC concentration, and multiple organic constituents. VOC emissions from Unit 21 treater vessels are limited in the Title V permit[4] as shown in Table 6.

Table 6. Unit 21 Emission Limits

	Treater # 4	Treater # 10	Treater # 11
Emission Limit (lb/batch)	22.13	10.26	12.99
Emission Limit (tons per year)	6.23		

The current Title V permit requires that the aqueous treater vessels be equipped with conservation vents, that these conservation vents shall have a set point above the maximum vapor pressure of the material being processed [§2103.12.a.2.B], and that Unit 21 and all associated equipment be properly operated and maintained at all times according to good engineering practices, and in accordance with the manufacturer's specifications [RACT Order #230, 1.1; §2105.03].

This RACT evaluation will determine the feasibility of controlling the emissions from the three aqueous treater vessels (#4, #10, and #11) with one control device

Step 1 – Identify Control Options

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[5] and *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry*[6], VOC emissions from the three aqueous treater vessels at the Unit 21 Catalytic Resin and Polyoil Neutralization Process could be controlled with a capture and control system using:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/oxidation

---

[4] Title V Operating Permit 0060, issued September 28, 2015.
[5] US EPA, "EPA's Control Techniques for Volatile Compound Emissions from Stationary Sources", EPA 453/R-92-018, December 1992. Available at: http://www.epa.gov/ozonepollution/SIPToolkit/ctgs.html
[6] US EPA, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry", EPA-450/4-91-031, August 1993. Available at: http://www.epa.gov/ozonepollution/SIPToolkit/ctgs.html

(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies is provided in RACT Section A.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, concentrator/oxidation, and condensation are technically feasible control options for controlling VOC emissions at Unit 21. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The three aqueous treaters comprising the Catalytic Resin and Polyoil Neutralization Unit 21 have a potential to emit VOC as shown in Table 6 above. These potential emissions are based on limits in the current Title V permit.

The technically feasible control options with their estimated control efficiencies are shown in Table 7.

Table 7. Technically Feasible Control Options for Unit 21

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using the information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the three aqueous treaters at the Catalytic Resin and Polyoil Neutralization Unit 21 was conducted. See Appendix B for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the "EPA Air Pollution Control Cost Manual, Sixth Edition" (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 8.

Table 8. Cost Analysis Summary for Unit 21

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	318,000	260,000	6.1	42,900
Catalytic Oxidation	246,000	182,000	6.1	30,000
Carbon Adsorption	630,000	255,000	6.1	42,000
Concentrator/oxidation	424,000	184,000	6.1	30,400
Condensation	777,800	371,000	5.6	66,500

Step 4 – Select RACT

Requiring the installation of thermal oxidation, catalytic oxidation, carbon adsorption, or condensation to control VOC emissions from the three aqueous treaters comprising the Catalytic Resin and Polyoil Neutralization Unit 21 is not cost-effective.

The RACT for control of VOC emissions from Unit 21 shall be to continue to comply with the current Title V permit requirements, which require the treater vessels be equipped with conservation vents, the conservation vents must have a set point above the maximum vapor pressure of the material being processed [§2103.12.a.2.B], and that Unit 21 and all associated equipment be properly operated and maintained at all times according to good engineering practices, and in accordance with the manufacturer's specifications [RACT Order #230, 1.1; §2105.03].

C. RACT for VOC – No. 3 Packaging Center

In the No. 3 Packaging Center, resin product is packaged in a liquid or solid pastillated form for final shipment and delivery. The #3 Packaging Center has seven (7) associated resin kettles, a pastillating belt, and a pouring operation. Heated resin is initially charged to the kettles then transferred to either the pastillating belt for pastillating and bagging, poured into drums, or loaded into tanks, tankcars, or tankwagons. If the resin is pastillated, it is cooled and solidified on a pastillating belt and placed in bags or supersacks. Emissions from the resin kettles are vented to the atmosphere. The VOC emissions from these operations are characterized by a low VOC concentration and multiple emission constituents. VOC emissions from the No. 3 Packaging Center operations are limited in the Title V permit[7] as shown in Table 9.

Table 9. No. 3 Packaging Center Emission Limits

	Resin Drain Kettles	No. 3 Flaking Belt	Pouring Operation
Emission Limit (lb per hour)	0.71 [a]	3.91	0.94
Emission Limit (tons per year)	21.78	17.10	1.96

[a] These limits are pounds of VOC per hour per kettle.

The current Title V permit requires that, for the No. 3 Packaging Center and all associated equipment, covers be used on all kettles after the initial kettle charging and during process operations, and enclosures be used on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03]. The current Title V permit also requires that all instrumentation, process equipment, and control equipment for the No. 3 Packaging Center be calibrated, maintained, and operated according to manufacturer's recommendations and good engineering control practices. [RACT Order #230, 1.1; §2105.03]

Since the potential VOC emissions from the pouring operation are low, ACHD has determined that it is unlikely that controlling emissions from the pouring operation will be cost-effective. This RACT evaluation will determine the feasibility and cost-effectiveness of controlling the emissions from the Resin Drain Kettles and the No. 3 Flaking Belt, separately, along with controlling all of the No. 3 Packaging Center sources together.

Step 1 – Identify Control Options

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[8] and *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry*[9], VOC emissions from the Resin Drain Kettles and the No. 3 Flaking Belt at the No. 3 Packaging Center could be controlled with a capture and control system.

VOC emissions from the No. 3 Packaging Center could be controlled using:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption

[7] Title V Operating Permit 0060, issued September 28,2015.
[8] US EPA, EPA 453/R-92-018, op. cit.
[9] US EPA, EPA-450/4-91-031, op. cit.

(d) Concentrator/Oxidation
(e) Condensation
(f) Absorption (scrubbing)

Installing a double belt system on the No. 3 Packaging Center pastillating belt, such as has been installed at #2 and #5 Packaging Centers, is not technically feasible, because a double belt would change the shape of the finished product from individual hemispheres into a solid sheet. Therefore this control method for the flaking belt is not investigated further.

A description of each of these control technologies is provided in RACT Section A.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, concentrator/oxidation, and condensation are technically feasible control options for controlling VOC emissions from the Resin Drain Kettles and the No. 3 Flaking Belt at the No. 3 Packaging Center. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The No. 3 Packaging Center has a potential to emit VOC as shown in Table 9 above. These potential emissions are based on limits in the current Title V permit. The technically feasible control options with their estimated control efficiency are as shown Table 10.

Table 10. Technically Feasible Control Options for No. 3 Packaging Center

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using the information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the resin kettles, pastillating belt, and pouring operation comprising the No. 3 Packaging Center was conducted. An economic analysis of the technically feasible control options for all three operations combined was also conducted. See Appendices C1, C2, and C3 for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 11.

Table 11. Cost Analysis Summary for No. 3 Packaging Center

Operation	Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Resin Kettles	Thermal Oxidation	209,000	243,000	21.4	11,400
	Catalytic Oxidation	131,000	163,000	21.4	7,600
	Carbon Adsorption	395,000	213,000	21.4	10,000
	Concentrator/ Oxidation	328,000	164,000	21.4	7,600
	Condensation	970,000	426,000	19.6	21,700
Pastillating Belt	Thermal Oxidation	466,000	1,310,000	16.8	78,200
	Catalytic Oxidation	547,000	792,000	16.8	47,200
	Carbon Adsorption	456,000	464,000	16.8	27,700
	Concentrator/ Oxidation	645,000	564,000	16.8	33.600
	Condensation	3,590,000	2,170,000	15.4	141,000
Both Sources	Thermal Oxidation	488,000	1,540,000	40	38,400
	Catalytic Oxidation	572,000	986,000	40	24,600
	Carbon Adsorption	606,000	926,000	40	23,200
	Concentrator/ Oxidation	756,000	761,000	40	19,000
	Condensation	3,870,000	2,460,000	36.7	66,900

Step 4 – Select RACT

The only control option that is considered cost-effective, based on the economic analysis summarized in Table 11 is to control the No. 3 Resin Kettles using either a catalytic oxidizer or a concentrator/oxidizer. ACHD has determined that RACT for the No. 3 Resin Kettles is to reduce emissions by 98% and limit emissions to 0.44 tons of VOC per year for the No. 3 Resin Kettles.

RACT is also continued compliance with existing requirements for the No. 3 Packaging Center. The current Title V permit requires that, for the No. 3 Packaging Center and all associated equipment, covers be used on all kettles after the initial kettle charging and during process operations, and enclosures be used on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03]. The current Title V permit also requires that all instrumentation, process equipment, and control equipment for the No. 3 Packaging Center be calibrated, maintained, and operated according to manufacturer's recommendations and good engineering control practices. [RACT Order #230, 1.1; §2105.03]

D. RACT for VOC – Resin Kettles in the No. 2 and No. 5 Packaging Centers

In this section, ACHD examines the feasibility of controlling emissions from the resin kettles at two packaging centers with one control device.

In the No. 2 and No. 5 Packaging Centers, resin product is packaged in a flake or liquid form for final shipment and delivery. The No. 2 Packaging Center has seven (7) resin kettles and No. 5 Packaging Center has three (3) resin kettles. Heated resin is initially charged to the kettles, and then the resin is transferred to the flaking belt for flaking and bagging. The VOC emissions from these operations are characterized by a low VOC concentration and multiple emission constituents.

VOC emissions from the resin drain kettles are limited in the Title V permit[10] as shown in Table 12.

Table 12. Emission Limits for Resin Kettles at the No. 2 and No. 5 Packaging Centers

Emission Unit	Emission Limit (lb/hr) [a]	Emission Limit (ton/yr)
No. 2 Packaging Center Resin Kettles	0.51	15.56
No. 5 Packaging Center Resin Kettles	1.07	14.0
	Total	**29.56**

[a] These limits are pounds of VOC per hour per kettle.

The draft Title V operating permit requires that, for the No. 2 and No. 5 Packaging Centers and all associated equipment, covers be used on all kettles after the initial kettle charging and during process operations, and enclosures be used on all solids handling transfer equipment. The draft Title V permit also requires that all instrumentation, process equipment, and control equipment for the No. 2 and No. 5 Packaging Centers be calibrated, maintained, and operated according to manufacturer's recommendations and good engineering control practices.

<u>Step 1 – Identify Control Options</u>

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[11] and *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry*[12], VOC emissions from the resin kettles at the No. 2 and No. 5 Packaging Centers could be controlled with a capture and control system using any number of controls including:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/Oxidation
(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies is provided in RACT Section A.

[10] Title V Operating Permit 0060, issued September 28,2015.
[11] US EPA, EPA 453/R-92-018, op. cit.
[12] US EPA, EPA-450/4-91-031, op. cit.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, concentrator/oxidation, and condensation are technically feasible control options for controlling VOC emissions from the resin kettles at the No. 2 and No. 5 Packaging Centers. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The resin kettles at the No. 2 and No. 5 Packaging Centers have a potential to emit VOC as shown in Table 12 above. These potential emissions are based on limits in the Title V permit. The technically feasible control options for the combined emissions from the resin kettles for the No. 2 and No. 5 Packaging Centers with their estimated control efficiencies are shown in Table 13.

Table 13. Technically Feasible Control Options for Resin Kettles at the No. 2 and No. 5 Packaging Centers

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using the information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the combined VOC emissions from the resin kettles at the No. 2 and No. 5 Packaging Centers was conducted. See Appendix D for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 14.

Table 14. Cost Analysis Summary for Resin Kettles at the No. 2 and No. 5 Packaging Centers

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	311,000	300,000	29	10,300
Catalytic Oxidation	256,000	217,000	29	7,500
Carbon Adsorption	845,000	344,000	29	11,900
Concentrator/ Oxidation	452,000	195,000	29	6,700
Condensation	1,620,000	705,000	26.6	26,400

Step 4 – Select RACT

Based on the economic analysis summarized in Table 14, it is cost-effective to control the Nos. 2 and 5 Resin Kettles using either a catalytic oxidizer or a concentrator/oxidizer. ACHD has determined that RACT for the Nos. 2 and 5 Resin Kettles is to reduce emissions by 98% to 0.59 tons combined of VOC per year.

RACT is also continued compliance with existing requirements for the Nos. 2 and 5 Packaging Center. The current Title V permit requires that, for the Nos. 2 and 5 Packaging Center and all associated equipment, covers be used on all kettles after the initial kettle charging and during process operations, and enclosures be used on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03]. The current Title V permit also requires that all instrumentation, process equipment, and control equipment for the Nos. 2 and 5 Packaging Center be calibrated, maintained, and operated according to manufacturer's recommendations and good engineering control practices. [RACT Order #230, 1.1; §2105.03]

E. RACT for VOC – Resin Rework Tanks N2 and N4

The two Resin Rework Tanks, identified as N2 and N4, are used to make resin products from recovered off-specification resins collected throughout the plant. Off-specification resin is recovered for reuse at the product recovery tanks by melting the resin into "solution" (i.e. distillate oils). The solution is charged into the recovery tanks and heated until the desired temperature is achieved. At this point, the off-specification resin is placed into the tanks. Throughout the entire process, emissions from the tanks are vented through a water-cooled condenser and collected in the condenser tank for reuse. Non-condensables from the recovery process are vented to the atmosphere from the condensate tank. The VOC emissions from these tanks are characterized by: a low volume, intermittent flow, a low VOC concentration, and multiple emission constituents. VOC emissions from the resin rework tanks are limited in the Title V permit[13] as shown in Table 15.

Table 15. Resin Rework Tanks Emission Limits

Emission Unit ID	Emission Limit (lb per hour)	Emission Limit (tons per year)
Resin Rework Tanks (N2 and N4)	3.78	16.55

The Title V permit for this source requires that all of the emissions from the resin rework tanks be routed through a condenser, that the inlet coolant temperature not exceed 90 degrees F, and the condenser shall be properly operated and maintained at all times. [RACT Order #230, §1.1, 1.3; §2103.12.a.2.B; §2105.03].

Step 1 – Identify Control Options

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[14] and *Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry*[15], VOC emissions from the resin rework tanks could be controlled with a capture and control system using any number of controls including:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/Oxidation
(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies is provided in RACT Section A.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the resin rework tanks. Absorption is not technically feasible for controlling organic emission streams with a wide range of

---

[13] Title V Operating Permit 0060, issued September 28, 2015.
[14] US EPA, EPA 453/R-92-018, op. cit.
[15] US EPA, EPA-450/4-91-031, op. cit.

constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The resin rework tanks and storage tanks have a potential to emit VOC as shown in Table 15 above. These potential emissions are based on limits in the draft Title V permit. The technically feasible control options for the combined emissions from the resin rework tanks with their estimated control efficiencies are shown in Table 16.

Table 16. Technically Feasible Control Options for the Resin Rework Tanks

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using the information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the combined VOC emissions from the resin rework tanks was conducted. See Appendix E for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 17.

Table 17. Cost Analysis Summary for the Resin Rework Tanks

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	284,000	164,000	16.2	10,200

Catalytic Oxidation	204,000	158,000	16.2	9,790
Carbon Adsorption	675,000	265,000	16.2	16,400
Concentrator/ Oxidation	410,000	168,000	16.2	10,400
Condensation	745,000	295,000	14.9	19,900

Step 4 – Select RACT

All of the proposed options to control VOC emissions from the resin rework tanks is not cost-effective.

ACHD has determined that RACT for control of VOC emissions from the resin rework tanks is continued compliance with current requirements which includes that all of the emissions from the resin rework tanks be routed through a condenser, that the inlet coolant temperature not exceed 90 degrees F, and the condenser shall be properly operated and maintained at all times. [RACT Order #230, §1.1, 1.3; §2103.12.a.2.B; §2105.03].

F. RACT for VOC – Final Product Loading Processes

At the Final Product Loading (Tankcars and Tankwagons), final products consisting of petroleum hydrocarbon resins and distillate oils are loaded into rail tankers (tankcars) and truck tankers (tankwagons). VOC emissions are generated due to the displacement of the VOC-saturated vapors within the headspace of the tankers. VOC emissions from the tankcar and tankwagon loading are limited in the Title V permit[16] as shown in Table 18. This source includes barge loading, however the barge loading is not evaluated since it is only limited in the TVOP to 0.79 tpy VOC (reductions are assumed to be cost-ineffective).

Table 18. Final Product Loading Emission Limits

Emission Unit ID	Emission Limit (lb per hour)	Emission Limit (tons per year)
Tankcar and Tankwagon Loading	22.52	18.24

The Title V permit for this source requires that the Tankcar & Tank Wagon Loading processes shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

<u>Step 1 – Identify Control Options</u>

According to the information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[17], VOC emissions from the tankcar and tankwagon loading could be controlled with a capture and control system using any number of controls including:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/Oxidation
(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies is provided in RACT Section A.

<u>Step 2 – Eliminate Technically Infeasible Control Options</u>

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the tankcar and tankwagon loading. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

<u>Step 3 - Evaluate Control Options</u>

[16] Title V Operating Permit 0060, issued September 28, 2015.
[17] US EPA, EPA 453/R-92-018, op. cit.

Emissions and Emission Reductions

The tankcar and tankwagon loading facilities have a potential to emit VOC as shown in Table 18 above. These potential emissions are based on limits in the Title V permit. The technically feasible control options for the combined emissions from the tankcar and tankwagon loading with their estimated control efficiency are shown in Table 19.

Table 19. Technically Feasible Control Options for Final Product Loading

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the combined VOC emissions from the tankcar and tankwagon loading facilities was conducted. See Appendix F for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in Table 20.

Table 20. Cost Analysis Summary for Final Product Loading

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	284,000	159,000	17.8	8,940
Catalytic Oxidation	204,000	153,000	17.8	8,590
Carbon Adsorption	677,000	261,000	17.8	14,600
Concentrator/Oxidation	410,000	168,000	17.8	9,390

Condensation	745,000	290,000	16.4	17,700

Step 4 – Select RACT

The control device options to control VOC emissions from the tankcar and tankwagon final product loading is not cost-effective.

ACHD has determined that RACT for control of VOC emissions from the final product loading process is continued compliance with the current requirements. The Title V permit for this source requires that the Tankcar & Tank Wagon Loading processes shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

G. RACT for VOC – Wastewater Conveyance and Treatment System

The Wastewater Conveyance System and three batch treatment tanks are the most significant sources of emissions from Neville Chemical's wastewater treatment plant. These emission sources are limited in the Title V permit[18] as shown in Table 21.

Table 21. Wastewater Conveyance and Treatment Emission Limits

Emission Unit ID	Emission Limit (tons per year)
Wastewater Conveyance System	3.36
Three (3) Batch Tanks	10.28

This RACT Evaluation will examine controlling emissions from the three batch tanks and wastewater conveyance system with a shared control device.

Step 1 – Identify Control Options

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*[19], VOC emissions from the wastewater conveyance system and the three batch tanks could be controlled with a capture and control system using any number of controls including:

(a) Thermal Oxidation
(b) Catalytic Oxidation
(c) Carbon Adsorption
(d) Concentrator/Oxidation
(e) Condensation
(f) Absorption (scrubbing)

A description of each of these technologies is provided in RACT Section A.

Step 2 – Eliminate Technically Infeasible Control Options

It was determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the wastewater conveyance system and the three batch tanks. Absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, absorption is determined to be not technically feasible for controlling VOC from this source.

Step 3 - Evaluate Control Options

Emissions and Emission Reductions

The wastewater conveyance system and the three batch tanks have a potential to emit VOC as shown in Table 21 above. These potential emissions are based on limits in the Title V permit. The technically feasible control options for the combined emissions from the conveyance system and the three batch tanks with their estimated control efficiencies are as shown in Table 22.

---

[18] Title V Operating Permit 0060, issued September 28, 2015.
[19] US EPA, EPA 453/R-92-018, op. cit.

Table 22. Technically Feasible Control Options for Wastewater Conveyance and Treatment

Control Technology	Type	Control Efficiency
Thermal Oxidation	Destruction	98%
Catalytic Oxidation	Destruction	98%
Carbon Adsorption	Removal/recovery	98%
Concentrator/Oxidation	Destruction	98%
Condensation	Removal/recovery	90%

These estimated efficiencies are based on information provided in the references cited in Step 1.

Economic Analysis

Using information provided by Neville Chemical Company and collected by ACHD, a thorough economic analysis of the technically feasible control options for the combined VOC emissions was conducted. See Appendix G for more information. The analysis estimates the total costs associated with the VOC control equipment, including the total capital investment of the various components intrinsic to the complete system, the estimated annual operating costs, and the indirect annual costs. All costs, except for capital costs, were calculated using the methodology described in Section 6, Chapter 1 of the “EPA Air Pollution Control Cost Manual, Sixth Edition” (document # EPA 452-02-001). Capital costs are based on cost spreadsheets provided by Neville Chemical and based on the costing algorithms contained in the Cost Manual and EPA spreadsheets that were previously available from EPA. Annualized costs are based on an interest rate of 7% and an equipment life of 15 years. The ductwork costs estimate only the capital cost for straight ductwork, and does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items.

The basis of cost-effectiveness, used to evaluate the control option, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. A summary of the cost figures determined in the analysis is provided in the Table 23.

Table 23. Cost Analysis Summary for Wastewater Conveyance and Treatment

Control Option	Total Capital Investment ($)	Total Annualized Cost ($/yr)	Potential VOC Removal from Add-on Control (ton/yr)	Cost Effectiveness ($/ton VOC Removed)
Thermal Oxidation	318,000	260,000	13.4	19,500
Catalytic Oxidation	246,000	182,000	13.4	13,600
Carbon Adsorption	634,000	259,000	13.4	19,400
Concentrator/Oxidation	424,000	184,000	13.4	13,800
Condensation	778,000	371,000	12.3	30,200

Step 4 – Select RACT

ACHD has determined that RACT for the wastewater conveyance and treatment emission units is to continue operating in accordance with the requirements in the Title V permit.

NEVILLE® Neville Chemical Company 2800 Neville Road, Pittsburgh, PA 15225-1496
Tel 412 331 4200
Fax General Administration 412 771 0226
Fax Sales/Customer Service 412 777 4234

RECEIVED

FEB 10 2014

ALLEGHENY COUNTY HEALTH DEPT.
AIR QUALITY PROGRAM

February 10, 2014

Hand Delivered

Ms. Sandra Etzel, Chief Engineer
Air Quality Program
Allegheny County Health Department
301 39th Street, Building #7
Pittsburgh, PA 15201-1891

Dear Sandra:

Per your letter dated December 6, 2013, Neville Chemical Company has prepared an updated Reasonably Available Control Technology (RACT) Evaluation for the Neville Island facility. We have enclosed one (1) copy of the report for your records.

If you have any questions regarding this report, please feel free to contact me directly at 412-777-4277 or by e-mail at zosiecki@nevchem.com.

Sincerely,

Zygmunt V. Osiecki
Director - Environmental

ZVO/reb

Enclosure

REASONABLY AVAILABLE CONTROL TECHNOLOGY EVALUATION

NEVILLE CHEMICAL COMPANY
NEVILLE TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA

January 2014

Prepared for:

Neville Chemical Company
2800 Neville Road
Pittsburgh, Pennsylvania 15225

Prepared by:

Air/Compliance Consultants, Inc.
1050 William Pitt Way
Pittsburgh, Pennsylvania 15238

Project Number 13-367

Air/Compliance Consultants, Inc.

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY 1
2.0 INTRODUCTION 1
3.0 FACILITY DESCRIPTION 2
4.0 VOC SOURCES WITH RACT CURRENTLY IN PLACE 3
4.1 Heat Polymerization Units 3
4.2 Unit 20 3
4.3 Equipment Fugitives 4
4.4 Groundwater Remediation System 4
4.5 #2 and #5 Packaging Centers 5
4.6 Storage and Blend Tanks 5
4.7 Combustion Sources 5
4.8 Barge Loading 6
5.0 VOC SOURCES REQUIRING A RACT RE-EVALAUTION 6
5.1 Types of VOC Control Equipment 6
5.2 VOC Control Feasibility Analysis 7
5.2.1 Unit 21 8
5.2.2 No. 3 and No. 4 Continuous Stills 8
5.2.3 #3 Packaging Center 8
5.2.4 Wastewater Treatment System 9
5.2.5 Resin Rework Operation 10
5.2.6 Liquid Product Loading (to tankcars and tankwagons) 10

TABLES

1. RACT Evaluation, Summary of VOC Sources and RACT Designations
2. RACT Evaluation, Summary of Control Technologies and Economic Evaluations

ATTACHMENTS

A. RACT Enforcement Order Upon Consent Number 230
B. VOC Control Cost Calculations:

Tables 3-1 through 3-6, Unit 21
Tables 4-1 through 4-6, Nos. 3 & 4 Continuous Stills
Tables 5-1 through 5-7, #3 Packaging Center – All Sources
Tables 6-1 through 6-7, #3 Packaging Center – Pastillator
Tables 7-1 through 7-6, #3 Packaging Center – Kettles
Tables 8-1 through 8-6, #3 Packaging Center – Drum Pouring
Tables 9-1 through 9-6, Resin Rework Tanks
Tables 10-1 through 10-6, Liquid Product Loading

REASONABLY AVAILABLE CONTROL TECHNOLOGY EVALUATION

NEVILLE CHEMICAL COMPANY
NEVILLE TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA

1.0 EXECUTIVE SUMMARY

Pursuant to a December 6, 2013, letter from the Allegheny County Health Department (ACHD), major sources of volatile organic compounds (VOCs) and/or oxides of nitrogen (NOx) are required to submit a Reasonably Available Control Technology (RACT) Evaluation for those pollutants. Neville Chemical Company (Neville Chemical) is a major source for VOC emissions, but is a minor source of NOx emissions. Therefore, this RACT evaluation pertains only to control of VOC emissions.

Table 1 contains a listing of the emission sources which emit VOC and the proposed designation of RACT. It is our conclusion that RACT is already in place for the following VOC emission sources, such that further evaluation is not necessary. Section 4.0 provides the reasoning behind these determinations.

- Heat Polymerization Stills No. 15, 16, 18, and 19, and Unit 43
- #2 Packaging Center
- #5 Packaging Center
- Unit 20
- Equipment Fugitives
- Groundwater Remediation System
- All Storage Tanks and Blend Tanks
- All Combustion Sources

Neville Chemical has conducted a RACT technical and economic feasibility analysis for the remaining VOC sources. A discussion of this analysis per source is provided in Section 5.0., and a summary of the results is contained in Table 2.

2.0 INTRODUCTION

Neville Chemical submitted an initial VOC RACT Evaluation in November 1993, as required by the Allegheny County Health Department (ACHD) pursuant to the now obsolete Article XX, Section 535 regulations. In response to the initial RACT Evaluation, ACHD issued RACT Plan Approval and Order Upon Consent No. 230. A copy of the RACT plan approval is contained in Attachment A.

On May 18, 2006, Neville Chemical received correspondence from the ACHD requiring submission of an updated RACT Evaluation. Allegheny County was designated non-attainment for the 8-hour ozone standard on June 15, 2004, thus requiring a re-evaluation of all major sources of NOx and VOC, per 40 CFR Part 51. That RACT Re-Evaluation was submitted to ACHD on a timely basis.

On December 6, 2013, Neville Chemical received correspondence from the ACHD requiring submission of another RACT reevaluation, by February 4, 2014. The reason for this reevaluation is that, on June 6, 2013, the EPA proposed 2008 Ozone State Implementation Plan (SIP) requirements and is requiring ACHD's Air Quality Program to reevaluate NOx and/or VOC RACT for the eight-hour ozone NAAQS.

A major source of VOC and NOx, per Article XXI, Section 2101.20, is defined as a facility having the potential to emit greater than or equal to 50 tons per year (tons/yr) VOC or 100 tons/yr NOx. An estimated potential emissions inventory was conducted in 2010 for the Title V Permit Application update, and found Neville Chemical to be a major source of VOC emissions and a minor source of NOx emissions. Therefore, a RACT Re-Evaluation will be conducted only for VOC emissions.

Article XXI, Section 2101.20 defines RACT to mean *"any air pollution control equipment, process modifications, operating and maintenance standards, or other apparatus or techniques, which may reduce emissions and which the Director determines is available for use by the affected source in consideration of the necessity for obtaining the emission reductions, the social and economic impact of such reductions, and the availability of alternative means of providing for the attainment and maintenance of the national ambient air quality standards"*. Factors considered in the determination of RACT include commercial availability, technical viability, control efficiency, potential adverse environmental effects, and the economic cost of the control mechanism.

The remainder of this report contains a facility/process description, lists of VOC sources, identification of sources with RACT already in place, sources requiring a RACT evaluation, VOC control technology information, and proposed RACT determinations.

3.0 FACILITY DESCRIPTION

Neville Chemical is located at 2800 Neville Road, Pittsburgh (Neville Township), PA 15225-1496, in Allegheny County. The facility manufactures synthetic hydrocarbon resins, plasticizers, plasticizing oils, and co-product distillate oils and fuel oils. The Standard Industrial Classification (SIC) Code for this source is 2821. The plant is a major source of volatile organic compounds (VOC) and oxides of nitrogen (NOx), as defined in Section 2102.20 of Article XXI.

Table 1 provides a list of VOC located at the plant and the current controls, if any, being implemented. General descriptions of the process units and other emission units/activities at this facility are presented in sections 4.0 and 5.0.

4.0 VOC SOURCES WITH RACT CURRENTLY IN PLACE

The sources that currently have RACT in place for VOC consist of the following:

- Heat Polymerization Stills No. 15, 16, 18, and 19, and Unit 43
- Unit 20
- Equipment Fugitives
- Groundwater Remediation System
- #2 and #5 Packaging Centers
- All Storage Tanks and Blend Tanks
- Barge Loading
- All Combustion sources

A further RACT evaluation will not be conducted for these sources. Following are brief descriptions of these sources and explanations for the determination that RACT is already in place.

4.1 Heat Polymerization Units

During the manufacturing process in the five (5) heat polymerization units listed above, hydrocarbon crudes are charged to each unit and reacted to form resins. Portions of the crudes that do not react to form resins are distilled off. A typical batch process involves charging a still, heating, venting, vacuum distillation, and steam stripping.

Pursuant to Installation Permit No. 0060-I006, issued March 8, 2005, all of the heat polymerization units listed above are vented to the Unit 43 thermal oxidizer. This oxidizer has a destruction efficiency of greater than 98%. This level of control is considered to represent best available control technology (BACT), which surpasses what is normally considered RACT. Therefore, *the heat polymerization units are already meeting RACT and further analysis is not required*.

4.2 Unit 20

Unit 20 is operated as a continuous polymerization process using petroleum based resin oils as the primary raw materials. During the manufacturing process, raw materials are continuously charged through a reactor where a catalyst is added. Portions of the raw material react to form resin. This reacted material is continuously transferred through an atmospherically vented holding tank to a continuous neutralization system.

The conversion of this unit to aqueous neutralization reduced potential VOC emissions by 47 tpy, resulting in a current potential emission rate of only 2 tpy. Additional control is not considered to be technically feasible (due to a low volume, intermittent flow from multiple exhaust points, a low VOC concentration, and multiple emission constituents). Therefore, Unit 20 is considered to be already meeting RACT and further analysis is not required.

4.3 Equipment Fugitives

Equipment components include pumps, valves, pressure relief devices, sampling connection systems, open-ended lines and valves, and flanges and other connectors. Neville Chemical instituted an LDAR program for all such VOC-containing equipment several years ago, pursuant to RACT Consent Order 230. Neville Chemical continues to implement this program. Therefore, *the current LDAR program is considered RACT for this equipment and no further analysis is required*.

4.4 Groundwater Remediation System

The Groundwater Site Remediation Activities consist of the following units.

- *Groundwater Treatment System* – This operation includes Water Wells 2, 4, 7C, 8, 9, 10 and 11, along with associated Recovery Wells 2, 4, 7, 8, 9, 10 and 11. The Groundwater Treatment System is the prescribed site remediation operation under the Act 2 Cleanup Plan approved by PADEP for the Neville Island facility in December 2003 and formalized in the April 7, 2004 COA. The Air Stripper and Temporary Discharge System have been taken out of service.

  The Groundwater Treatment System includes the water wells listed above, in addition to the existing 25,000-gallon Equalization Tank (Tank-247) currently used for the Air Stripper, and a liquid-phase granular carbon adsorption system for treatment of the groundwater. The Equalization Tank will hold only carbon vessel backwashes, not oil, so there will be minimal emissions associated with it.

  The system also includes the oil recovery wells listed above. All recovered oil is pumped into sealed totes and then transferred off-site for energy recovery.

- *The #2 Drywell Pump and Treat System***.** This unit is currently operating in accordance with the April 7, 2004 Consent Order and Agreement with the PADEP. The #2 Drywell pump operates at a rate of 30 gallons per minute. The pump is automated and operates only when stormwater runoff or infiltration enters the pump casing. Stormwater and groundwater recovered oil is pumped into a catch basin for subsequent treatment at the wastewater treatment facility.

- *The #8 (old) Water Well Pump and Treat System.* This unit is also currently operating in accordance with the April 7, 2004 Consent Order And Agreement with the PADEP. This pump handles approximately 5,000 gallons per day, twice per week. This material is pumped directly into a manhole, which is routed to the wastewater treatment facility.

Due to the minimal emission rate (less than 2 tons/year, with a majority of this total from component fugitive emissions), and compliance by October 2006 with 40 CFR Part 63 Subpart GGGGG (MACT for Remediation), *this system is considered to be meeting RACT and no further analysis is required*.

4.5 #2 and #5 Packaging Centers

At these two product packaging centers, resin product is packaged in a flake or liquid form for final shipment and delivery. #2 Packaging Center has seven (7) associated resin kettles and one (1) flaking belt. #5 Packaging Center has three (3) resin kettles and one (1) flaking belt.

Heated resin is initially charged to the kettles at each packaging center. Following this process, the resin is transferred to the flaking belt for flaking and bagging. In the flaking operation, the resin is introduced to a lower belt and is then covered by an upper belt. The resin is cooled and solidified on this belt system, goes through a flaking operation, then is transferred to bags or supersacks. VOC emissions from the flaking operation are discharged to the atmosphere by the use of exhaust hoods over the belts.

Each of these packaging centers recently underwent modifications that included installation of the double-belt system. This system significantly reduced VOC emissions. Both modifications had to be approved by ACHD via submittal of Installation Permit applications. Included with the applications was a BACT evaluation. ACHD approved both modifications (IP #00600-I007 for #2 Packaging Center, and IP #0060-I008 for #5 Packaging Center). During its review process, *ACHD determined that the double-belt system represented BACT for both units. Since BACT is more stringent than RACT, these process units are considered to be meeting RACT and no further analysis is required*.

4.6 Storage and Blend Tanks

Neville Chemical has many storage tanks to hold raw materials and products. All of the storage tanks are of fixed roof design. Article XXI, § 2105.12 regulates VOC storage tanks storing materials with vapor pressures of 1.5 psi or greater under actual storage conditions. Article XXI, § 2105.12 is considered RACT for VOC storage tanks. *Since all of the storage tanks at the facility are currently in compliance with Article XXI, they are all considered to be meeting RACT and no further analysis is required*.

4.7 Combustion Sources

Neville Chemical has several combustion sources, comprised of boilers, process heaters, emergency generators, and a thermal oxidizer. The #6 Boiler can combust natural gas and oil. All other combustion units burn natural gas.

Potential VOC emissions from the combustion units are low enough to consider controls economically infeasible. Furthermore, there are no reasonably available control measures for VOC from combustion units. *All combustion units at the plant are meeting "presumptive RACT" as outlined in Article XXI, §2105.06.d, so no further analysis is required*.

4.8 Barge Loading

Neville Chemical sells quantities of its co-product distillate oil (LX-830) and uses a loading operation to load this material into barges. This oil has a very low vapor pressure, such that potential annual emissions from this operation are less than one (1) ton (as estimated by ACHD in its Technical Support Document for Neville's draft Title V Operating Permit, December 2010). *Due to this insignificant emission rate, control of this source would be technically and economically infeasible and no further analysis is required.*

5.0 VOC SOURCES REQUIRING A RACT RE-EVALAUTION

Neville Chemical has determined that the following sources require a comprehensive RACT evaluation for VOC:

- Unit 21
- No. 3 and No. 4 Continuous Stills
- #3 Packaging Center (kettles, pastillator, and drum pouring)
- Wastewater Treatment System
- Resin Rework Operation
- Liquid Product Loading (to tankcars and tankwagons)

A feasibility analysis for each of these sources is contained in Section 5.2 below.

5.1 Types of VOC Control Equipment

Control equipment and work practices that have been demonstrated to be effective in reducing VOC emissions are listed below, with their estimated maximum VOC destruction, removal or reduction efficiencies:

Control Technology	Type	Capture Efficiency	Max. VOC Reduction Efficiency
Thermal Oxidation	Destruction	95%	98%
Catalytic Oxidation	Destruction	95%	98%
Concentrator/oxidation	Destruction	95%	98%
Flaring	Destruction	95%	98%
Carbon Adsorption	Removal/recovery	95%	95%
Condensation	Removal/recovery	95%	95%
Absorption (scrubbing)	Removal/recovery	95%	70%

Flaring is not suitable for any of the emission units listed above, because the heat content of the emission streams from each of them is well below the 300 Btu/scf threshold needed for proper flare operation. Therefore, *flaring is determined to be technically infeasible for all of these sources*.

As an emission control technique, absorption is much more commonly employed for inorganic vapors than for organic vapors. The suitability of absorption for controlling organics is determined by several factors, depending mostly on the solubility of the specific constituent to be controlled. All of the emission sources listed above have many different constituent emissions in their exhaust streams. The most important factor in absorption is the availability of a suitable solvent to absorb the constituents contained in the VOC stream. No one solvent is able to absorb all of the constituents in these streams. In general, absorption is not technically feasible for controlling organic emission streams with a wide range of constituents. Therefore, *absorption is determined to be not technically feasible for controlling VOC from these sources*.

Everywhere it is indicated below that a cost analysis was conducted, the control options evaluated included only: thermal and catalytic oxidation, carbon adsorption, concentrator/oxidation, and refrigerated condensation.

5.2 VOC Control Feasibility Analysis

Refer to Table 2 for a summary of the evaluation of the VOC control devices, including whether they are technically feasible and, if technically feasible, the annualized cost per ton of VOC removed ($/ton removed). Attachment B contains the backup calculations for any annual cost evaluations. All of the cost evaluations are based on spreadsheets developed by USEPA's Office of Air Quality Planning and Standards (OAQPS). To account for inflation, the costs derived by these spreadsheets have been adjusted based on the Chemical Engineering Plant Cost Index (CEPCI) values that are published periodically in *Chemical Engineering* magazine. The adjustment factor is simply a ratio of the current CEPCI divided by the CEPCI that was in place at the time of development of each individual cost spreadsheet.

Also, please note that the cost analyses include estimations for ductwork costs. In our opinion, the derived costs greatly underestimate what the total actual costs would be. The ductwork spreadsheet estimates only the capital cost for straight ductwork. It does not include costs for any structural supports, fire propagation prevention measures, exhaust mixing controls, engineering design, and other items. While we believe that all of the control costs presented in this evaluation are already not economically feasible, we also believe that they are lower than what real world costs would be.

5.2.1 Unit 21

Unit 21 is operated as a continuous polymerization process using petroleum based resin oils as the primary raw materials. During the manufacturing process, raw materials are continuously charged through a reactor where a catalyst is added. Portions of the raw material react to form resin. This reacted material is continuously transferred through a series of three atmospherically vented holding tanks to one of three vessels operating in parallel where the reacted material is neutralized in a batch process. Emissions occur from these neutralization vessels as the liquid level in the vessels increase, and the air, which is saturated with organic vapor, is expelled from the vessel. The VOC emission pathway is representative of fixed roof storage tanks.

Although additional control is not considered to be technically feasible (due to a low volume, intermittent flow, a low VOC concentration, and multiple emission constituents), an economic feasibility study was conducted. Results in Tables 3-1 through 3-6 show that the lowest cost control technology has a cost of **$51,974 per ton of VOC reduced**. This is not economically feasible for RACT. *Therefore, the RACT determination for this Unit 21 is to continue operating as is currently done under RACT Consent Order 230.*

5.2.2 No. 3 and No. 4 Continuous Stills

The Number 3 & 4 Stills are operated similarly as continuous resin distillation processes. Emissions from the 3 & 4 Stills occur from charging and condenser losses.

Although additional control is not considered to be technically feasible (due to a low volume, intermittent flow, a low VOC concentration, and multiple emission constituents), an economic feasibility study was conducted. For purposes of this analysis, it was assumed that emissions from these units can be combined and routed to a single control device. Results in Tables 4-1 through 4-6 show that the lowest cost control technology has a cost of **$13,422 per ton of VOC reduced**. This is not economically feasible for RACT. *Therefore, the RACT determination for these units is to continue operating as is currently done.*

5.2.3 #3 Packaging Center

#3 Packaging Center has seven (7) associated resin kettles, a pastillating belt, and a pouring operation. Heated resin is initially charged to the kettles then transferred to either the pastillating belt for pastillating and bagging, poured into drums or loaded into tanks, tankcars, or tankwagons. If the resin is pastillated, it is cooled and solidified on a pastillating belt, and placed in bags or supersacks. Emissions from the pastillating operation are discharged to the atmosphere by the use of exhaust hoods over the belt. There are no add-on VOC emission controls at this packaging center The pastillating system at #3 Packaging Center does not allow for the utilization of a double-belt system such as has been installed at #2 and #5 Packaging Centers.

An economic feasibility study for add-on VOC control was conducted separately for each of the emission sources in #3 Packaging Center, and also for combined emissions from the entire process. Results in Table 2 show that the lowest cost to control any of the emission sources in this process is **$11,091 per ton of VOC reduced**. This is not economically feasible for RACT. *Therefore, the RACT determination for #3 Packaging Center is to continue operating as is currently done.*

5.2.4 Wastewater Treatment System

Neville Chemical operates a state-of-the-art biological wastewater treatment plant to treat process wastewaters prior to discharge to the Ohio River. Process wastewater enters the treatment plant through a submerged sump referred to as the wet well. From the wet well, the wastewater is pumped into one of three batch tanks where both coagulation and flocculation occur [during high rain events, water may be first pumped to a surge tank prior to the three batch tanks]. The sludge from the batch tanks is transferred to the sludge tank and the wastewater continues on to one equalization tank, where flows and loadings are dampened. Following the equalization tank, the wastewater is routed to a splitter box where the flow is divided between two aeration tanks. Biological degradation of organic compounds occurs in the aeration tanks. From the aeration tanks, the water is directed into clarifiers where solids are allowed to settle. The overflow from the clarifier flows to an effluent tank, through a multimedia filter, and a carbon adsorption unit. Following the carbon unit, the water is discharged to the Ohio River.

The biological treatment system is designed to maximize biodegradation as opposed to volatilization. This phase of the wastewater treatment system was subject to BACT analysis when it was permitted in 1991. Consequently, this equipment is already complying with RACT, so additional add-on controls are not be required for this biological aeration treatment system. All other emission sources in the system are fixed roof tanks (the surge tank and batch tanks) except for the equalization tank that is open-top.

The open-top equalization tank holds wastewater containing low levels of saturated hydrocarbon. Constructing a fixed roof over this tank would be economically infeasible, with an insignificant effect on VOC emissions. The fixed-roof surge and batch tanks meet the specifications for storage tanks in Article XXI, Section 2105.12. Further control of these tanks would not be technically feasible due to low, intermittent flows and low VOC concentrations.

An intermittent operation in wastewater treatment is the Rotary Vacuum Filter. Sludge generated from the primary treatment system is transferred to a sludge holding tank. Waste activated sludge is transferred initially to an aerobic digester and then to the sludge holding tank. Sludge is dewatered using the Rotary Vacuum Pre-coat Filter. The dewatered solids are transported off site for treatment and disposal. The vacuum filtrate is passed through an oil/water separator with the separated water drained to #2 Wet Well. The separated oil is transferred to a small holding tank. All emissions from the rotary vacuum filter are vented to the #6 Boiler for combustion.

The RACT determination for the wastewater treatment system is to continue operating as is currently done.

5.2.5 Resin Rework Operation

This operation uses two tanks, identified as N2 and N4, to make resin products from recovered off-specification resins collected throughout the plant. Off-specification resin is recovered for reuse at the product recovery tanks by melting the resin into "solution" (i.e. distillate oils). The solution is charged into the recovery tanks and heated until the desired temperature is achieved. At this point, the off-specification resin is placed into the tanks. Throughout the entire process, vapors are vented through a water-cooled condenser and collected in the condenser tank for reuse. Non-condensables from the recovery process are vented to the atmosphere from the condensate tank.

Although additional control is not considered to be technically feasible (due to a low volume, intermittent flow, a low VOC concentration, and multiple emission constituents), an economic feasibility study was conducted. Results in Tables 9-1 through 9-6 show that the lowest cost control technology has a cost of **$14,203 per ton of VOC reduced**. This is not economically feasible for RACT. *Therefore, the RACT determination for the Resin Rework operation is to continue operating as is currently done.*

5.2.6 Liquid Product Loading (to tankcars and tankwagons)

Final products, consisting of petroleum hydrocarbon resins and distillate oils, are loaded into rail tankers (tankcars) and truck tankers (tankwagons). VOC emissions are generated due to displacement of the VOC-saturated vapors within the headspace of the tankers. Emissions are estimated using the saturation factor method found in U.S. EPA AP-42 *Section 5.2: Transportation and Marketing of Petroleum Liquids (6/08)*.

Control of loading emissions is technically feasible, so an economic feasibility study was conducted. Results in Tables 10-1 through 10-6 show that the lowest cost control technology has a cost of **$12,876 per ton of VOC reduced**. This is not economically feasible for RACT. *The RACT determination for the Tankcar & Tankwagon Loading operations is to properly operate and maintain the operation at all times according to good engineering practices.*

TABLES

Table 1. RACT Evaluation, Summary of RACT Designations for VOC Sources
Neville Chemical Company, Pittsburgh, Pennsylvania

VOC Source	Source ID	VOC Control Measures	VOC Potential* (tpy)	RACT Currently in Place?	Current or proposed RACT Designation
Heat Poly Still #15	P001	Unit 43 Oxidizer	0.60	Yes	Control via oxidation
Heat Poly Still #16	P001	Unit 43 Oxidizer	0.80	Yes	Control via oxidation
Heat Poly Still #18	P001	Unit 43 Oxidizer	0.90	Yes	Control via oxidation
Heat Poly Still #19	P001	Unit 43 Oxidizer	0.80	Yes	Control via oxidation
Heat Poly Still #43	P001	Unit 43 Oxidizer	0.80	Yes	Control via oxidation
Unit 20 Neutralization	P006	None	2.10	Yes	Good operating practices; comply with RACT Consent Order 230
Unit 21 Neutralization	P007	None	6.80	Yes	Good operating practices; comply with RACT Consent Order 230
No. 3 Continuous Still	P008	None	2.60	Yes	Good operating practices; comply with RACT Consent Order 230
No. 4 Continuous Still	P009	None	13.90	Yes	Good operating practices; comply with RACT Consent Order 230
No. 2 Packaging Center	P011	Double-belt Flaking Line	25.10	Yes	Good operating practices; comply with RACT Consent Order 230
No. 3 Packaging Center	P012	None	40.80	Yes	Good operating practices; comply with RACT Consent Order 230
No. 5 Packaging Center	P013	Double-belt Flaking Line	25.50	Yes	Good operating practices; comply with RACT Consent Order 230
Wastewater Treatment	P014	None	4.70	Yes	Good operating practices; comply with RACT Consent Order 230
Resin Rework	P015	Water condenser	16.50	Yes	Good operating practices; comply with RACT Consent Order 230
Barge Loading	P016	None	0.80	Yes	Good operating practices; comply with RACT Consent Order 230
Final Product Loading	P016	None	18.20	Yes	Good operating practices; comply with RACT Consent Order 230
Groundwater Remediation	P017	None	1.50	Yes	Good operating practices; comply with RACT Consent Order 230
Storage Tanks	Several IDs	Conservation vents	42.00	Yes	Compliance with Article XXI, 2105.12
Area O Tanks 8501-06	D009	Vapor recovery/Conservation vent	3.40	Yes	Compliance with Article XXI, 2105.12
Fugitive Emissions	n/a	LDAR Program	3.00	Yes	Good operating practices; comply with RACT Consent Order 230
Combustion Units	Several IDs	None	3.90	Yes	Presumptive RACT per Article XXI, 2105.06.d.
		Total:	214.7		

Table 2. RACT Evaluation, Summary of VOC Control Technologies Economic Evaluations
Neville Chemical Company, Pittsburgh, Pennsylvania

Source	Control Technology with lowest cost	Annual Cost ($/yr)	VOC Reduction (ton/yr)	Overall Total Control Cost ($/ton/yr)	Economic Feasibility Determination
No. 3 Packaging Center - All Sources	Rotary Concentrator/Oxidizer	844,749	38.0	22,239	Not Feasible
No. 3 Packaging Center - Pastillator	Carbon Adsorption	536,340	14.6	36,684	Not Feasible
No. 3 Packaging Center - Resin Kettles	Catalytic Oxidation	225,103	20.3	11,091	Not Feasible
No. 3 Packaging Center - Drum Pouring	Catalytic Oxidation	185,699	1.9	99,731	Not Feasible
No. 3 and 4 Stills	Catalytic Oxidation	206,187	15.4	13,422	Not Feasible
Rework Tanks	Catalytic Oxidation	218,178	15.4	14,203	Not Feasible
Unit 21	Thermal Oxidation	329,035	6.3	51,974	Not Feasible
Liquid Product Loading	Catalytic Oxidation	218,178	16.9	12,876	Not Feasible

ATTACHMENT A

RACT Enforcement Order Upon Consent Number 230

RACT Plan Approval & Consent

Allegheny County Health Department

Air Quality Program
301 Thirty-ninth Street - Building #7
Pittsburgh, Pennsylvania 15201-1891

December 20, 1996

Timothy J. Novack, P.E. **(412)-578-8118**
Air Pollution Engineer **FAX: (412)-578-8144**

Neville Chemical Company
Environmental Services
2800 Neville Road
Pittsburgh, PA 15225-1496
ATTN: Mr. Zygmunt V. Osiecki:

RE: Enforcement Order and Agreement Upon Consent 230
<u>Reasonably Available Control Technology Approval</u>

Dear Mr. Osiecki:

Please find the above-referenced fully executed Order and Agreement.

As we have discussed, the executed documents will be submitted to the United States Environmental Protection Agency so that the Order portion of the documents can be incorporated into the County's portion of the Commonwealth's State Implementation Plan.

Thank you for your past cooperation in the negotiation and resolution of this matter. Should you have any further questions concerning this matter, please also contact me at the phone or fax numbers referenced above.

Very truly yours,

Timothy J. Novack, P.E.

TJN

Distribution: JHF
TFM MAC/Recall
ZVO
JMH
JJK FILE/Central Records

Received
12/27/96

25-CS-0196

ALLEGHENY COUNTY HEALTH DEPARTMENT

IN RE:

Neville Chemical Company	)	PLAN APPROVAL ORDER
2800 Neville Road	)	AND AGREEMENT NO. 230
Neville Township	)	UPON CONSENT
Allegheny County	)	

AND NOW, this 13th day of December, 1996,

WHEREAS, the Allegheny County Health Department, (hereafter referred to as "Department"), has determined that Neville, Chemical Company, (hereafter referred to as "Neville"), 2800 Neville Road, Neville Township, Allegheny County, PA, is the owner and operator of a synthetic hydrocarbon resin manufacturing facility at 2800 Neville Road, Neville Township, Allegheny County, PA 15225 (hereafter referred to as "the facility"), and is a major stationary source of volatile organic compounds and oxides of nitrogen emissions (hereafter referred to as "VOCs & NO_x") as defined in Section 2101.20 of Article XXI, Rules and Regulations of the Allegheny County Health Department, Air Pollution Control (hereafter referred to as "Article XXI"); and

WHEREAS, the Department has determined that Section 2105.06. of Article XXI, entitled "Major Sources of NO_x & VOCs" is applicable to Neville's operations at this facility; and

WHEREAS, Neville has been in full compliance at all relevant times with all relevant requirements of Section 2105.06 of

Article XXI; and

WHEREAS, Neville has timely submitted to the Department all of the documents required by Section 2105.06.b of Article XXI (hereafter referred to as "the proposal"); and

WHEREAS, the Department has determined the proposal to be complete; and

WHEREAS, the Department has further determined, after review of the submitted proposal, that it constitutes Reasonably Available Control Technology (hereafter referred to as "RACT") for control of VOC and NO_x emissions from the facility; and

WHEREAS, The Department and Neville desire to memorialize the details of the proposal by entry of this RACT Plan Approval Order and Agreement Upon Consent; and

WHEREAS, pursuant to Section 2109.03 of Article XXI, the Director of the Allegheny County Health Department or his designated representative may issue orders as are necessary to aid in the enforcement of the provisions of Article XXI, notwithstanding the absence of any violation of any provision of Article XXI and of any condition causing, contributing to, or creating a danger of air pollution;

NOW, THEREFORE, this day first written above, the Department, pursuant to Section 2109.03 of Article XXI, and upon agreement of the parties as hereinafter set forth, hereby issues the following RACT Plan Approval Order and Agreement upon Consent:

I. ORDER

1.1. All existing VOC and NO_x emission units and control equipment shall be properly operated and maintained at all times according to good engineering practices at all times, with the exception of activities to mitigate emergeny conditions.

1.2. Neville shall at no time operate the C-5 Process while generating VOC emissions unless all such emissions are processed through refrigerated condensers. Such condensers shall be properly maintained and operated at all times while treating VOC emissions, with the exception of activities to mitigate emergency conditions, with an average monthly coolant inlet temperature no greater than 60^0F.

1.3. Neville shall at no time operate the following process equipment while generating VOC emissions unless all such emissions are processed through water-cooled condensers. Such condensers shall be properly maintained and operated at all times while treating VOC emissions with the exception of activities to mitigate emergency conditions, with an average monthly inlet coolant temperature no greater than 90°F:

a. Resin Rework Tanks

b. Screen Cleaning Unit

1.4. The Continuous Polymerization Unit No. 20 shall not operate while generating VOC emissions, unless such emissions are treated by water cooled and refrigerated condensers, with the exception of activities to mitigate emergency conditions. The water cooled and refrigerated condensers shall be properly operated and maintained with average monthly coolant inlet temperatures not exceeding 90°F and 60°F, respectively.

1.5. The Packaging Centers No. 2, 3 and 5 shall be properly maintained and operated at all times, with the exception of activities to mitigate emergency conditions. Proper operation shall include the use of covers on all kettles after the initial kettle charging and during process operations.

1.6. Neville shall perform an annual adjustment or "tuneup" on Boilers No. 4, 6 and 7 once every twelve (12) months, (hereafter referred to as "annual tune-up"). Such annual tune-up shall include:

a. Inspection, adjustment, cleaning, or necessary replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation; and

b. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NO_x, and to the extent practicable minimize emissions of carbon monoxide (hereafter referred as "CO"; and

c. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation.

Neville shall maintain the following records of the annual tune-up for the subject equipment:

a. the date of the annual tune-up;

b. the name of the service company and/or individuals performing the annual tune-up;

c. the operating rate or load after the annual tune-up;

d. the CO and NO_x emission rate after the annual tune-up; and

e. the excess oxygen rate after the annual tune-up.

1.7. Neville shall maintain records of fuel type and usage for each combustion unit including certifications from fuel suppliers for all types of liquid fuel. For each shipment of distillate oils number 1 or 2, a certification from the fuel supplier that the fuel complies with ASTM D396-78 "Standard Specifications for Fuel Oils" is required. For residual fuels, minimum record keeping includes a certification from the fuel supplier of the nitrogen content of the fuel, and identification of the sampling method and sampling protocol. For fuels that are co-products of the facility's processes, minimum record keeping shall include the nitrogen content of the fuel and identification of the sampling method and protocol.

1.8. Neville shall conduct a Leak Detection and Repair (LDAR) program at the facility at all times when facility operation may result in fugitive emissions of VOCs. Such LDAR program shall consist of the following:

a. Components applicable to the LDAR program shall be all accessible valves and pumps in light oil service.

b. The subject components shall be monitored visually and with a VOC analyzer and shall be tagged or labeled using Neville's component identification system.

c. Initially, each non difficult/unsafe subject component shall be monitored on a monthly basis. Any component for which a leak is not detected for two successive months shall be monitored on a quarterly basis. Any component for which a leak is not detected for two successive quarters shall then be monitored on an annual basis. Difficult/unsafe components shall be monitored annually.

d. Visual leaks are determined if the component is visually leaking or dripping product from the component. Leaks determined using the analytical test method are an instrument reading exceeding 10,000 parts per million, by volume.

e. If a component is designated as leaking by either the visual or analytical method, the component will not be designated as a "leaker", instead, 1) a first attempt of repair of the component will be performed for the purposes of stopping or reducing leakage, using best available practices, until the component can achieve non-leaking status. 2) Should this attempt fail, the component will be repaired or replaced and the monitoring will revert to the previous inspection schedule. Two successful monitoring events will allow the new or repaired component to again move up the progression of monthly, quarterly and annual inspection frequency.

f. Recordkeeping of labeled or tagged monitoring components will be maintained, and include the type of component with available specifications, dates of monitoring, instrument readings, and location of the component.

1.9. Neville shall maintain all appropriate records to demonstrate compliance with the requirements of both Section 2105.06 Article XXI and this Order. Such records shall provide sufficient data to clearly demonstrate that all requirements of both Section 2105.06 of Article XXI and this Order are being met.

1.10. The facility shall retain all records required by both Section 2105.06 of Article XXI and this Order for the facility for at least 2 years and shall make the same available to the Department upon request.

II. AGREEMENT

The foregoing Order shall be enforced in accordance with and is subject to the following agreement of the parties, to wit:

2.1. The contents of this Order shall be submitted to the US EPA as a revision to the Commonwealth of Pennsylvania's SIP.

2.2. Failure to comply with any portion of this Order or Agreement is a violation of Article XXI that may subject Neville to civil proceedings, including injunctive relief, by the Department.

2.3. This Order does not, in any way, preclude, limit or otherwise affect any other remedies available to the Department for violations of this Plan Approval Order and Agreement or of Article XXI, including, but not limited to, actions to require the installation of additional pollution control equipment and the implementation of additional corrective operating practices.

2.4. Neville hereby consents to the foregoing Order and hereby knowingly waives all rights to appeal said Order, and the undersigned represents that he is authorized to consent to the Order and to enter into this Agreement on behalf of Neville.

2.5. Neville acknowledges and understands that the purpose of this Agreement is to establish RACT for the control of emissions of VOCs from this facility. Neville further acknowledges and understands the possibility that the U.S. EPA may decide to not accept the Agreement portion of the Plan Approval Order and Agreement by Consent as a revision to the Commonwealth of Pennsylvania's SIP.

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereby consent to all of the terms and conditions of the foregoing RACT Plan Approval Order and Agreement as of the date of the above written.

NEVILLE CHEMICAL COMPANY

By: Z V Osiecki
(signature)

Print or type Name: **Z. V. Osiecki**

Title: **V.P. - Plant Engineering & Environmental Services**

Date: **December 13, 1996**

ALLEGHENY COUNTY HEALTH DEPARTMENT

By: Bruce Dixon 12/19/96

Bruce W. Dixon, M.D., Director
Allegheny County Health Department

and By: Thomas J. Puzniak

Thomas J. Puzniak, Manager, Engineering
Air Quality Program

RACT Plan Approval & Consent

Allegheny County Health Department

Air Quality
301 Thirty-ninth Street - Building #7
Pittsburgh, Pennsylvania 15201-1891

December 5, 1996

Timothy J. Novack, P.E.
Air Pollution Engineer

(412)-578-8118
FAX: (412)-578-8144

Neville Chemical Company
Environmental Services
2800 Neville Road
Pittsburgh, PA 15225-1496
ATTN: Mr. Zygmunt V. Osiecki:

RE: Plan Approval Order and Agreement No. 230
Reasonably Available Control Technology Approval

Dear Mr. Osiecki:

Pursuant to our discussions, enclosed please find the technical support document for the above-referenced.

As we have discussed, upon completion of the execution of the Order and Agreement by both parties, the Health Department will then submit both documents to the United States Environmental Protection Agency so that the Order portion of the Plan Approval Order and Agreement can be incorporated into the County's portion of the Commonwealth's State Implementation Plan.

The technical document is part of the SIP submittal but not an enforceable document. It is present to explain and support the RACT requirements present in the Order portion of the Order and Agreement.

Thank you for your past cooperation in the negotiation and resolution of this matter. Should you have any further questions concerning this matter, please also contact me at the phone or fax numbers referenced above.

Very truly yours,

Timothy J. Novack, P.E.

Distribution: JHF
TFM MAC/Recall
ZVO
JMH
JJK FILE/Central Records

Rec'd 12/9/96

25-CS-0196

ATTACHMENT B

VOC Control Cost Calculations

Table 3-1. Ranking of VOC Control Technology Options for Unit 21
Neville Chemical Company, Pittsburgh, Pennsylvania

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	6.8	6.3
2.	Catalytic Oxidation	98.0	95.0	93.1	6.8	6.3
3.	Carbon Adsorber	98.0	95.0	93.1	6.8	6.3
4.	Refrigerated Condenser	90.0	95.0	85.5	6.8	5.8
					VOC PTE =	**6.8 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [2]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Thermal Oxidation	311,043	46,355	7,322	329,035	51,974
2.	Carbon Adsorber	616,992	91,950	14,524	334,644	52,860
3.	Catalytic Oxidation	823,623	122,539	19,356	393,598	62,172
4.	Refrigerated Condenser	761,731	113,520	19,525	455,564	78,356

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] Refer to the following Tables 3-2 through 3-6 for the derivation of the values used in this table

Table 3-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	1,000	Operating factor (hr/yr):	8760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	100	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	5	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	68	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	750	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.869
(scfm):	21.3
-- Total Gas Flowrate (scfm):	1,021

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	96,553
@ 70 % heat recovery:	0
Other equipment (moisture pre-condense	50,000
Total Equipment Cost--base:	146,553
Total Equipment Cost--escalated:	230,403
Purchased Equipment Cost ($):	248,835
Total Capital Investment ($):	311,043

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	117,558
Electricity	1,446
Overhead	45,530
Taxes, insurance, administrative	31,104
Capital recovery	46,355
Total Annual Cost	**317,876**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 3-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	1,000
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	100
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	5.00
-- Waste gas heat content (BTU/lb):	67.66
-- Gas heat capacity (BTU/lb-oF):	0.40
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	475
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.397
(scfm):	9.7
-- Total Gas Flowrate (scfm):	1,010
-- Catalyst Volume (ft3):	2.0

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	57,467
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	50,000
Total Equipment Cost--base:	107,467
Total Equipment Cost--escalated:	610,091
Purchased Equipment Cost ($):	658,898
Total Capital Investment ($):	823,623

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	53,666
Electricity	1,688
Catalyst replacement	770
Overhead	45,530
Taxes, insurance, administrative	82,362
Capital recovery	122,539
Total Annual Cost	**382,439**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 3-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine	
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine	

INPUT PARAMETERS:		**CAPITAL COSTS**	
-- Inlet stream flowrate (scfm):	1000	Equipment Costs ($):	
-- Inlet stream temperature (oF):	100	-- Refrigeration unit/single-stage (< 10 tons):	0
-- VOC to be condensed:	Toluene	-- Refrigeration unit/single-stage (> 10 tons):	88,408
-- VOC inlet volume fraction:	0.00100	-- Multistage refrigeration unit:	172,867
-- Required VOC removal (fraction):	0.900	-- VOC condenser:	8,830
-- Antoine equation constants for VOC: [4]		-- Recovery tank:	1,998
A:	6.955	-- Auxiliaries (ductwork, etc.):	50,000
B:	1344.800	Total equipment cost ($)--base:	233,695
C:	219.480	Total equipment cost ($)--escalated:	370,997
-- VOC heat of condensation (BTU/lb-mole):	14270	Purchased Equipment Cost ($):	437,776
-- VOC heat capacity (BTU/lb-mole-oF):	37.580	Total Capital Investment ($):	761,731
-- Coolant specific heat (BTU/lb-oF):	0.650		
-- VOC boiling point (oF):	231	**ANNUAL COST INPUTS:**	
-- VOC critical temperature (oR):	1065	Operating factor (hr/yr):	8760
-- VOC molecular weight (lb/lb-mole):	92.1	Operating labor rate ($/hr):	44.00
-- VOC condensate density (lb/gal):	7.20	Maintenance labor rate ($/hr):	44.00
-- Air heat capacity (BTU/lb-mole-oF):	6.95	Operating labor factor (hr/sh):	0.50
		Maintenance labor factor (hr/sh):	0.50
DESIGN PARAMETERS:		Electricity price ($/kWhr):	0.075
-- Outlet VOC partial pressure (mm Hg):	0.076	Recovered VOC value ($/lb):	0.00
-- Condensation temperature, Tc (oF):	-63.2	Annual interest rate (fraction):	0.08
-- VOC flowrate in (lb-moles/hr):	0.153	Control system life (years):	10
-- VOC flowrate out (lb-moles/hr):	0.015	Capital recovery factor:	0.1490
-- VOC condensed (lb-moles/hr):	0.138	Taxes, insurance, admin. factor:	0.10
(lb/hr):	12.7		
-- VOC heat of condensation @ Tc (BTU/lb-mole	17,791	**ANNUAL COSTS:**	
-- Enthalpy change, condensed VOC (BTU/hr):	3,296	Item	Cost ($/yr)
-- Enthalpy change, uncondensed VOC (BTU/hr):	94		
-- Enthalpy change, air (BTU/hr):	173,487	Operating labor	24,090
-- Condenser heat load (BTU/hr):	176,877	Supervisory labor	3,614
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):	20	Maintenance labor	24,090
-- Log-mean temperature difference (oF):	59.5	Maintenance materials	24,090
-- Condenser surface area (ft2):	148.7	Electricity	133,298
-- Coolant flowrate (lb/hr):	10,885	Overhead	45,530
-- Refrigeration capacity (tons):	14.74	Taxes, insurance, administrative	76,173
-- Electricity requirement (kW/ton):	11.7	Capital recovery	113,520
		Total Annual Cost (without credits)	444,405
		Recovery credits	0
		Total Annual Cost (with credits)	**444,405**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 3-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	1000	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	100	VOC number (enter Table 1 #):		1012
-- Inlet stream pressure (atm):	1		K:	0.551
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.110
-- Inlet VOC flowrate (lb/hr):	1.5	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	92.00	VOC number (enter Table 2 #):		466
-- VOC inlet volume fraction:	0.0001		A:	1.11466
-- VOC inlet concentration (ppmv):	109		B:	0.20795
-- VOC inlet partial pressure (psia):	0.0016		C:	-0.02016
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	6.5			
-- Adsorption time (hr):	16.0			
-- Desorption time (hr):	4.0			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2715	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1357	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	174	Equation 1.14
-- Carbon requirement per vessel (lb):	174	
-- Gas flowrate per adsorbing vessel (acfm):	1,000	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	5.046	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.290	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	108.01	Equation 1.24
-- Carbon bed thickness (ft):	0.290	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	0.613	Equation 1.30
-- Ductwork friction losses (in. w.c.):	15.409	See box at right
Total system pressure drop (in. w.c.):	16.022	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	13,457	Equation 1.25
-- Carbon	217	
-- Other equipment (condenser, decanter, etc.)	223,274	
-- Auxiliary equipment (ductwork & condensed liquid tanks)	50,000	
-- Boiler (and associated equip.) for steam regeneration of car	37,700	
Total equipment cost ($)--base:	235,423	Equation 1.27
Total equipment cost ($)--escalated:	342,165	
Purchased Equipment Cost ($):	383,225	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	616,992	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual):

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}$ $(u/1000)^{1.8}$
   D = duct diameter, ft
   u = average duct velocity, fpm

Total straight lengtl	1000	ft
Diameter:	0.667	ft
Duct velocity:	2863	fpm
Straight duct loss:	14.57	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
   k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
   u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	2863	fpm
Total Elbow loss:	0.84	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 3-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	2,538	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	295	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	31	Equation 1.29
Carbon replacement	98	
Liquid waste disposal	1,757	Assume 90% of steam is condensed
Spent carbon disposal	23	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	61,699	
Capital recovery	91,950	
Total Annual Cost (without credits)	323,484	
Recovery credits	0	
Total Annual Cost (with credits)	**323,484**	

VOC Removed (tpy): 5.8 Cost per ton removed: **55,639**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 3.6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2		from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7		from *Chemical Engineering* magazine
INPUT PARAMETERS			
-- Inlet stream flowrate (acfm):	1000		
-- Duct velocity (ft/min): [4]		2863	47.7 ft/sec
-- Duct length (ft): [5]		1000	
-- Material of construction: [6]		Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]		1	
-- Duct design: [8]		Circ.-spiral	
-- Cost equation parameters: [9]	a:	2.560	
	b:	0.937	
-- Cost equation form: [10]		1	
-- Control system installation factor: [11]		1.5	
(if no system, enter '0')			
-- Fan-motor combined efficiency (fraction):		0.60	
DESIGN PARAMETERS			
-- Number of exhaust fans:		1	
-- Duct diameter (in.):		8.0	
-- Pressure drop (in. w.c.): [12]		14.570	
CAPITAL COSTS			
Equipment Cost ($)--base:		17,965	
' ' ' --escalated:		28,393	
Purchased Equipment Cost ($):		30,665	
Total Capital Investment per Exhaust Fan($): [13]		45,997	
Overall Total Capital Investment($):		**45,997**	
ANNUAL COST INPUTS			
Operating factor (hours/year):	8760		
Electricity price ($/kWhr):	0.075		
Annual interest rate (fractional):	0.08		
Ductwork economic life (years):	20		
Capital recovery factor (system):	0.1019		
Taxes, insurance, admin. factor:	0.10		

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	1,875	0.168
Taxes, insurance, administrative	4,600	0.412
Capital recovery	4,685	0.420
Total Annual Cost	**11,159**	**1.000**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 4-1. **Ranking of VOC Control Technology Options for No. 3 and No. 4 Stills**
Neville Chemical Company, Pittsburgh, Pennsylvania

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	16.5	15.4
2.	Catalytic Oxidation	98.0	95.0	93.1	16.5	15.4
3.	Carbon Adsorber	98.0	95.0	93.1	16.5	15.4
4.	Refrigerated Condenser	90.0	95.0	85.5	16.5	14.1
					VOC PTE =	**16.5 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [2]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Catalytic Oxidation	239,932	35,554	2,314	206,187	13,422
2.	Thermal Oxidation	310,655	46,297	3,014	286,403	18,644
3.	Refrigerated Condenser	476,220	70,971	5,031	291,305	20,649
4.	Carbon Adsorber	621,871	92,677	6,033	339,825	22,122

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] Refer to the following Tables 4-2 through 4-6 for the derivation of the values used in this table

Table 4-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	1,000	Operating factor (hr/yr):	8760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	70	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	12	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	162	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	735	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.555
(scfm):	13.6
-- Total Gas Flowrate (scfm):	1,014

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	96,371
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	50,000
Total Equipment Cost--base:	146,371
Total Equipment Cost--escalated:	230,115
Purchased Equipment Cost ($):	248,524
Total Capital Investment ($):	310,655

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	75,033
Electricity	1,435
Overhead	45,530
Taxes, insurance, administrative	31,066
Capital recovery	46,297
Total Annual Cost	**275,243**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 4-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	1,000	Operating factor (hr/yr):	8760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	70	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	12.00	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	162.38	Catalyst price ($/ft3):	650
-- Gas heat capacity (BTU/lb-oF):	0.40	Natural gas price ($/mscf):	10.50
-- Combustion temperature (oF):	850	Annual interest rate (fraction):	0.08
-- Preheat temperature (oF):	460	Control system life (years):	10
-- Fuel heat of combustion (BTU/lb):	21,502	Catalyst life (years):	2
-- Fuel density (lb/ft3):	0.0408	Capital recovery factor (system):	0.1490
		Capital recovery factor (catalyst):	0.5608
CALCULATED PARAMETERS		Taxes, insurance, admin. factor:	0.10
		Pressure drop (in. w.c.):	13.0
-- Auxiliary Fuel Reqrmnt (lb/min):	0.086		
(scfm):	2.1	**CALCULATED ANNUAL COSTS**	
-- Total Gas Flowrate (scfm):	1,002		
-- Catalyst Volume (ft3):	1.9	Item	Cost ($/yr)
CALCULATED CAPITAL COSTS		Operating labor	24,090
		Supervisory labor	3,614
Equipment Costs ($):		Maintenance labor	24,090
-- Incinerator:		Maintenance materials	24,090
@ 0 % heat recovery:	0	Natural gas	11,628
@ 35 % heat recovery:	0	Electricity	1,675
@ 50 % heat recovery:	57,225	Catalyst replacement	764
@ 70 % heat recovery:	0	Overhead	45,530
Other equipment (moisture pre-condenser):	50,000	Taxes, insurance, administrative	23,993
Total Equipment Cost--base:	107,225	Capital recovery	35,554
Total Equipment Cost--escalated:	177,727		
Purchased Equipment Cost ($):	191,946	**Total Annual Cost**	**195,028**
Total Capital Investment ($):	239,932		

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 4-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:		
-- Inlet stream flowrate (scfm):		1,000
-- Inlet stream temperature (oF):		70
-- VOC to be condensed:		Toluene
-- VOC inlet volume fraction:		0.01000
-- Required VOC removal (fraction):		0.900
-- Antoine equation constants for VOC: [4]		
	A:	6.955
	B:	1344.800
	C:	219.480
-- VOC heat of condensation (BTU/lb-mole):		14270
-- VOC heat capacity (BTU/lb-mole-oF):		37.580
-- Coolant specific heat (BTU/lb-oF):		0.650
-- VOC boiling point (oF):		231
-- VOC critical temperature (oR):		1065
-- VOC molecular weight (lb/lb-mole):		92.1
-- VOC condensate density (lb/gal):		7.20
-- Air heat capacity (BTU/lb-mole-oF):		6.95
DESIGN PARAMETERS:		
-- Outlet VOC partial pressure (mm Hg):		0.767
-- Condensation temperature, Tc (oF):		-20.7
-- VOC flowrate in (lb-moles/hr):		1.53
-- VOC flowrate out (lb-moles/hr):		0.153
-- VOC condensed (lb-moles/hr):		1.378
(lb/hr):		126.9
-- VOC heat of condensation @ Tc (BTU/lb-mole):		17,352
-- Enthalpy change, condensed VOC (BTU/hr):		28,598
-- Enthalpy change, uncondensed VOC (BTU/hr):		522
-- Enthalpy change, air (BTU/hr):		95,514
-- Condenser heat load (BTU/hr):		124,634
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):		20
-- Log-mean temperature difference (oF):		39.0
-- Condenser surface area (ft2):		159.6
-- Coolant flowrate (lb/hr):		7,670
-- Refrigeration capacity (tons):		10.39
-- Electricity requirement (kW/ton):		5.0

CAPITAL COSTS	
Equipment Costs ($):	
-- Refrigeration unit/single-stage (< 10 tons):	0
-- Refrigeration unit/single-stage (> 10 tons):	52,698
-- Multistage refrigeration unit:	84,556
-- VOC condenser:	9,202
-- Recovery tank:	2,343
-- Auxiliaries (ductwork, etc.):	50,000
Total equipment cost ($)--base:	146,102
Total equipment cost ($)--escalated:	231,940
Purchased Equipment Cost ($):	273,690
Total Capital Investment ($):	476,220
ANNUAL COST INPUTS:	
Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.075
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Electricity	40,140
Overhead	45,530
Taxes, insurance, administrative	47,622
Capital recovery	70,971
Total Annual Cost (without credits)	280,146
Recovery credits	0
Total Annual Cost (with credits)	**280,146**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 4-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	1,000	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	70	VOC number (enter Table 1 #):		1012
-- Inlet stream pressure (atm):	1		K:	0.551
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.110
-- Inlet VOC flowrate (lb/hr):	3.6	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	92.00	VOC number (enter Table 2 #):		466
-- VOC inlet volume fraction:	0.0003		A:	1.11466
-- VOC inlet concentration (ppmv):	251		B:	0.20795
-- VOC inlet partial pressure (psia):	0.0037		C:	#######
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	15.7			
-- Adsorption time (hr):	16.0			
-- Desorption time (hr):	4.0			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2975	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1487	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	385	Equation 1.14
-- Carbon requirement per vessel (lb):	385	
-- Gas flowrate per adsorbing vessel (acfm):	1,000	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	5.046	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.642	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	113.58	Equation 1.24
-- Carbon bed thickness (ft):	0.642	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5	1.358	Equation 1.30
-- Ductwork friction losses (in. w.c.):	15.409	See box at right
Total system pressure drop (in. w.c.):	16.766	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	13,994	Equation 1.25
-- Carbon	481	
-- Other equipment (condenser, decanter, etc.)	224,652	
-- Auxiliary equipment (ductwork & condensed liquid ta	50,000	
-- Boiler (and associated equip.) for steam regeneration c	37,700	
Total equipment cost ($)--base:	237,285	Equation 1.27
Total equipment cost ($)--escalated:	344,871	Apply inflation factor
Purchased Equipment Cost ($):	386,255	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	621,871	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manu

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}$ (u/1000

D = duct diameter, ft

u = average duct velocity, fpm

Total straight leng	1000	ft
Diameter:	0.667	ft
Duct velocity:	2863	fpm
Straight duct loss	14.57	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$

k = 0.33 (from Table 1.7, assuming radius of curvature = 1

u = average duct velocity, fpm

Number of elbow	5	
Duct velocity:	2863	fpm
Total Elbow loss:	0.84	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 4-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	3,386	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	716	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	75	Equation 1.29
Carbon replacement	217	
Liquid waste disposal	4,263	Assume 90% of steam is condensed
Spent carbon disposal	51	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	62,187	
Capital recovery	92,677	
Total Annual Cost (without credits)	328,666	
Recovery credits	0	
Total Annual Cost (with credits)	**328,666**	

VOC Removed (tpy): 14.1 Cost per ton removed **23,297**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 4-6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* mag
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* mag
INPUT PARAMETERS		
-- Inlet stream flowrate (acfm):	1000	
-- Duct velocity (ft/min): [4]	2,863	47.7 ft/sec
-- Duct length (ft): [5]	1000	
-- Material of construction: [6]	Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]	1	
-- Duct design: [8]	Circ.-spiral	
-- Cost equation parameters: [9]	2.560	a.
	0.937	b.
-- Cost equation form: [10]	1	
-- Control system installation factor: [11]	1.5	
(if no system, enter '0')		
-- Fan-motor combined efficiency (fraction):	0.60	
DESIGN PARAMETERS		
-- Number of exhaust fans:	1	
-- Duct diameter (in.):	8.0	
-- Pressure drop (in. w.c.): [12]	14.570	
CAPITAL COSTS		
Equipment Cost ($)--base:	17,965	
Equipment Cost ($)--escalated:	28,393	
Purchased Equipment Cost ($):	30,665	
Total Capital Investment per Exhaust Fan($): [13]	45,997	
Overall Total Capital Investment($):	**45,997**	
ANNUAL COST INPUTS		
Operating factor (hours/year):	8760	
Electricity price ($/kWhr):	0.075	
Annual interest rate (fractional):	0.08	
Ductwork economic life (years):	20	
Capital recovery factor (system):	0.1019	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	1,875	0.168
Taxes, insurance, administrative	4,600	0.412
Capital recovery	4,685	0.420
Total Annual Cost	**11,159**	**1.000**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-1. **Ranking of VOC Control Technology Options for #3 Packaging Center - All Sources**
Neville Chemical Company, Pittsburgh, PA

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	40.8	38.0
2.	Catalytic Oxidation	98.0	95.0	93.1	40.8	38.0
3.	Rotary Concentrator/Oxidizer	98.0	95.0	93.1	40.8	38.0
4.	Carbon Adsorber	90.0	95.0	85.5	40.8	34.9
5.	Refrigerated Condenser	90.0	95.0	85.5	40.8	34.9
					VOC PTE [2] =	**40.8 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [3]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Rotary Concentrator/Oxidizer	745,174	111,053	2,924	844,749	22,239
2.	Catalytic Oxidation	562,808	82,033	2,160	1,062,633	27,975
3.	Carbon Adsorber	592,355	88,278	2,531	998,274	28,617
4.	Thermal Oxidation	480,125	71,553	1,884	1,610,001	42,385
5.	Refrigerated Condenser	3,794,619	565,510	16,211	2,645,833	75,847

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] PTE is the sum of Resin Kettles, Pastillator, and Pouring

[3] Refer to the following Tables 5-2 through 5-7 for the derivation of the values used in this table

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC All Sources - RACT cost analysis.xlsx

Table 5-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	9,000	Operating factor (hr/yr):	8,760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	80	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	5	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	68	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	740	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	7.949
(scfm):	194.8
-- Total Gas Flowrate (scfm):	9,195

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	167,323
@ 70 % heat recovery:	0
Total Equipment Cost--base:	167,323
Total Equipment Cost--escalated:	263,055
Other misc equipment:	100,000 ductwork structures, holding tanks, moisture condensers, etc.
Purchased Equipment Cost ($):	384,100
Total Capital Investment ($):	480,125

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	1,075,277
Electricity	13,016
Overhead	45,530
Taxes, insurance, administrative	48,012
Capital recovery	71,553
Total Annual Cost	**1,329,271**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	9,000
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	80
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	5.00
-- Waste gas heat content (BTU/lb):	67.66
-- Gas heat capacity (BTU/lb-oF):	0.40
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	465
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	3.697
(scfm):	90.6
-- Total Gas Flowrate (scfm):	9,091
-- Catalyst Volume (ft3):	17.6

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	195,655
@ 70 % heat recovery:	0
Total Equipment Cost--base:	195,655
Total Equipment Cost--escalated:	324,302
Other misc equipment:	100,000
Purchased Equipment Cost ($):	450,247
Total Capital Investment ($):	562,808

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	500,047
Electricity	15,197
Catalyst replacement	6,931
Overhead	45,530
Taxes, insurance, administrative	56,281
Capital recovery	82,033
Total Annual Cost	**781,903**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-4. **Total Annual Cost Spreadsheet -- Rotary Concentrator/Oxidizer**
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

PARAMETERS	***INPUT***
Flowrate (cfm)	9,000
Control device input mass (tons/year)	38.8
Concentration (avg. ppm)	61
Facility operating schedule (hours/year)	8,760
Thermal oxidizer temperature (F)	1,400
Fuel cost, ($/million BTU)	10.50
Electricity cost, ($/kwhr)	0.075

COST CALCULATIONS	
Heat recovery (%)	0
Electrical power (kW)	9.4
Fuel usage (Btu/hr)	2,700,896
Capital Costs	
Equipment cost (EC), (Durr budgetary costs, 3/15/96	173,266
Escalated Equipment Cost (EC)	272,399
Other equipment (moisture pre-condenser):	100,000
Total Direct Cost (TDC), ($)	606,642
Total Capital Investment (TCI), ($)	745,174
Annual Cost Inputs	
Operating factor (hr/yr):	8,760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kwh):	0.075
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.1

Annual Operating Costs

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	248,428
Electricity	8,606
Overhead	45,530
Taxes, insurance, administrative	74,517
Capital recovery	111,053
Total Annual Cost	**564,018**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-5. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (scfm):	9,000
-- Inlet stream temperature (oF):	80
-- VOC to be condensed:	Toluene
-- VOC inlet volume fraction:	0.00008
-- Required VOC removal (fraction):	0.900
-- Antoine equation constants for VOC: [4]	
A:	6.955
B:	1344.800
C:	219.480
-- VOC heat of condensation (BTU/lb-mole):	14270
-- VOC heat capacity (BTU/lb-mole-oF):	37.580
-- Coolant specific heat (BTU/lb-oF):	0.650
-- VOC boiling point (oF):	231
-- VOC critical temperature (oR):	1065
-- VOC molecular weight (lb/lb-mole):	92.1
-- VOC condensate density (lb/gal):	7.20
-- Air heat capacity (BTU/lb-mole-oF):	6.95

DESIGN PARAMETERS:

-- Outlet VOC partial pressure (mm Hg):	0.006
-- Condensation temperature, Tc (oF):	-99.8
-- VOC flowrate in (lb-moles/hr):	0.105
-- VOC flowrate out (lb-moles/hr):	0.010
-- VOC condensed (lb-moles/hr):	0.094
(lb/hr):	8.7
-- VOC heat of condensation @ Tc (BTU/lb-mc	18,155
-- Enthalpy change, condensed VOC (BTU/hr):	2,347
-- Enthalpy change, uncondensed VOC (BTU/h	71
-- Enthalpy change, air (BTU/hr):	1,720,892
-- Condenser heat load (BTU/hr):	1,723,310
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):	20
-- Log-mean temperature difference (oF):	63.8
-- Condenser surface area (ft2):	1350.9
-- Coolant flowrate (lb/hr):	106,050
-- Refrigeration capacity (tons):	143.61
-- Electricity requirement (kW/ton):	11.7

CAPITAL COSTS

Equipment Costs ($):	
-- Refrigeration unit/single-stage (< 10 tons):	0
-- Refrigeration unit/single-stage (> 10 tons):	475,771
-- Multistage refrigeration unit:	1,012,476
-- VOC condenser:	49,706
-- Recovery tank:	1,986
-- Auxiliaries (ductwork, etc.):	100,000
Total equipment cost ($)--base:	1,164,168
Total equipment cost ($)--escalated:	1,848,149
Purchased Equipment Cost ($):	2,180,815
Total Capital Investment ($):	3,794,619

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.075
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Electricity	1,298,717
Overhead	45,530
Taxes, insurance, administrative	379,462
Capital recovery	565,510
Total Annual Cost (without credits)	2,365,102
Recovery credits	0
Total Annual Cost (with credits)	**2,365,102**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-6. Total Annual Cost Spreadsheet -- Carbon Adsorption w/On-site Regeneration
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	9,000	
-- Inlet stream temperature (oF):	80	
-- Inlet stream pressure (atm):	1.0	
-- VOC to be condensed:	Toluene	
-- Inlet VOC flowrate (lb/hr):	8.8	
-- VOC molecular weight (lb/lb-mole):	92.0	
-- VOC inlet volume fraction:	0.0001	
-- VOC inlet concentration (ppmv):	70	
-- VOC inlet partial pressure (psia):	0.0010	
-- Required VOC removal (fraction):	0.90	
-- Annual VOC inlet (tons):	38.8	
-- Adsorption time (hr):	24.0	use 24 hr, since annual emissions based on 8760 hr/yr
-- Desorption time (hr):	4.0	
-- Number of adsorbing vessels:	1	10,000 cfm per vessel
-- Superficial carbon bed velocity (ft/min):	50.0	Normal range is 10 fpm to 100 fpm; picked mid-point
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316

-- Freundlich isotherm equation constants for VOC:

VOC number (enter Table 1 #):	1012
K:	0.551
M:	0.110

-- Yaws isotherm equation constants:

VOC number (enter Table 2 #):	466
A:	1.11466
B:	0.20795
C:	-0.02016

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2586	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1293	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	1,642	Equation 1.14
-- Carbon requirement per vessel (lb):	1,642	
-- Gas flowrate per adsorbing vessel (acfm):	9,000	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	1.159	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.304	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	17.78	Equation 1.24
-- Carbon bed thickness (ft):	0.304	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	0.644	Equation 1.30
-- Ductwork friction losses (in. w.c.):	272.637	See box at right
Total system pressure drop (in. w.c.):	273.281	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	3,306	Equation 1.25
-- Carbon	2,053	
-- Other equipment (condenser, decanter, etc.)	156,862	
-- Auxiliary equipment (ductwork & condensed liquid tanks)	100,000	
-- Special controls for kettle piping (to avoid steam ruptures)	25,000	
Total equipment cost ($)--base:	226,022	Equation 1.27
Total equipment cost ($)--escalated:	328,502	
Purchased Equipment Cost ($):	367,922	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	592,355	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual)

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$
   D = duct diameter, ft
   u = average duct velocity, fpm

Total straight lengt	2,000	ft
Diameter:	1	ft
Duct velocity:	11,450	fpm
Straight duct loss:	218.99	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
   k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
   u = average duct velocity, fpm

Number of elbows	20	
Duct velocity:	11,450	fpm
Total Elbow loss:	53.65	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 5-6. Total Annual Cost Spreadsheet -- Carbon Adsorption w/On-site Regeneration
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	393,066	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	0	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	186	Equation 1.29
Carbon replacement	924	
Liquid waste disposal	10,540	Assume 90% of steam is condensed
Spent carbon disposal	219	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	59,235	
Capital recovery	88,278	
Total Annual Cost (without credits)	717,543	
Recovery credits	0	
Total Annual Cost (with credits)	**717,543**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 5-7. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Inlet stream flowrate (acfm):	9000	
-- Duct velocity (ft/min): [4]	11,450	190.8 ft/sec
-- Duct length (ft): [5]	2000	
-- Material of construction: [6]	Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]	1	
-- Duct design: [8]	Circ.-spiral	
-- Cost equation parameters: [9]	2.560	a:
	0.937	b:
-- Cost equation form: [10]	1	
-- Control system installation factor: [11]	1.5	
(if no system, enter '0')		
-- Fan-motor combined efficiency (fraction):	0.60	

DESIGN PARAMETERS

-- Number of exhaust fans:	1
-- Duct diameter (in.):	12.0
-- Pressure drop (in. w.c.): [12]	218.987

CAPITAL COSTS

Equipment Cost ($)--base:	52,537
' ' '--escalated:	83,032
Purchased Equipment Cost ($):	89,675
Total Capital Investment per Exhaust Fan($): [13]	134,512
Overall Total Capital Investment($):	**134,512**

ANNUAL COST INPUTS

Operating factor (hours/year):	8760
Electricity price ($/kWhr):	0.075
Annual interest rate (fractional):	0.08
Ductwork economic life (years):	20
Capital recovery factor (system):	0.1019
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	253,579	0.903
Taxes, insurance, administrative	13,451	0.048
Capital recovery	13,700	0.049
Total Annual Cost	**280,730**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC All Sources - RACT cost analysis.xlsx

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-1. Ranking of VOC Control Technology Options for No. 3 Packaging Center Pastillator
Neville Chemical Company, Pittsburgh, PA

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	17.1	15.9
2.	Catalytic Oxidation	98.0	95.0	93.1	17.1	15.9
3.	Rotary Concentrator/Oxidizer	98.0	95.0	93.1	17.1	15.9
4.	Carbon Adsorber	90.0	95.0	85.5	17.1	14.6
5.	Refrigerated Condenser	90.0	95.0	85.5	17.1	14.6
					VOC PTE [2] =	**17.1 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [3]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Carbon Adsorber	446,165	66,492	4,548	536,340	36,684
2.	Rotary Concentrator/Oxidizer	634,407	94,545	5,939	644,007	40,452
3.	Catalytic Oxidation	535,960	78,134	4,908	867,923	54,517
4.	Thermal Oxidation	456,202	67,988	4,271	1,384,467	86,963
5.	Refrigerated Condenser	3,514,978	523,835	35,829	2,344,926	160,386

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] PTE is from only the pastillator operation

[3] Refer to the following Tables 6-2 through 6-7 for the derivation of the values used in this table

Table 6-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	8,500	Operating factor (hr/yr):	8,760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	80	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	5	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	68	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	740	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	7.508
(scfm):	184.0
-- Total Gas Flowrate (scfm):	8,684

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	164,947
@ 70 % heat recovery:	0
Other equipment (moisture pre-condense	50,000
Total Equipment Cost--base:	214,947
Total Equipment Cost--escalated:	337,927
Purchased Equipment Cost ($):	364,961
Total Capital Investment ($):	456,202

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	1,015,539
Electricity	12,292
Overhead	45,530
Taxes, insurance, administrative	45,620
Capital recovery	67,988
Total Annual Cost	**1,262,853**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	8,500
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	80
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	5.00
-- Waste gas heat content (BTU/lb):	67.66
-- Gas heat capacity (BTU/lb-oF):	0.40
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	465
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	3.491
(scfm):	85.6
-- Total Gas Flowrate (scfm):	8,586
-- Catalyst Volume (ft3):	16.6

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	189,519
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	50,000
Total Equipment Cost--base:	239,519
Total Equipment Cost--escalated:	397,007
Purchased Equipment Cost ($):	428,768
Total Capital Investment ($):	535,960

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	472,267
Electricity	14,353
Catalyst replacement	6,546
Overhead	45,530
Taxes, insurance, administrative	53,596
Capital recovery	78,134
Total Annual Cost	**746,309**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-4. **Total Annual Cost Spreadsheet -- Rotary Concentrator/Oxidizer**
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

PARAMETERS	***INPUT***
Flowrate (cfm)	8,500
Control device input mass (tons/year)	16.2
Concentration (avg. ppm)	27
Facility operating schedule (hours/year)	8,760
Thermal oxidizer temperature (F)	1,400
Fuel cost, ($/million BTU)	10.50
Electricity cost, ($/kwhr)	0.075

COST CALCULATIONS	
Heat recovery (%)	0
Electrical power (kW)	9.1
Fuel usage (Btu/hr)	2,550,847

Capital Costs	
Equipment cost (EC), (Durr budgetary costs, 3/15/	168,980
Escalated Equipment Cost (EC)	265,661
Other equipment (moisture pre-condenser):	50,000
Total Direct Cost (TDC), ($)	516,981
Total Capital Investment (TCI), ($)	634,407

Annual Cost Inputs	
Operating factor (hr/yr):	8,760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kwh):	0.075
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.1

Annual Operating Costs

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	234,627
Electricity	8,367
Overhead	45,530
Taxes, insurance, administrative	63,441
Capital recovery	94,545
Total Annual Cost	**522,393**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-5. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:		**CAPITAL COSTS**	
-- Inlet stream flowrate (scfm):	8,500	Equipment Costs ($):	
-- Inlet stream temperature (oF):	80	-- Refrigeration unit/single-stage (< 10 tons):	0
-- VOC to be condensed:	Toluene	-- Refrigeration unit/single-stage (> 10 tons):	459,022
-- VOC inlet volume fraction:	0.00008	-- Multistage refrigeration unit:	979,236
-- Required VOC removal (fraction):	0.900	-- VOC condenser:	47,154
-- Antoine equation constants for VOC: [4]		-- Recovery tank:	1,985
A:	6.955	-- Auxiliaries (ductwork, etc.):	50,000
B:	1344.800	Total equipment cost ($)--base:	1,078,375
C:	219.480	Total equipment cost ($)--escalated:	1,711,951
-- VOC heat of condensation (BTU/lb-mole):	14270	Purchased Equipment Cost ($):	2,020,102
-- VOC heat capacity (BTU/lb-mole-oF):	37.580	Total Capital Investment ($):	3,514,978
-- Coolant specific heat (BTU/lb-oF):	0.650		
-- VOC boiling point (oF):	231	**ANNUAL COST INPUTS:**	
-- VOC critical temperature (oR):	1065	Operating factor (hr/yr):	8760
-- VOC molecular weight (lb/lb-mole):	92.1	Operating labor rate ($/hr):	44.00
-- VOC condensate density (lb/gal):	7.20	Maintenance labor rate ($/hr):	44.00
-- Air heat capacity (BTU/lb-mole-oF):	6.95	Operating labor factor (hr/sh):	0.50
		Maintenance labor factor (hr/sh):	0.50
DESIGN PARAMETERS:		Electricity price ($/kWhr):	0.075
-- Outlet VOC partial pressure (mm Hg):	0.006	Recovered VOC value ($/lb):	0.00
-- Condensation temperature, Tc (oF):	-99.8	Annual interest rate (fraction):	0.08
-- VOC flowrate in (lb-moles/hr):	0.099	Control system life (years):	10
-- VOC flowrate out (lb-moles/hr):	0.010	Capital recovery factor:	0.1490
-- VOC condensed (lb-moles/hr):	0.089	Taxes, insurance, admin. factor:	0.10
(lb/hr):	8.2		
-- VOC heat of condensation @ Tc (BTU/lb-mc	18,155	**ANNUAL COSTS:**	
-- Enthalpy change, condensed VOC (BTU/hr):	2,217	Item	Cost ($/yr)
-- Enthalpy change, uncondensed VOC (BTU/h	67		
-- Enthalpy change, air (BTU/hr):	1,625,287	Operating labor	24,090
-- Condenser heat load (BTU/hr):	1,627,570	Supervisory labor	3,614
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):	20	Maintenance labor	24,090
-- Log-mean temperature difference (oF):	63.8	Maintenance materials	24,090
-- Condenser surface area (ft2):	1275.9	Electricity	1,226,566
-- Coolant flowrate (lb/hr):	100,158	Overhead	45,530
-- Refrigeration capacity (tons):	135.63	Taxes, insurance, administrative	351,498
-- Electricity requirement (kW/ton):	11.7	Capital recovery	523,835
		Total Annual Cost (without credits)	2,223,312
		Recovery credits	0
		Total Annual Cost (with credits)	**2,223,312**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-6. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	8,500	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	80	VOC number (enter Table 1 #):		1012
-- Inlet stream pressure (atm):	1		K:	0.551
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.110
-- Inlet VOC flowrate (lb/hr):	3.7	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	92.00	VOC number (enter Table 2 #):		466
-- VOC inlet volume fraction:	0.0000		A:	1.11466
-- VOC inlet concentration (ppmv):	31		B:	0.20795
-- VOC inlet partial pressure (psia):	0.0005		C:	-0.02016
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	16.2			
-- Adsorption time (hr):	24			
-- Desorption time (hr):	4			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2365	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1183	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	753	Equation 1.14
-- Carbon requirement per vessel (lb):	753	
-- Gas flowrate per adsorbing vessel (acfm):	8,500	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	14.712	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.148	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	531.70	Equation 1.24
-- Carbon bed thickness (ft):	0.148	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	0.312	Equation 1.30
-- Ductwork friction losses (in. w.c.):	110.752	See box at right
Total system pressure drop (in. w.c.):	111.064	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	46,503	Equation 1.25
-- Carbon	941	
-- Other equipment (condenser, decanter, etc.)	127,137	
-- Auxiliary equipment (ductwork & condensed liquid tanks)	25,000	
-- Special controls for kettle piping (to avoid steam ruptures)	25,000	
Total equipment cost ($)--base:	170,241	Equation 1.27
Total equipment cost ($)--escalated:	247,430	
Purchased Equipment Cost ($):	277,121	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	446,165	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual)

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$
D = duct diameter, ft
u = average duct velocity, fpm

Total straight lengt	1000	ft
Diameter:	1	ft
Duct velocity:	10,814	fpm
Straight duct loss:	98.79	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	10,814	fpm
Total Elbow loss:	11.96	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 6-6. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	132,762	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	742	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	78	Equation 1.29
Carbon replacement	424	
Liquid waste disposal	4,418	Assume 90% of steam is condensed
Spent carbon disposal	100	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	44,617	
Capital recovery	66,492	
Total Annual Cost (without credits)	414,726	
Recovery credits	0	
Total Annual Cost (with credits)	**414,726**	

VOC Removed (tpy): 14.6

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 6-7. **Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls**
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		
-- Inlet stream flowrate (acfm):	8500	
-- Duct velocity (ft/min): [4]	10,814	180.2 ft/sec
-- Duct length (ft): [5]	1000	
-- Material of construction: [6]	Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]	1	
-- Duct design: [8]	Circ.-spiral	
-- Cost equation parameters: [9]	2.560	a:
	0.937	b:
-- Cost equation form: [10]	1	
-- Control system installation factor: [11]	1.5	
(if no system, enter '0')		
-- Fan-motor combined efficiency (fraction):	0.60	
DESIGN PARAMETERS		
-- Number of exhaust fans:	1	
-- Duct diameter (in.):	12.0	
-- Pressure drop (in. w.c.): [12]	98.788	
CAPITAL COSTS		
Equipment Cost ($)--base:	26,268	
' ' ' --escalated:	41,516	
Purchased Equipment Cost ($):	44,837	
Total Capital Investment per Exhaust Fan($): [13]	67,256	
Overall Total Capital Investment($):	**67,256**	
ANNUAL COST INPUTS		
Operating factor (hours/year):	8760	
Electricity price ($/kWhr):	0.075	
Annual interest rate (fractional):	0.08	
Ductwork economic life (years):	20	
Capital recovery factor (system):	0.1019	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	108,038	0.888
Taxes, insurance, administrative	6,726	0.055
Capital recovery	6,850	0.056
Total Annual Cost	**121,614**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC Pastillator - RACT cost analysis.xlsx

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 7-1. Ranking of VOC Control Technology Options for No. 3 Packaging Center Kettles
Neville Chemical Company, Pittsburgh, PA

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	21.8	20.3
2.	Catalytic Oxidation	98.0	95.0	93.1	21.8	20.3
3.	Carbon Adsorber	98.0	95.0	93.1	21.8	20.3
4.	Refrigerated Condenser	90.0	95.0	85.5	21.8	18.6
					VOC PTE [2] =	**21.8 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [3]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Catalytic Oxidation	128,616	18,963	934	225,103	11,091
2.	Carbon Adsorber	394,883	58,849	2,900	285,207	14,053
3.	Thermal Oxidation	204,941	30,542	1,505	307,217	15,137
4.	Refrigerated Condenser	949,997	141,578	7,596	516,138	27,691

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] PTE is from only the resin kettles

[3] Refer to the following Tables 7-2 through 7-6 for the derivation of the values used in this table

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC Kettles - RACT cost analysis.xlsx

Table 7-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	1,000	Operating factor (hr/yr):	8,760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	80	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	5	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	68	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	740	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.883
(scfm):	21.6
-- Total Gas Flowrate (scfm):	1,022

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	96,562
@ 70 % heat recovery:	0
Other equipment (moisture pre-condens	-
Total Equipment Cost--base:	96,562
Total Equipment Cost--escalated:	151,808
Purchased Equipment Cost ($):	163,953
Total Capital Investment ($):	204,941

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	119,475
Electricity	1,446
Overhead	45,530
Taxes, insurance, administrative	20,494
Capital recovery	30,542
Total Annual Cost	**293,371**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 7-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	1,000
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	80
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	5.00
-- Waste gas heat content (BTU/lb):	67.66
-- Gas heat capacity (BTU/lb-oF):	0.40
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	465
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.411
(scfm):	10.1
-- Total Gas Flowrate (scfm):	1,010
-- Catalyst Volume (ft3):	2.0

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	57,478
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	-
Total Equipment Cost--base:	57,478
Total Equipment Cost--escalated:	95,271
Purchased Equipment Cost ($):	102,892
Total Capital Investment ($):	128,616

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	55,561
Electricity	1,689
Catalyst replacement	770
Overhead	45,530
Taxes, insurance, administrative	12,862
Capital recovery	18,963
Total Annual Cost	**211,257**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 7-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine	
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine	

INPUT PARAMETERS:		
-- Inlet stream flowrate (scfm):		1,000
-- Inlet stream temperature (oF):		80
-- VOC to be condensed:		Toluene
-- VOC inlet volume fraction:		0.00008
-- Required VOC removal (fraction):		0.900
-- Antoine equation constants for VOC: [4]		
	A:	6.955
	B:	1344.800
	C:	219.480
-- VOC heat of condensation (BTU/lb-mole):		14270
-- VOC heat capacity (BTU/lb-mole-oF):		37.580
-- Coolant specific heat (BTU/lb-oF):		0.650
-- VOC boiling point (oF):		231
-- VOC critical temperature (oR):		1065
-- VOC molecular weight (lb/lb-mole):		92.1
-- VOC condensate density (lb/gal):		7.20
-- Air heat capacity (BTU/lb-mole-oF):		6.95
DESIGN PARAMETERS:		
-- Outlet VOC partial pressure (mm Hg):		0.006
-- Condensation temperature, Tc (oF):		-99.8
-- VOC flowrate in (lb-moles/hr):		0.012
-- VOC flowrate out (lb-moles/hr):		0.001
-- VOC condensed (lb-moles/hr):		0.010
(lb/hr):		1.0
-- VOC heat of condensation @ Tc (BTU/lb-mc		18,155
-- Enthalpy change, condensed VOC (BTU/hr):		261
-- Enthalpy change, uncondensed VOC (BTU/h		8
-- Enthalpy change, air (BTU/hr):		191,210
-- Condenser heat load (BTU/hr):		191,479
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):		20
-- Log-mean temperature difference (oF):		63.8
-- Condenser surface area (ft2):		150.1
-- Coolant flowrate (lb/hr):		11,783
-- Refrigeration capacity (tons):		15.96
-- Electricity requirement (kW/ton):		11.7

CAPITAL COSTS	
Equipment Costs ($):	
-- Refrigeration unit/single-stage (< 10 tons):	0
-- Refrigeration unit/single-stage (> 10 tons):	119,974
-- Multistage refrigeration unit:	280,612
-- VOC condenser:	8,878
-- Recovery tank:	1,963
-- Auxiliaries (ductwork, etc.):	-
Total equipment cost ($)--base:	291,454
Total equipment cost ($)--escalated:	462,691
Purchased Equipment Cost ($):	545,975
Total Capital Investment ($):	949,997
ANNUAL COST INPUTS:	
Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.075
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Electricity	144,302
Overhead	45,530
Taxes, insurance, administrative	95,000
Capital recovery	141,578
Total Annual Cost (without credits)	502,293
Recovery credits	0
Total Annual Cost (with credits)	**502,293**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 7-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	1,000	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	80	VOC number (enter Table 1 #):		1012
-- Inlet stream pressure (atm):	1		K:	0.551
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.110
-- Inlet VOC flowrate (lb/hr):	4.7	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	92.00	VOC number (enter Table 2 #):		466
-- VOC inlet volume fraction:	0.0003		A:	1.11466
-- VOC inlet concentration (ppmv):	338		B:	0.20795
-- VOC inlet partial pressure (psia):	0.0050		C:	-0.02016
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	20.7			
-- Adsorption time (hr):	16.0			
-- Desorption time (hr):	4.0			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.3074	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1537	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	492	Equation 1.14
-- Carbon requirement per vessel (lb):	492	
-- Gas flowrate per adsorbing vessel (acfm):	1,000	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	5.046	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.820	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	116.42	Equation 1.24
-- Carbon bed thickness (ft):	0.820	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	1.736	Equation 1.30
-- Ductwork friction losses (in. w.c.):	2.263	See box at right
Total system pressure drop (in. w.c.):	4.000	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	14,265	Equation 1.25
-- Carbon	615	
-- Other equipment (condenser, decanter, etc.)	144,031	
-- Auxiliary equipment (ductwork & condensed liquid tanks)	25,000	
-- Special controls for kettle piping (to avoid steam ruptures)	25,000	
Total equipment cost ($)--base:	150,674	Equation 1.27
Total equipment cost ($)--escalated:	218,990	
Purchased Equipment Cost ($):	245,269	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	394,883	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual)

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$
   D = duct diameter, ft
   u = average duct velocity, fpm

Total straight lengt	1000	ft
Diameter:	1	ft
Duct velocity:	1,272	fpm
Straight duct loss:	2.10	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
   k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
   u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	1,272	fpm
Total Elbow loss:	0.17	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 7-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	911	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	946	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	99	Equation 1.29
Carbon replacement	277	
Liquid waste disposal	5,632	Assume 90% of steam is condensed
Spent carbon disposal	66	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	39,488	
Capital recovery	58,849	
Total Annual Cost (without credits)	271,362	
Recovery credits	0	
Total Annual Cost (with credits)	**271,362**	

Table 7-6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine	
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine	
INPUT PARAMETERS			
-- Inlet stream flowrate (acfm):	1000		
-- Duct velocity (ft/min): [4]	1,272		21.2 ft/sec
-- Duct length (ft): [5]	1000		
-- Material of construction: [6]	Galv. CS sh.		
-- Insulation thickness (in.): (text input) [7]	1		
-- Duct design: [8]	Circ.-spiral		
-- Cost equation parameters: [9]	2.560	a:	
	0.937	b:	
-- Cost equation form: [10]	1		
-- Control system installation factor: [11]	1.5		
(if no system, enter '0')			
-- Fan-motor combined efficiency (fraction):	0.60		
DESIGN PARAMETERS			
-- Number of exhaust fans:	1		
-- Duct diameter (in.):	12.0		
-- Pressure drop (in. w.c.): [12]	2.098		
CAPITAL COSTS			
Equipment Cost ($)--base:	26,268		
' ' ' --escalated:	41,516		
Purchased Equipment Cost ($):	44,837		
Total Capital Investment per Exhaust Fan($): [13]	67,256		
Overall Total Capital Investment($):	**67,256**		
ANNUAL COST INPUTS			
Operating factor (hours/year):	8760		
Electricity price ($/kWhr):	0.075		
Annual interest rate (fractional):	0.08		
Ductwork economic life (years):	20		
Capital recovery factor (system):	0.1019		
Taxes, insurance, admin. factor:	0.10		

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	270	0.019
Taxes, insurance, administrative	6,726	0.486
Capital recovery	6,850	0.495
Total Annual Cost	**13,846**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC Kettles - RACT cost analysis.xlsx

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 8-1. Ranking of VOC Control Technology Options for No. 3 Packaging Center Pouring (to drums)
Neville Chemical Company, Pittsburgh, PA

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	2.0	1.9
2.	Catalytic Oxidation	98.0	95.0	93.1	2.0	1.9
3.	Carbon Adsorber	98.0	95.0	93.1	2.0	1.9
4.	Refrigerated Condenser	90.0	95.0	85.5	2.0	1.7
					VOC PTE [2] =	**2.0 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [3]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Catalytic Oxidation	87,392	12,922	6,940	185,699	99,731
2.	Thermal Oxidation	172,311	25,679	13,791	238,399	128,034
3.	Carbon Adsorber	396,009	59,017	31,695	278,053	149,330
4.	Refrigerated Condenser	637,195	94,961	55,533	365,860	213,953

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] PTE is from only the drum pouring operations

[3] Refer to the following Tables 8-2 through 8-6 for the derivation of the values used in this table

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC Pouring - RACT cost analysis.xlsx

Table 8-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	500	Operating factor (hr/yr):	8,760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	80	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	5	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	68	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1400	Control system life (years):	10
-- Preheat temperature (oF):	740	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.442
(scfm):	10.8
-- Total Gas Flowrate (scfm):	511

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	81,187
@ 70 % heat recovery:	0
Other equipment (moisture pre-condens	-
Total Equipment Cost--base:	81,187
Total Equipment Cost--escalated:	127,637
Purchased Equipment Cost ($):	137,848
Total Capital Investment ($):	172,311

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	59,738
Electricity	723
Overhead	45,530
Taxes, insurance, administrative	17,231
Capital recovery	25,679
Total Annual Cost	**224,785**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 8-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	500
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	80
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	5.00
-- Waste gas heat content (BTU/lb):	67.66
-- Gas heat capacity (BTU/lb-oF):	0.40
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	465
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.205
(scfm):	5.0
-- Total Gas Flowrate (scfm):	505
-- Catalyst Volume (ft3):	1.0

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	39,055
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	-
Total Equipment Cost--base:	39,055
Total Equipment Cost--escalated:	64,734
Purchased Equipment Cost ($):	69,913
Total Capital Investment ($):	87,392

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	27,780
Electricity	844
Catalyst replacement	385
Overhead	45,530
Taxes, insurance, administrative	8,739
Capital recovery	12,922
Total Annual Cost	**172,084**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 8-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:			**CAPITAL COSTS**	
-- Inlet stream flowrate (scfm):		500	Equipment Costs ($):	
-- Inlet stream temperature (oF):		80	-- Refrigeration unit/single-stage (< 10 tons):	152,167
-- VOC to be condensed:		Toluene	-- Refrigeration unit/single-stage (> 10 tons):	0
-- VOC inlet volume fraction:		0.00008	-- Multistage refrigeration unit:	187,200
-- Required VOC removal (fraction):		0.900	-- VOC condenser:	6,327
-- Antoine equation constants for VOC: [4]			-- Recovery tank:	1,961
	A:	6.955	-- Auxiliaries (ductwork, etc.):	-
	B:	1344.800	Total equipment cost ($)--base:	195,488
	C:	219.480	Total equipment cost ($)--escalated:	310,343
-- VOC heat of condensation (BTU/lb-mole):		14270	Purchased Equipment Cost ($):	366,204
-- VOC heat capacity (BTU/lb-mole-oF):		37.580	Total Capital Investment ($):	637,195
-- Coolant specific heat (BTU/lb-oF):		0.650		
-- VOC boiling point (oF):		231	**ANNUAL COST INPUTS:**	
-- VOC critical temperature (oR):		1065	Operating factor (hr/yr):	8760
-- VOC molecular weight (lb/lb-mole):		92.1	Operating labor rate ($/hr):	44.00
-- VOC condensate density (lb/gal):		7.20	Maintenance labor rate ($/hr):	44.00
-- Air heat capacity (BTU/lb-mole-oF):		6.95	Operating labor factor (hr/sh):	0.50
			Maintenance labor factor (hr/sh):	0.50
DESIGN PARAMETERS:			Electricity price ($/kWhr):	0.075
-- Outlet VOC partial pressure (mm Hg):		0.006	Recovered VOC value ($/lb):	0.00
-- Condensation temperature, Tc (oF):		-99.8	Annual interest rate (fraction):	0.08
-- VOC flowrate in (lb-moles/hr):		0.006	Control system life (years):	10
-- VOC flowrate out (lb-moles/hr):		0.001	Capital recovery factor:	0.1490
-- VOC condensed (lb-moles/hr):		0.005	Taxes, insurance, admin. factor:	0.10
(lb/hr):		0.5		
-- VOC heat of condensation @ Tc (BTU/lb-mc		18,155	**ANNUAL COSTS:**	
-- Enthalpy change, condensed VOC (BTU/hr):		130	Item	Cost ($/yr)
-- Enthalpy change, uncondensed VOC (BTU/h		4		
-- Enthalpy change, air (BTU/hr):		95,605	Operating labor	24,090
-- Condenser heat load (BTU/hr):		95,739	Supervisory labor	3,614
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):		20	Maintenance labor	24,090
-- Log-mean temperature difference (oF):		63.8	Maintenance materials	24,090
-- Condenser surface area (ft2):		75.1	Electricity	72,151
-- Coolant flowrate (lb/hr):		5,892	Overhead	45,530
-- Refrigeration capacity (tons):		7.98	Taxes, insurance, administrative	63,720
-- Electricity requirement (kW/ton):		11.7	Capital recovery	94,961
			Total Annual Cost (without credits)	352,245
			Recovery credits	0
			Total Annual Cost (with credits)	**352,245**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 8-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	500	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	80	VOC number (enter Table 1 #):		1012
-- Inlet stream pressure (atm):	1		K:	0.551
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.110
-- Inlet VOC flowrate (lb/hr):	0.4	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	92.00	VOC number (enter Table 2 #):		466
-- VOC inlet volume fraction:	0.0001		A:	1.11466
-- VOC inlet concentration (ppmv):	62		B:	0.20795
-- VOC inlet partial pressure (psia):	0.0009		C:	-0.02016
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	1.9			
-- Adsorption time (hr):	16.0			
-- Desorption time (hr):	4.0			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	For Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2551	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1275	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	54	Equation 1.14
-- Carbon requirement per vessel (lb):	54	
-- Gas flowrate per adsorbing vessel (acfm):	500	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	3.568	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	4.181	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	66.87	Equation 1.24
-- Carbon bed thickness (ft):	0.181	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	0.384	Equation 1.30
-- Ductwork friction losses (in. w.c.):	0.644	See box at right
Total system pressure drop (in. w.c.):	1.028	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	9,267	Equation 1.25
-- Carbon	68	
-- Other equipment (condenser, decanter, etc.)	151,798	
-- Auxiliary equipment (ductwork & condensed liquid tanks)	25,000	
-- Special controls for kettle piping (to avoid steam ruptures)	25,000	
Total equipment cost ($)--base:	151,103	Equation 1.27
Total equipment cost ($)--escalated:	219,614	
Purchased Equipment Cost ($):	245,968	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	396,009	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual)

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}$ $(u/1000)^{1.8}$
   D = duct diameter, ft
   u = average duct velocity, fpm

Total straight lengt	1000	ft
Diameter:	1	ft
Duct velocity:	636	fpm
Straight duct loss:	0.60	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
   k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
   u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	636	fpm
Total Elbow loss:	0.04	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 8-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	This is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	76	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	87	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	9	Equation 1.29
Carbon replacement	31	
Liquid waste disposal	517	Assume 90% of steam is condensed
Spent carbon disposal	7	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	39,601	
Capital recovery	59,017	
Total Annual Cost (without credits)	264,438	
Recovery credits	0	
Total Annual Cost (with credits)	**264,438**	

VOC Removed (tpy): 1.7

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 8-6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine	
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine	
INPUT PARAMETERS			
-- Inlet stream flowrate (acfm):	500		
-- Duct velocity (ft/min): [4]	636		10.6 ft/sec
-- Duct length (ft): [5]	1000		
-- Material of construction: [6]	Galv. CS sh.		
-- Insulation thickness (in.): (text input) [7]	1		
-- Duct design: [8]	Circ.-spiral		
-- Cost equation parameters: [9]	2.560	a:	
	0.937	b:	
-- Cost equation form: [10]	1		
-- Control system installation factor: [11]	1.5		
(if no system, enter '0')			
-- Fan-motor combined efficiency (fraction):	0.60		
DESIGN PARAMETERS			
-- Number of exhaust fans:	1		
-- Duct diameter (in.):	12.0		
-- Pressure drop (in. w.c.): [12]	0.602		
CAPITAL COSTS			
Equipment Cost ($)--base:	26,268		
' ' ' --escalated:	41,516		
Purchased Equipment Cost ($):	44,837		
Total Capital Investment per Exhaust Fan($): [13]	67,256		
Overall Total Capital Investment($):	**67,256**		
ANNUAL COST INPUTS			
Operating factor (hours/year):	8760		
Electricity price ($/kWhr):	0.075		
Annual interest rate (fractional):	0.08		
Ductwork economic life (years):	20		
Capital recovery factor (system):	0.1019		
Taxes, insurance, admin. factor:	0.10		

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	39	0.003
Taxes, insurance, administrative	6,726	0.494
Capital recovery	6,850	0.503
Total Annual Cost	**13,615**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\3PC Pouring - RACT cost analysis.xlsx

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 9-1. Ranking of VOC Control Technology Options for Rework Tanks
Neville Chemical Company, Pittsburgh, Pennsylvania

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	16.5	15.4
2.	Catalytic Oxidation	98.0	95.0	93.1	16.5	15.4
3.	Carbon Adsorber	98.0	95.0	93.1	16.5	15.4
4.	Refrigerated Condenser	90.0	95.0	85.5	16.5	14.1
					VOC PTE =	**16.5 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [2]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Catalytic Oxidation	199,508	29,630	1,929	218,178	14,203
2.	Thermal Oxidation	277,989	41,429	2,697	227,164	14,788
3.	Carbon Adsorber	661,435	98,573	6,417	340,817	22,186
4.	Refrigerated Condenser	729,403	108,703	7,705	373,700	26,489

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] Refer to the following Tables 9-2 through 9-6 for the derivation of the values used in this table

Table 9-2. Total Annual Cost Spreadsheet--Thermal Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		**ANNUAL COST INPUTS**	
-- Gas flowrate (scfm):	500	Operating factor (hr/yr):	8760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	70	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.50	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	14	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	189	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.40	Annual interest rate (fraction):	0.080
-- Combustion temperature (oF):	1,400	Control system life (years):	10
-- Preheat temperature (oF):	735	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21502	Taxes, insurance, admin. factor:	0.10
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.229
(scfm):	5.6
-- Total Gas Flowrate (scfm):	506

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	80,979
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser	50,000
Total Equipment Cost--base:	130,979
Total Equipment Cost--escalated:	205,918
Purchased Equipment Cost ($):	222,391
Total Capital Investment ($):	277,989

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	31,030
Electricity	716
Overhead	45,530
Taxes, insurance, administrative	27,799
Capital recovery	41,429
Total Annual Cost	**222,387**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 9-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	500
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	68
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	1.00
-- Waste gas heat content (BTU/lb):	13.53
-- Gas heat capacity (BTU/lb-oF):	0.400
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	459
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.304
(scfm):	7.5
-- Total Gas Flowrate (scfm):	507
-- Catalyst Volume (ft3):	1.0

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	39,160
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	50,000
Total Equipment Cost--base:	89,160
Total Equipment Cost--escalated:	147,784
Purchased Equipment Cost ($):	159,606
Total Capital Investment ($):	199,508

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	41,172
Electricity	848
Catalyst replacement	387
Overhead	45,530
Taxes, insurance, administrative	19,951
Capital recovery	29,630
Total Annual Cost	**213,401**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 9-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:		
-- Inlet stream flowrate (scfm):		500
-- Inlet stream temperature (oF):		70
-- VOC to be condensed:		Toluene
-- VOC inlet volume fraction:		0.00012
-- Required VOC removal (fraction):		0.900
-- Antoine equation constants for VOC: [4]		
	A:	6.955
	B:	1344.800
	C:	219.480
-- VOC heat of condensation (BTU/lb-mole):		14270
-- VOC heat capacity (BTU/lb-mole-oF):		37.580
-- Coolant specific heat (BTU/lb-oF):		0.650
-- VOC boiling point (oF):		231
-- VOC critical temperature (oR):		1065
-- VOC molecular weight (lb/lb-mole):		92.1
-- VOC condensate density (lb/gal):		7.20
-- Air heat capacity (BTU/lb-mole-oF):		6.95
DESIGN PARAMETERS:		
-- Outlet VOC partial pressure (mm Hg):		0.009
-- Condensation temperature, Tc (oF):		-94.0
-- VOC flowrate in (lb-moles/hr):		0.01
-- VOC flowrate out (lb-moles/hr):		0.001
-- VOC condensed (lb-moles/hr):		0.008
(lb/hr):		0.8
-- VOC heat of condensation @ Tc (BTU/lb-mole):		18,098
-- Enthalpy change, condensed VOC (BTU/hr):		201
-- Enthalpy change, uncondensed VOC (BTU/hr):		6
-- Enthalpy change, air (BTU/hr):		87,194
-- Condenser heat load (BTU/hr):		87,400
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):		20
-- Log-mean temperature difference (oF):		59.7
-- Condenser surface area (ft2):		73.2
-- Coolant flowrate (lb/hr):		5,378
-- Refrigeration capacity (tons):		7.28
-- Electricity requirement (kW/ton):		11.7

CAPITAL COSTS	
Equipment Costs ($):	
-- Refrigeration unit/single-stage (< 10 tons):	136,005
-- Refrigeration unit/single-stage (> 10 tons):	0
-- Multistage refrigeration unit:	165,550
-- VOC condenser:	6,265
-- Recovery tank:	1,962
-- Auxiliaries (ductwork, etc.):	50,000
Total equipment cost ($)--base:	223,777
Total equipment cost ($)--escalated:	355,252
Purchased Equipment Cost ($):	419,197
Total Capital Investment ($):	729,403
ANNUAL COST INPUTS:	
Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.075
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Electricity	65,867
Overhead	45,530
Taxes, insurance, administrative	72,940
Capital recovery	108,703
Total Annual Cost (without credits)	368,923
Recovery credits	0
Total Annual Cost (with credits)	**368,923**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 9-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	500	-- Freundlich isotherm equation constants for VOC:		
-- Inlet stream temperature (oF):	70	VOC number (enter Table 1 #):		1001
-- Inlet stream pressure (atm):	1		K:	0.597
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)	M:	0.176
-- Inlet VOC flowrate (lb/hr):	3.6	-- Yaws isotherm equation constants:		
-- VOC molecular weight (lb/lb-mole):	90.00	VOC number (enter Table 2 #):		341
-- VOC inlet volume fraction:	5.13E-04		A:	0.81119
-- VOC inlet concentration (ppmv):	513		B:	0.28864
-- VOC inlet partial pressure (psia):	0.0075		C:	-0.02378
-- Required VOC removal (fraction):	0.900			
-- Annual VOC inlet (tons):	15.7			
-- Adsorption time (hr):	16.0			
-- Desorption time (hr):	4.0			
-- Number of adsorbing vessels:	1	10,000 cfm per vessel		
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point		
-- Carbon price ($/lb):	1.25	See Reference 1; for Envirotrol fire-proof carbon, due to ketone presence		
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316		

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2526	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1263	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	453	Equation 1.14
-- Carbon requirement per vessel (lb):	453	
-- Gas flowrate per adsorbing vessel (acfm):	500	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	3.568	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	5.511	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	81.78	Equation 1.24
-- Carbon bed thickness (ft):	1.511	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	3.199	Equation 1.30
-- Ductwork friction losses (in. w.c.):	2.302	See box at right
Total system pressure drop (in. w.c.):	5.500	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	10,838	Equation 1.25
-- Carbon	567	
-- Other equipment (condenser, decanter, etc.)	248,268	
-- Auxiliary equipment (ductwork & condensed liquid tanks	50,000	See References 2 & 3
-- Boiler (and associated equip.) for steam regeneration of c	37,700	See Reference 4
Total equipment cost ($)--base:	252,381	Equation 1.27
Total equipment cost ($)--escalated:	366,812	Apply VAPCCI factor
Purchased Equipment Cost ($):	410,829	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	661,435	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual)

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$

D = duct diameter, ft
u = average duct velocity, fpm

Total straight lengt	500	ft
Diameter:	0.667	ft
Duct velocity:	1431	fpm
Straight duct loss:	2.09	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$

k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
u = average duct velocity, fpm

Number of elbows	5	
Duct velocity:	1431	fpm
Total Elbow loss:	0.21	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 9-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	See Reference 5; this is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	See Reference 7
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	860	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	716	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	75	Equation 1.29
Carbon replacement	255	
Liquid waste disposal	4,263	Assume 90% of steam is condensed
Spent carbon disposal	60	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	66,144	
Capital recovery	98,573	
Total Annual Cost (without credits)	336,040	
Recovery credits	0	
Total Annual Cost (with credits)	**336,040**	

VOC Removed (tpy): 14.1 Cost per ton removed: **23,820**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 9-6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2		from *Chemical Engineering* ma
CEPCI at current date, Jan 2014:	567.7		from *Chemical Engineering* ma

INPUT PARAMETERS

-- Inlet stream flowrate (acfm):	500		
-- Duct velocity (ft/min): [4]		1,431	23.9 ft/sec
-- Duct length (ft): [5]		500	
-- Material of construction: [6]		Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]		1	
-- Duct design: [8]		Circ.-spiral	
-- Cost equation parameters: [9]	a:	2.560	
	b:	0.937	
-- Cost equation form: [10]		1	
-- Control system installation factor: [11]		1.5	
(if no system, enter '0')			
-- Fan-motor combined efficiency (fraction):		0.60	

DESIGN PARAMETERS

-- Number of exhaust fans:	1
-- Duct diameter (in.):	8.0
-- Pressure drop (in. w.c.): [12]	2.092

CAPITAL COSTS

Equipment Cost ($)--base:	8,983
' ' '--escalated:	14,197
Purchased Equipment Cost ($):	15,332
Total Capital Investment per Exhaust Fan($): [13]	22,999
Overall Total Capital Investment($):	**22,999**

ANNUAL COST INPUTS

Operating factor (hours/year):	8760
Electricity price ($/kWhr):	0.075
Annual interest rate (fractional):	0.08
Ductwork economic life (years):	20
Capital recovery factor (system):	0.1019
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	135	0.028
Taxes, insurance, administrative	2,300	0.481
Capital recovery	2,342	0.490
Total Annual Cost	**4,777**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\Rework Tanks - RACT cost analysis.xlsx
* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 10-1. Ranking of VOC Control Technology Options for Liquid Product Loading (to tanker cars and trucks)
Neville Chemical Company, Pittsburgh, Pennsylvania

1a. - Ranking of Technically-Feasible Control Options, by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Reduction [1] Efficiency (%)	Inlet VOC Emissions (tons/year)	VOC Reduction (tons/year)
1.	Thermal Oxidation	98.0	95.0	93.1	18.2	16.9
2.	Catalytic Oxidation	98.0	95.0	93.1	18.2	16.9
3.	Carbon Adsorber	98.0	95.0	93.1	18.2	16.9
4.	Refrigerated Condenser	90.0	95.0	85.5	18.2	15.6
					VOC PTE =	**18.2 tpy**

1b. - Ranking of Annual Control Costs per Ton of VOC Reduced [2]

Ranking	Control Technology	Capital Cost ($)	Capital Recovery Cost ($/year)	Capital Only Control Cost ($/ton/yr)	Total Annualized Cost ($/year)	Overall Total Control Cost ($/ton/yr)
1.	Catalytic Oxidation	199,508	29,630	1,749	218,178	12,876
2.	Thermal Oxidation	277,989	41,429	2,445	227,164	13,407
3.	Carbon Adsorber	662,733	98,767	5,829	341,776	20,171
4.	Refrigerated Condenser	729,403	108,703	6,986	373,700	24,015

[1] Overall reduction based on product of Control efficiency and Capture efficiency

[2] Refer to the following Tables 10-2 through 10-6 for the derivation of the values used in this table

Table10-2. **Total Annual Cost Spreadsheet--Thermal Incinerator**
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		ANNUAL COST INPUTS	
-- Gas flowrate (scfm):	500	Operating factor (hr/yr):	8,760
-- Reference temperature (oF):	77	Operating labor rate ($/hr):	44.00
-- Inlet gas temperature (oF):	70	Maintenance labor rate ($/hr):	44.00
-- Inlet gas density (lb/scf):	0.0739	Operating labor factor (hr/sh):	0.5
-- Primary heat recovery (fraction):	0.5	Maintenance labor factor (hr/sh):	0.5
-- Waste gas heat content (BTU/scf):	14	Electricity price ($/kwh):	0.075
-- Waste gas heat content (BTU/lb):	189	Natural gas price ($/mscf):	10.50
-- Gas heat capacity (BTU/lb-oF):	0.4	Annual interest rate (fraction):	0.08
-- Combustion temperature (oF):	1,400	Control system life (years):	10
-- Preheat temperature (oF):	735	Capital recovery factor:	0.1490
-- Fuel heat of combustion (BTU/lb):	21,502	Taxes, insurance, admin. factor:	0.1
-- Fuel density (lb/ft3):	0.0408	Pressure drop (in. w.c.):	11.0

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.229
(scfm):	5.6
-- Total Gas Flowrate (scfm):	506

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	80,979
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser	50,000
Total Equipment Cost--base:	130,979
Total Equipment Cost--escalated:	205,918
Purchased Equipment Cost ($):	222,391
Total Capital Investment ($):	277,989

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	31,030
Electricity	716
Overhead	45,530
Taxes, insurance, administrative	27,799
Capital recovery	41,429
Total Annual Cost	**222,387**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 10-3. Total Annual Cost Spreadsheet -- Catalytic Incinerator
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1988:	342.5	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS

-- Gas flowrate (scfm):	500
-- Reference temperature (oF):	77
-- Inlet gas temperature (oF):	68
-- Inlet gas density (lb/scf):	0.0739
-- Primary heat recovery (fraction):	0.50
-- Waste gas heat content (BTU/scf):	1.00
-- Waste gas heat content (BTU/lb):	13.53
-- Gas heat capacity (BTU/lb-oF):	0.400
-- Combustion temperature (oF):	850
-- Preheat temperature (oF):	459
-- Fuel heat of combustion (BTU/lb):	21,502
-- Fuel density (lb/ft3):	0.0408

CALCULATED PARAMETERS

-- Auxiliary Fuel Reqrmnt (lb/min):	0.304
(scfm):	7.5
-- Total Gas Flowrate (scfm):	507
-- Catalyst Volume (ft3):	1.0

CALCULATED CAPITAL COSTS

Equipment Costs ($):	
-- Incinerator:	
@ 0 % heat recovery:	0
@ 35 % heat recovery:	0
@ 50 % heat recovery:	39,160
@ 70 % heat recovery:	0
Other equipment (moisture pre-condenser):	50,000
Total Equipment Cost--base:	89,160
Total Equipment Cost--escalated:	147,784
Purchased Equipment Cost ($):	159,606
Total Capital Investment ($):	199,508

ANNUAL COST INPUTS

Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.5
Maintenance labor factor (hr/sh):	0.5
Electricity price ($/kwh):	0.075
Catalyst price ($/ft3):	650
Natural gas price ($/mscf):	10.50
Annual interest rate (fraction):	0.08
Control system life (years):	10
Catalyst life (years):	2
Capital recovery factor (system):	0.1490
Capital recovery factor (catalyst):	0.5608
Taxes, insurance, admin. factor:	0.10
Pressure drop (in. w.c.):	13.0

CALCULATED ANNUAL COSTS

Item	Cost ($/yr
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Natural gas	41,172
Electricity	848
Catalyst replacement	387
Overhead	45,530
Taxes, insurance, administrative	19,951
Capital recovery	29,630
Total Annual Cost	**213,401**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 10-4. Total Annual Cost Spreadsheet --Refrigerated Condenser
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:		
-- Inlet stream flowrate (scfm):		500
-- Inlet stream temperature (oF):		70
-- VOC to be condensed:		Toluene
-- VOC inlet volume fraction:		0.00012
-- Required VOC removal (fraction):		0.900
-- Antoine equation constants for VOC: [4]		
	A:	6.955
	B:	1344.800
	C:	219.480
-- VOC heat of condensation (BTU/lb-mole):		14270
-- VOC heat capacity (BTU/lb-mole-oF):		37.580
-- Coolant specific heat (BTU/lb-oF):		0.650
-- VOC boiling point (oF):		231
-- VOC critical temperature (oR):		1065
-- VOC molecular weight (lb/lb-mole):		92.1
-- VOC condensate density (lb/gal):		7.20
-- Air heat capacity (BTU/lb-mole-oF):		6.95

DESIGN PARAMETERS:	
-- Outlet VOC partial pressure (mm Hg):	0.009
-- Condensation temperature, Tc (oF):	-94.0
-- VOC flowrate in (lb-moles/hr):	0.01
-- VOC flowrate out (lb-moles/hr):	0.001
-- VOC condensed (lb-moles/hr):	0.008
(lb/hr):	0.8
-- VOC heat of condensation @ Tc (BTU/lb-mole):	18,098
-- Enthalpy change, condensed VOC (BTU/hr):	201
-- Enthalpy change, uncondensed VOC (BTU/hr):	6
-- Enthalpy change, air (BTU/hr):	87,194
-- Condenser heat load (BTU/hr):	87,400
-- Heat transfer coefficient, U (BTU/hr-ft2-oF):	20
-- Log-mean temperature difference (oF):	59.7
-- Condenser surface area (ft2):	73.2
-- Coolant flowrate (lb/hr):	5,378
-- Refrigeration capacity (tons):	7.28
-- Electricity requirement (kW/ton):	11.7

CAPITAL COSTS	
Equipment Costs ($):	
-- Refrigeration unit/single-stage (< 10 tons):	136,005
-- Refrigeration unit/single-stage (> 10 tons):	0
-- Multistage refrigeration unit:	165,550
-- VOC condenser:	6,265
-- Recovery tank:	1,962
-- Auxiliaries (ductwork, etc.):	50,000
Total equipment cost ($)--base:	223,777
Total equipment cost ($)--escalated:	355,252
Purchased Equipment Cost ($):	419,197
Total Capital Investment ($):	729,403

ANNUAL COST INPUTS:	
Operating factor (hr/yr):	8760
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.075
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.10

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	24,090
Supervisory labor	3,614
Maintenance labor	24,090
Maintenance materials	24,090
Electricity	65,867
Overhead	45,530
Taxes, insurance, administrative	72,940
Capital recovery	108,703
Total Annual Cost (without credits)	368,923
Recovery credits	0
Total Annual Cost (with credits)	**368,923**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Table 10-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS:

-- Inlet stream flowrate (acfm):	500	-- Freundlich isotherm equation constants for VOC:			
-- Inlet stream temperature (oF):	70	VOC number (enter Table 1 #):			1001
-- Inlet stream pressure (atm):	1			K:	0.597
-- VOC to be condensed:	Toluene	(no data for alpha-pinene)		M:	0.176
-- Inlet VOC flowrate (lb/hr):	3.9	-- Yaws isotherm equation constants:			
-- VOC molecular weight (lb/lb-mole):	90.00	VOC number (enter Table 2 #):			341
-- VOC inlet volume fraction:	5.66E-04			A:	0.81119
-- VOC inlet concentration (ppmv):	566			B:	0.28864
-- VOC inlet partial pressure (psia):	0.0083			C:	-0.02378
-- Required VOC removal (fraction):	0.900				
-- Annual VOC inlet (tons):	17.3				
-- Adsorption time (hr):	16.0				
-- Desorption time (hr):	4.0				
-- Number of adsorbing vessels:	1	10,000 cfm per vessel			
-- Superficial carbon bed velocity (ft/min):	50	Normal range is 10 fpm to 100 fpm; picked mid-point			
-- Carbon price ($/lb):	1.25	See Reference 1; for Envirotrol fire-proof carbon, due to ketone presence			
-- Material of construction: [4]	1.3	Table 1.2; Stainless steel 316			

DESIGN PARAMETERS:

-- Carbon equil. capacity-- (lb VOC/lb carbon):	0.2570	Based on Freundlich isotherm equation
-- Carbon working capacity (lb VOC/lb carbon):	0.1285	50% of equilibrium capacity
-- Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
-- Total number of vessels:	1	
-- Carbon requirement, total (lb):	492	Equation 1.14
-- Carbon requirement per vessel (lb):	492	
-- Gas flowrate per adsorbing vessel (acfm):	500	Vertical vessel, since flow under 9000 cfm
-- Adsorber vessel diameter (ft):	3.568	Equation 1.18 or 1.21, depending if vertical or horizontal vessel
-- Adsorber vessel length (ft):	5.639	Equation 1.19 or 1.23, depending if vertical or horizontal vessel
-- Adsorber vessel surface area (ft2):	83.21	Equation 1.24
-- Carbon bed thickness (ft):	1.639	Equation 1.31
-- Total pressure drop across all carbon beds (in. w.c.): [5]	3.468	Equation 1.30
-- Ductwork friction losses (in. w.c.):	2.302	See box at right
Total system pressure drop (in. w.c.):	5.770	

CAPITAL COSTS:

Equipment Costs ($):		
-- Adsorber vessels	10,985	Equation 1.25
-- Carbon	615	
-- Other equipment (condenser, decanter, etc.)	248,659	
-- Auxiliary equipment (ductwork & condensed liquid tanks	50,000	See References 2 & 3
-- Boiler (and associated equip.) for steam regeneration of c	37,700	See Reference 4
Total equipment cost ($)--base:	252,876	Equation 1.27
Total equipment cost ($)--escalated:	367,531	Apply VAPCCI factor
Purchased Equipment Cost ($):	411,635	Table 1.3 (with tax at 7%)
Total Capital Investment ($):	662,733	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual):

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$
   D = duct diameter, ft
   u = average duct velocity, fpm

Total straight lengt	500	ft
Diameter:	0.667	ft
Duct velocity:	1431	fpm
Straight duct loss:	2.09	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$
   k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)
   u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	1431	fpm
Total Elbow loss:	0.21	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 10-5. Total Annual Cost Spreadsheet -- Carbon Adsorption
Neville Chemical Company, Pittsburgh, Pennsylvania

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8,760	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	
Maintenance labor factor (hr/sh):	0.50	
Electricity price ($/kWhr):	0.075	
Natural gas price ($/mcf):	10.50	
Recovered VOC value ($/lb):	0.00	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	7.25	
Cooling water price ($/1000 gal):	0.20	
Liquid waste disposal ($/gallon):	0.40	See Reference 5; this is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	0.40	See Reference 7
Carbon replacement labor ($/lb):	0.10	
Overhead rate (fraction):	0.6	
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	3	Lower than typical life, due to presence of ketones (Section 1.4.1.4, p. 1-28)
Capital recovery factor (carbon):	0.3880	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS:

Item	Cost ($/yr)	
Operating labor	24,090	
Supervisory labor	3,614	
Maintenance labor	24,090	
Maintenance materials	24,090	
Electricity	948	Equations 1.32 and 1.34
Natural gas	43,680	Based on 4 mcf/hr, 4 hr/day, 260 days/yr
Steam	790	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	83	Equation 1.29
Carbon replacement	277	
Liquid waste disposal	4,702	Assume 90% of steam is condensed
Spent carbon disposal	66	Total carbon mass, divided by life, times cost per pound
Overhead	45,530	
Taxes, insurance, administrative	66,273	
Capital recovery	98,767	
Total Annual Cost (without credits)	336,999	
Recovery credits	0	
Total Annual Cost (with credits)	**336,999**	

VOC Removed (tpy): 15.6 Cost per ton removed: **21,657**

Table 10-6. Total Annual Cost Spreadsheet--Straight Ductwork For Routing To Controls
Neville Chemical Company, Pittsburgh, Pennsylvania

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine
CEPCI at current date, Jan 2014:	567.7	from *Chemical Engineering* magazine

INPUT PARAMETERS		
-- Inlet stream flowrate (acfm):	500	
-- Duct velocity (ft/min): [4]	1,431	23.9 ft/sec
-- Duct length (ft): [5]	500	
-- Material of construction: [6]	Galv. CS sh.	
-- Insulation thickness (in.): (text input) [7]	1	
-- Duct design: [8]	Circ.-spiral	
-- Cost equation parameters: [9]	2.560	a:
	0.937	b:
-- Cost equation form: [10]	1	
-- Control system installation factor: [11]	1.5	
(if no system, enter '0')		
-- Fan-motor combined efficiency (fraction):	0.60	
DESIGN PARAMETERS		
-- Number of exhaust fans:	1	
-- Duct diameter (in.):	8.0	
-- Pressure drop (in. w.c.): [12]	2.092	
CAPITAL COSTS		
Equipment Cost ($)--base:	8,983	
' ' ' --escalated:	14,197	
Purchased Equipment Cost ($):	15,332	
Total Capital Investment per Exhaust Fan($): [13]	22,999	
Overall Total Capital Investment($):	**22,999**	
ANNUAL COST INPUTS		
Operating factor (hours/year):	8760	
Electricity price ($/kWhr):	0.075	
Annual interest rate (fractional):	0.08	
Ductwork economic life (years):	20	
Capital recovery factor (system):	0.1019	
Taxes, insurance, admin. factor:	0.10	

ANNUAL COSTS

Item	Cost ($/yr)	Wt.Fact.
Electricity	135	0.028
Taxes, insurance, administrative	2,300	0.481
Capital recovery	2,342	0.490
Total Annual Cost	**4,777**	**1.000**

Y:\Neville Chemical\13-367 - RACT Evaluation\2014 RACT Evaluation\Cost Tables\Product Loading - RACT cost analysis.xlsx

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

ALLEGHENY COUNTY HEALTH DEPARTMENT

IN RE:

Neville Chemical Company 2800 Neville Road Neville Township Allegheny County	))))	**PLAN APPROVAL ORDER** **AND AGREEMENT NO. 230** **UPON CONSENT**

AND NOW, this 13th day of December, 1996,

WHEREAS, the Allegheny County Health Department, (hereafter referred to as "Department"), has determined that Neville, Chemical Company, (hereafter referred to as "Neville"), 2800 Neville Road, Neville Township, Allegheny County, PA, is the owner and operator of a synthetic hydrocarbon resin manufacturing facility at 2800 Neville Road, Neville Township, Allegheny County, PA 15225 (hereafter referred to as "the facility"), and is a major stationary source of volatile organic compounds and oxides of nitrogen emissions (hereafter referred to as "VOCs & NO_x") as defined in Section 2101.20 of Article XXI, Rules and Regulations of the Allegheny County Health Department, Air Pollution Control (hereafter referred to as "Article XXI"); and

WHEREAS, the Department has determined that Section 2105.06. of Article XXI, entitled "Major Sources of NO_x & VOCs" is applicable to Neville's operations at this facility; and

WHEREAS, Neville has been in full compliance at all relevant times with all relevant requirements of Section 2105.06 of

Article XXI; and

WHEREAS, Neville has timely submitted to the Department all of the documents required by Section 2105.06.b of Article XXI (hereafter referred to as "the proposal"); and

WHEREAS, the Department has determined the proposal to be complete; and

WHEREAS, the Department has further determined, after review of the submitted proposal, that it constitutes Reasonably Available Control Technology (hereafter referred to as "RACT") for control of VOC and NO_x emissions from the facility; and

WHEREAS, The Department and Neville desire to memorialize the details of the proposal by entry of this RACT Plan Approval Order and Agreement Upon Consent; and

WHEREAS, pursuant to Section 2109.03 of Article XXI, the Director of the Allegheny County Health Department or his designated representative may issue orders as are necessary to aid in the enforcement of the provisions of Article XXI, notwithstanding the absence of any violation of any provision of Article XXI and of any condition causing, contributing to, or creating a danger of air pollution;

NOW, THEREFORE, this day first written above, the Department, pursuant to Section 2109.03 of Article XXI, and upon agreement of the parties as hereinafter set forth, hereby issues the following RACT Plan Approval Order and Agreement upon Consent:

I. ORDER

1.1. All existing VOC and NO_x emission units and control equipment shall be properly operated and maintained at all times according to good engineering practices at all times, with the exception of activities to mitigate emergeny conditions.

1.2. Neville shall at no time operate the C-5 Process while generating VOC emissions unless all such emissions are processed through refrigerated condensers. Such condensers shall be properly maintained and operated at all times while treating VOC emissions, with the exception of activities to mitigate emergency conditions, with an average monthly coolant inlet temperature no greater than 60^0F.

1.3. Neville shall at no time operate the following process equipment while generating VOC emissions unless all such emissions are processed through water-cooled condensers. Such condensers shall be properly maintained and operated at all times while treating VOC emissions with the exception of activities to mitigate emergency conditions, with an average monthly inlet coolant temperature no greater than 90°F:

a. Resin Rework Tanks

b. Screen Cleaning Unit

1.4. The Continuous Polymerization Unit No. 20 shall not operate while generating VOC emissions, unless such emissions are treated by water cooled and refrigerated condensers, with the exception of activities to mitigate emergency conditions. The water cooled and refrigerated condensers shall be properly operated and maintained with average monthly coolant inlet temperatures not exceeding 90°F and 60°F, respectively.

1.5. The Packaging Centers No. 2, 3 and 5 shall be properly maintained and operated at all times, with the exception of activities to mitigate emergency conditions. Proper operation shall include the use of covers on all kettles after the initial kettle charging and during process operations.

1.6. Neville shall perform an annual adjustment or "tuneup" on Boilers No. 4, 6 and 7 once every twelve (12) months, (hereafter referred to as "annual tune-up"). Such annual tune-up shall include:

a. Inspection, adjustment, cleaning, or necessary replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation; and

b. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NO_x, and to the extent practicable minimize emissions of carbon monoxide (hereafter referred as "CO"; and

c. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation.

Neville shall maintain the following records of the annual tune-up for the subject equipment:

a. the date of the annual tune-up;

b. the name of the service company and/or individuals performing the annual tune-up;

c. the operating rate or load after the annual tune-up;

d. the CO and NO_x emission rate after the annual tune-up; and

e. the excess oxygen rate after the annual tune-up.

1.7. Neville shall maintain records of fuel type and usage for each combustion unit including certifications from fuel suppliers for all types of liquid fuel. For each shipment of distillate oils number 1 or 2, a certification from the fuel supplier that the fuel complies with ASTM D396-78 "Standard Specifications for Fuel Oils" is required. For residual fuels, minimum record keeping includes a certification from the fuel supplier of the nitrogen content of the fuel, and identification of the sampling method and sampling protocol. For fuels that are co-products of the facility's processes, minimum record keeping shall include the nitrogen content of the fuel and identification of the sampling method and protocol.

1.8. Neville shall conduct a Leak Detection and Repair (LDAR) program at the facility at all times when facility operation may result in fugitive emissions of VOCs. Such LDAR program shall consist of the following:

a. Components applicable to the LDAR program shall be all accessible valves and pumps in light oil service.

b. The subject components shall be monitored visually and with a VOC analyzer and shall be tagged or labeled using Neville's component identification system.

c. Initially, each non difficult/unsafe subject component shall be monitored on a monthly basis. Any component for which a leak is not detected for two successive months shall be monitored on a quarterly basis. Any component for which a leak is not detected for two successive quarters shall then be monitored on an annual basis. Difficult/unsafe components shall be monitored annually.

d. Visual leaks are determined if the component is visually leaking or dripping product from the component. Leaks determined using the analytical test method are an instrument reading exceeding 10,000 parts per million, by volume.

e. If a component is designated as leaking by either the visual or analytical method, the component will not be designated as a "leaker", instead, 1) a first attempt of repair of the component will be performed for the purposes of stopping or reducing leakage, using best available practices, until the component can achieve non-leaking status. 2) Should this attempt fail, the component will be repaired or replaced and the monitoring will revert to the previous inspection schedule. Two successful monitoring events will allow the new or repaired component to again move up the progression of monthly, quarterly and annual inspection frequency.

f. Recordkeeping of labeled or tagged monitoring components will be maintained, and include the type of component with available specifications, dates of monitoring, instrument readings, and location of the component.

1.9. Neville shall maintain all appropriate records to demonstrate compliance with the requirements of both Section 2105.06 Article XXI and this Order. Such records shall provide sufficient data to clearly demonstrate that all requirements of both Section 2105.06 of Article XXI and this Order are being met.

1.10. The facility shall retain all records required by both Section 2105.06 of Article XXI and this Order for the facility for at least 2 years and shall make the same available to the Department upon request.

II. AGREEMENT

The foregoing Order shall be enforced in accordance with and is subject to the following agreement of the parties, to wit:

2.1. The contents of this Order shall be submitted to the US EPA as a revision to the Commonwealth of Pennsylvania's SIP.

2.2. Failure to comply with any portion of this Order or Agreement is a violation of Article XXI that may subject Neville to civil proceedings, including injunctive relief, by the Department.

2.3. This Order does not, in any way, preclude, limit or otherwise affect any other remedies available to the Department for violations of this Plan Approval Order and Agreement or of Article XXI, including, but not limited to, actions to require the installation of additional pollution control equipment and the implementation of additional corrective operating practices.

2.4. Neville hereby consents to the foregoing Order and hereby knowingly waives all rights to appeal said Order, and the undersigned represents that he is authorized to consent to the Order and to enter into this Agreement on behalf of Neville.

2.5. Neville acknowledges and understands that the purpose of this Agreement is to establish RACT for the control of emissions of VOCs from this facility. Neville further acknowledges and understands the possibility that the U.S. EPA may decide to not accept the Agreement portion of the Plan Approval Order and Agreement by Consent as a revision to the Commonwealth of Pennsylvania's SIP.

NO SIP

IN WITNESS WHEREOF, and intending to be legally bound, the parties hereby consent to all of the terms and conditions of the foregoing RACT Plan Approval Order and Agreement as of the date of the above written.

NEVILLE CHEMICAL COMPANY

By: Z V Osiecki
(signature)

Print or type Name: **Z. V. Osiecki**

Title: **V.P. - Plant Engineering & Environmental Services**

Date: **December 13, 1996**

ALLEGHENY COUNTY HEALTH DEPARTMENT

By: Bruce Dixon 12/19/96

Bruce W. Dixon, M.D., Director
Allegheny County Health Department

and By: Thomas J. Puzniak

Thomas J. Puzniak, Manager, Engineering
Air Quality Program

ALLEGHENY COUNTY HEALTH DEPARTMENT

AIR QUALITY PROGRAM
301 39th Street, Bldg. #7
Pittsburgh, PA 15201-1811

Title V Operating Permit
& Federally Enforceable State Operating Permit

Issued To:	**Neville Chemical Company**	**ACHD Permit #:**	**0060c**
Facility:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496	**Date of Issuance:**	**September 28, 2015**
		Date Amended:	**April 23, 2020**
		Expiration Date:	**September 27, 2020**
		Renewal Date:	**March 28, 2020**

Issued By: Digitally signed by JoAnn Truchan, PE Date: 2020.04.23 11:55:53 -04'00'
JoAnn Truchan, P.E.
Section Chief, Engineering

Prepared By: H. Gurvich Digitally signed by Helen Gurvich Date: 2020.04.23 11:53:08 -04'00'
Helen Gurvich
Air Quality Engineer

TABLE OF CONTENTS

I. CONTACT INFORMATION ____ 4
II. FACILITY DESCRIPTION ____ 5
A. Process Flow Diagrams ____ 12
III. GENERAL CONDITIONS - Major Source ____ 17
IV. SITE LEVEL TERMS AND CONDITIONS ____ 27
V. EMISSION UNIT LEVEL TERMS AND CONDITIONS ____ 40
A. Process P001: Heat Polymerization Stills #15, #16, #18, #19, & Unit 43 ____ 40
B. Process P006: Unit 20 ____ 44
C. Process P007: Unit 21 ____ 47
D. Processes P008 & P009: Continuous Stills #3 and #4 ____ 50
E. Process P011: No. 2 Packaging Center ____ 52
F. Process P012: No. 3 Packaging Center ____ 55
G. Process P013: No. 5 Packaging Center ____ 59
H. Process P014: Wastewater Collection, Conveyance, and Treatment ____ 62
I. Process P015: Resin Rework Tanks ____ 65
J. Process P016: Final Product Loading ____ 68
K. B001, B002, B003, B004, & B015: Heat Poly Still Process Heaters ____ 70
L. B006 & B007: Continuous Still Process Heaters ____ 73
M. B009, B010, & B011: Packaging Center Heaters ____ 75
N. B013: No. 6 Boiler ____ 77
O. B012: No. 8 Boiler ____ 80
P. D001-D012: Storage Tanks ____ 82
VI. MISCELLANEOUS ____ 86
A. Process P017: Groundwater Remediation ____ 86
B. Emergency Generators ____ 92
C. Sources of Minor Significance ____ 94
VII. ALTERNATIVE OPERATING SCENARIOS ____ 95
A. Process P006/P007 (Alternative): Unit 20 and Unit 21 ____ 95
VIII. EMISSIONS LIMITATIONS SUMMARY ____ 98

AMENDMENTS:

DATE	***SECTION***	
05/17/16	I	Revised facility contact information
	II, Table II-1	Changed control device on Boiler No. 8 to “induced” flue gas recirculation; changed throughput on No. 3 Packaging Center Belt from 78.8 mmlbs/yr; added footnote to address multiple-use tanks
	IV.31.a.2)	Added clarification that all components must be monitored every three (3) years
	V.F	Changed “flaking belt” to “pastillating belt”; V.F.1.c, revised emissions for 48 mmlbs/yr throughput instead of 78.8 mmlbs/yr; V.F.2.a, changed testing date to 18 months from permit issuance from 12 months; V.F.2.a.5), removed HAP testing; V.F.2.b, added one-time VOC test and testing of VOC & HAP if throughput exceeds 24 mmlbs/yr; V.F.4.a.3), added recordkeeping of material throughput on belt
	V.G.5.b.2)	Corrected cross-reference
	V.H	V.H.4.c & 5.b.5), deleted erroneous cross-references
	V.I.2.b	Removed requirement to test for HAP
	V.L.1.a	Added condition to require reactivation plan for No. 4 Continuous Still Heater
	V.N	V.N.1.b, changed natural gas limit from 47,050 scf/hr and 412.2 mmscf/yr to 28,922 scf/hr and 253.4 mmscf/yr; V.N.2, corrected citations; V.N.2.a, revised to require testing only if natural gas combustion exceeds 206 mmscf/yr
	V.O	V.O.1.b, changed natural gas limit from 28,922 scf/hr and 253.4 mmscf/yr to 47,050 scf/hr and 412.2 mmscf/yr
	V.P	V.P.1.b, revised Table V-P-1 to correct limits for D009; V.P.4.e, revised condition to require calculation of rolling 12-month emissions only if resin former throughput exceeds 18.7 mmgal in the previous 12-month period; V.P.5.c, added condition to require permittee to provide 12-month total emissions within 30 days upon request by the Department
10/02/17	II, Table II-1	Changed control device on D009, Tanks 8501-8506 to “none”
	V.P	Removed controls for tanks #8501-8506 (included under D009).
	V.P.1.e	Removed old condition about Vapor Balancing System and added new condition to limit the quantity of material transferred into tanks #8501-8506 to no more than 12 MM gal/yr for any 12 month period.
	V.P.3.a	Removed requirement for Vapor Balancing System.
04/23/20	IV.30, V, VI, VII	Incorporated case-by-case RACT citations

I. CONTACT INFORMATION

Facility Location:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496
Permittee/Owner:	**Neville Chemical Company** 2800 Neville Road Neville Township, PA 15225-1496
Permittee/Operator: **(if not Owner)**	**same as owner**
Responsible Official:	**Mr. John H. Ferguson**
Title:	Vice-President & Plant Manager, Neville Island
Company:	Neville Chemical Company
Address:	2800 Neville Road Neville Township, PA 15225-1496
Telephone Number:	(412) 777-4253
Fax Number:	(412) 777-6729
Facility Contact:	**Mr. Daniel D. Kokoski**
Title:	Manager – Environmental
Telephone Number:	(412) 777-4201
Fax Number:	(412) 777-6729
E-mail Address:	dkokoski@nevchem.com

AGENCY ADDRESSES:

ACHD Engineer:	**Ms. Helen Gurvich**
Title:	Air Quality Engineer III
Telephone Number:	(412) 578-8105
Fax Number:	(412) 578-8144
E-mail Address:	helen.gurvich@alleghenycounty.us
ACHD Contact:	**Chief Engineer** **Allegheny County Health Department** Air Quality Program 301 39th Street, Building #7 Pittsburgh, PA 15201-1811
EPA Contact:	**Enforcement Programs Section (3AP12)** **USEPA Region III** 1650 Arch Street Philadelphia, PA 19103-2029

II. FACILITY DESCRIPTION

[This section is provided for informational purposes only and is not intended to be an applicable requirement.]

Neville Chemical Company, located at 2800 Neville Road, Pittsburgh (Neville Township), manufactures synthetic hydrocarbon resins, plasticizers, and plasticizing oils. The facility also operates a groundwater remediation system and wastewater treatment system. Also located at the facility are three (3) resin flaking and packaging centers, a 49.4 MMBtu/hr and a 29.5 MMBtu/hr natural gas-fired boiler. The facility is a major source of volatile organic compounds (VOCs); and a minor source of particulate matter (PM), particulate matter <10 µm in diameter (PM_{10}), particulate matter <2.5 µm in diameter ($PM_{2.5}$), nitrogen oxides (NO_X), sulfur oxides (SO_X), and hazardous air pollutants (HAPs), as defined in §2102.20 of Article XXI.

The emission units regulated by this permit are summarized in Table II-1:

TABLE II-1
Emission Unit Identification

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
Heat Polymerization Stills					
P001	**Heat Polymerization Still - #15**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	18,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	2 – Ejector Vents	thermal oxidizer			
	Decanter	thermal oxidizer			
P001	**Heat Polymerization Still - #16**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	21,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #18 & #19)	thermal oxidizer			
P001	**Heat Polymerization Still - #18**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	26,280,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #16 & #19)	thermal oxidizer			
P001	**Heat Polymerization Still - #19**				

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Reactor	18.9 MMBtu/hr thermal oxidizer	25,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	Vacuum Pump	thermal oxidizer			
	Decanter (shared with #16 & #18)	thermal oxidizer			
P001	**Heat Polymerization Still - #43**				
	Reactor	18.9 MMBtu/hr thermal oxidizer	25,000,000 lb/yr	resin-forming feedstock, additives	S101
	2 – Distillate Receivers	thermal oxidizer			
	2 – Ejector Vents	thermal oxidizer			
	Decanter	thermal oxidizer			
Continuous Stills					
P008	**No. 3 Continuous Still**				
	Tray Tower	none	67,200,000 lb/yr	polyoil, resin-forming feedstock, additives	--
	Distillate Condenser	none			--
	Decanter	none			S026
	Batch/Flush Tank	none			--
	Sidestream Oil Tank (T-85)	none			--
P009	**No. 4 Continuous Still**				
	Tray Tower	none	219,800,000 lb/yr	polyoil, resin-forming feedstock, additives	--
	Distillate Condenser	none			--
	Decanter	none			S028
	Vapor Surge Tank	none			--
Catalytic Resin and Polyoil Neutralization					
P006	**Unit 20**				
	Reactor	packed bed scrubber	66,600,000 lb/yr	ethylene-cracking products, resin-forming feedstock, additives	S020, S021
	2 – Mix Tanks	none			
	2 – Decanters	none			
	Holding Tank	packed bed scrubber			

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
P007	**Unit 21**				
	Reactor	none	89,400,000 lb/yr	ethylene-cracking products, resin-forming feedstock, additives	
	4 – Holding Towers	packed bed scrubber			
	Final Holding Tank	packed bed scrubber			
	3 – Aqueous Treaters	none			S025a, b, c
Flaking and Packaging					
P011	**No. 2 Packaging Center**				
	7 – Drain Kettles	none	12,500 lb/hr 86,700,000 lb/yr	liquid hydrocarbon resins	S042-S048
	Flaking Belt	none		liquid hydrocarbon resins	S050a
	Packaging Station	fabric filter		solid flaked hydrocarbon resins	S051
P012	**No. 3 Packaging Center**				
	7 – Drain Kettles	none	122,600,000 lb/yr	liquid hydrocarbon resins	S054-S060
	Flaking Belt	none	48,000,000 lb/yr	liquid hydrocarbon resins	S061a, b, c
	Packaging Station	fabric filter	122,600,000 lb/yr	solid flaked hydrocarbon resins	S062
	Pouring Station	none	122,600,000 lb/yr	liquid hydrocarbon resins	S063
P013	**No. 5 Packaging Center**				
	3 – Drain Kettles	none	78,800,000 lb/yr	liquid hydrocarbon resins	S065-S067
	Flaking Belt	none		liquid hydrocarbon resins	S068a, b, c
	Packaging Station	fabric filter		solid flaked hydrocarbon resins	S069
Other Processes					
P015	**Resin Rework Tanks**				
	Resin Rework Tanks, N2 and N4	condenser	1,800,000 gal/yr	resins, rosins, distillate oils	--
	Distillate Receiver	none		resins, rosins, distillate oils	S079
P016	**Final Product Loading**				
	LX-830 Fuel Oil Barge Loading	none	6,000,000 gal/yr	petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Final Product Tankcar & Tankwagon Loading	none	24,300,000 gal/yr	petroleum hydrocarbon resins, distillate fuel oils, distillate oils	--
P017	**Groundwater Remediation System**				
	7 – Groundwater Wells	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	7 – Oil Recovery Wells	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	Number 2 Drywell pump and Treat System	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
	Old Number 8 Water Well Pump and Treat System	none	165,000 gal/yr (recovered oil)	groundwater, recovered oils	--
P014	**Wastewater Collection, Conveyance, and Treatment**				
	3 – Surge Tanks (#5001, #5251, #1004)	none	105,000,000 gal/yr (total for system)	wastewater	--
	3 – Batch Tanks (#2011, #2012, #2013)	none		wastewater	S071-S073
	Equalization Tank (#5002)	none		wastewater	
	2 – Biological Treatment / Aeration Tanks (TA-2, TA-3)	none		wastewater	S074-S075
	2 – Clarifier Tanks (TA-4, TA-5)	none		wastewater	
	Effluent Tank (TA-7)	none		wastewater	S076
	Sludge Tank (#2010)	none		wastewater	S077
	Rotary Vacuum Filter	vented to No. 6 Boiler		wastewater	
	Oil/Water Separator	none		wastewater	S078
	Aerobic Digester Tank (TA-6)	none		wastewater	S078a
	Still Process Heaters				
B001	No. 15 Still Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S001
B002	No. 16 Still Process Heater	none	6.1 MMBtu/hr	natural gas, liquid propane	S006
B003	No. 18 Still Process Heater	none	7.21 MMBtu/hr	natural gas, liquid propane	S009
B004	No. 19 Still Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S012
B015	Unit 43 Process Heater	none	7.5 MMBtu/hr	natural gas, liquid propane	S104
B006	No. 3 Continuous Still Process Heater	none	5.25 MMBtu/hr	natural gas, liquid propane	S027
B007	No. 4 Continuous Still Process Heater	none	10.5 MMBtu/hr	natural gas, liquid propane	S029

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
Packaging Center Heaters					
B009	No. 2 Packaging Center Heater	none	5.0 MMBtu/hr	natural gas, liquid propane	S053
B010	No. 3 Packaging Center Heater	none	3.91 MMBtu/hr	natural gas, liquid propane	S064
B011	No. 5 Packaging Center Heater	none	3.0 MMBtu/hr	natural gas, liquid propane	S070
Boilers and Generators					
B013	No. 6 Boiler	none	49.4 MMBtu/hr	natural gas	S099
B012	No. 8 Boiler	low-NO_X burners, induced flue gas recirc.	29.5 MMBtu/hr	natural gas	S098
--	8 - Emergency Generators	none		natural gas	--
Storage Tanks					
D001	1001-1002, 1016-1017	none	101,148 gal. ea.	Catalytic & Misc. Polymer Oil	--
D001	2101	none	215,777 gal.	Catalytic & Misc. Polymer Oil	--
D001	2102	none	214,944 gal.	Catalytic & Misc. Polymer Oil	--
D002	9	none	2,477 gal.	Distillates	--
D002	11-12	none	19,320 gal. ea.	Distillates	--
D002	13-14	none	20,305 gal. ea.	Distillates	--
D002	69	none	9,728 gal.	Distillates	--
D002	85 *(part of No. 3 Continuous Still, P008)*	none	3,900 gal.	Distillates	--
D002	172	none	16,900 gal.	Distillates	--
D002	178-179	none	16,120 gal. ea.	Distillates	--
D002	211-212	none	20,078 gal. ea.	Distillates	--
D002	273-278	none	25,974 gal. ea.	Distillates	--
D002	308-311, 314-315	none	30,050 gal. ea.	Distillates	--
D002	601	none	60,918 gal.	Distillates	--
D002	2108	none	217,334 gal.	Distillates	--
D002	3 Still Wash Tank	none	3,900 gal.	Distillates	--
D003	176-177	none	16,120 gal. ea.	Heat Poly Charge Stock	--
D003	205-206	none	20,160 gal. ea.	Heat Poly Charge Stock	--
D003	1014	none	100,674 gal.	Heat Poly Charge Stock	--

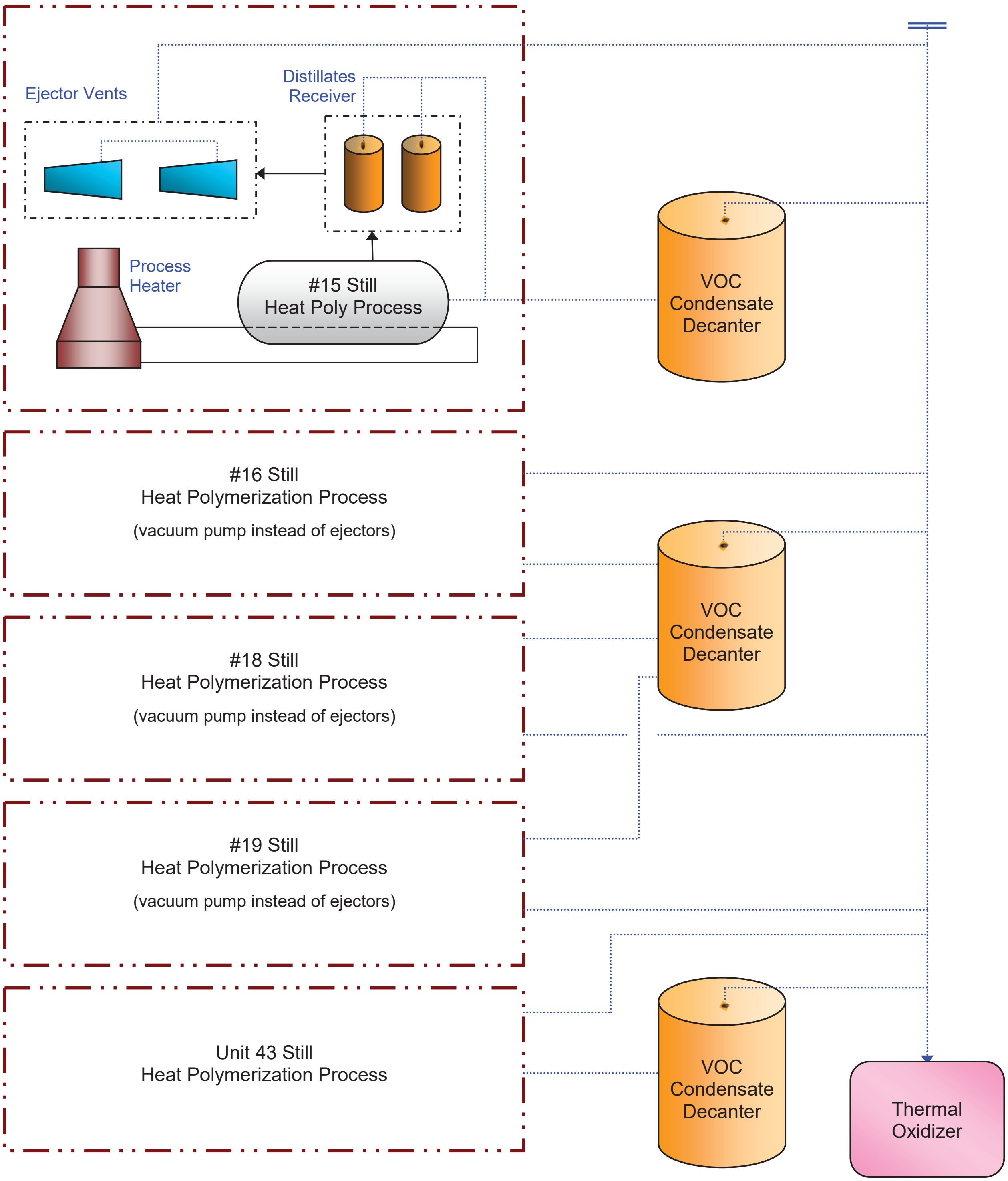
I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
D003	1018-1019	none	99,309 gal. ea.	Heat Poly Charge Stock	--
D003	2104, 2107, 2109	none	217,334 gal. ea.	Heat Poly Charge Stock	--
D003	1015	none	101,148 gal.	Heat Poly Charge Stock	--
D004	80	none	15,100 gal.	LX-1144 Charge Stock	--
D005	TA-13, TA-14	none	550 gal. ea.	Misc. – Water Treatment	--
D005	TA-15	none	1,050 gal.	Misc. – Water Treatment	--
D005	307	none	30,050 gal.	Misc. – Alpha Methylstyrene	--
D005	76	none	7,614 gal.	Misc. – BHT	--
D005	60SC	none	6,016 gal.	Misc. – Diesel Fuel	--
D005	147	none	500 gal.	Misc. – Mineral Spirits	--
D005	175	none	20,347 gal.	Misc. – Caustic	--
D005	9 Agitator	none	4,852 gal.	Misc. – Emulsion Breaker	--
D005	5003*	vent condenser	500,000 gal.	Misc. – Piperylene, Resin Former, Distillates	--
D006	1, 2	none	19,320 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D006	4	none	22,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	10	none	20,850 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	68	none	9,728 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	81	none	10,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	100	none	11,025 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	102	none	10,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	108	none	10,307 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	112	none	9,743 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	145	none	2,000 gal.	Naphthenic/Ink/ Vegetable Oil	--
D006	201-204	none	20,082 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D006	301-303	none	30,050 gal. ea.	Naphthenic/Ink/ Vegetable Oil	--
D007	82-83	none	10,000 gal. ea.	NEVCHEM LR	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
D007	1005	none	101,516 gal.	NEVCHEM LR	--
D008	1008	none	100,989 gal.	Recovered Oil	
D009	1012-1013	none	100,674 gal. ea.	Resin Former	--
D009	8501-8506*	none	850,000 gal. ea.	Resin Former, Distillates	--
D009	6301-6302*	none	630,000 gal. ea.	Resin Former, Distillate	--
D010	93-94	none	28,201 gal. ea.	Resin Solutions	--
D010	135	none	2,010 gal.	Resin Solutions	--
D010	304-305, 312-313, 316-317	none	30,050 gal. ea.	Resin Solutions	--
D010	320	none	22,438 gal.	Resin Solutions	--
D010	330	none	30,913 gal.	Resin Solutions	--
D010	331-334	none	30,000 gal. ea.	Resin Solutions	--
D011	252	none	24,052 gal.	Unit 20 Feed Blend	--
D011	271-272	none	25,974 gal. ea.	Unit 20 Feed Blend	--
D012	2105-2106	none	217,334 gal. ea.	Unit 21 Feed Blend	--
Miscellaneous Sources					
F001	Roads and Vehicles	none	n/a	n/a	--
G001	Hydrolaser Water Blasting	none		pressurized water	--
G002	Parts Washing	none	2,500 gal/yr	degreasing materials	--
G003	R&D Laboratory Hoods	none			
G004	Tank Cleaning and Painting	none	2,000 gal/yr	sandblasting agents, primer, coatings	--

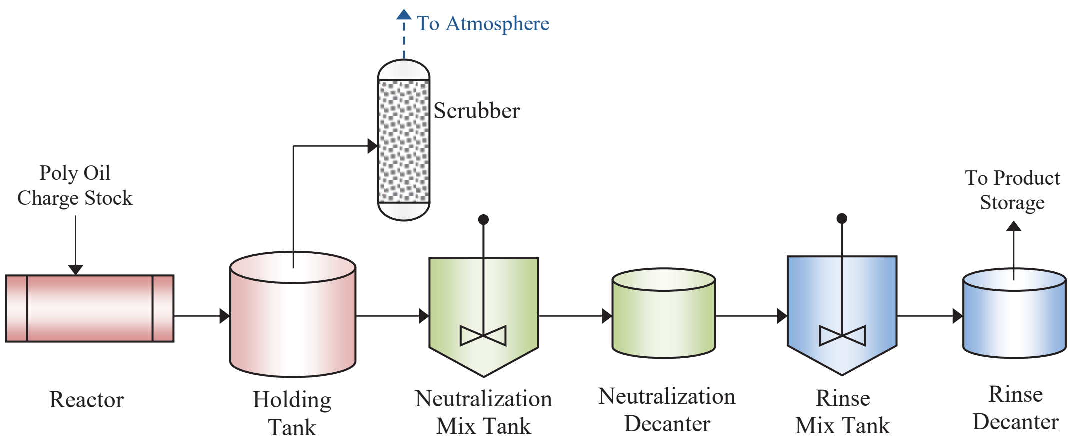
* Tanks 6301-6302, and 8501-8506 can be used to store distillate (D002) in addition to resin former (D009). Tank 5003 can be used to store distillate and resin former in addition to piperylene.

A. Process Flow Diagrams

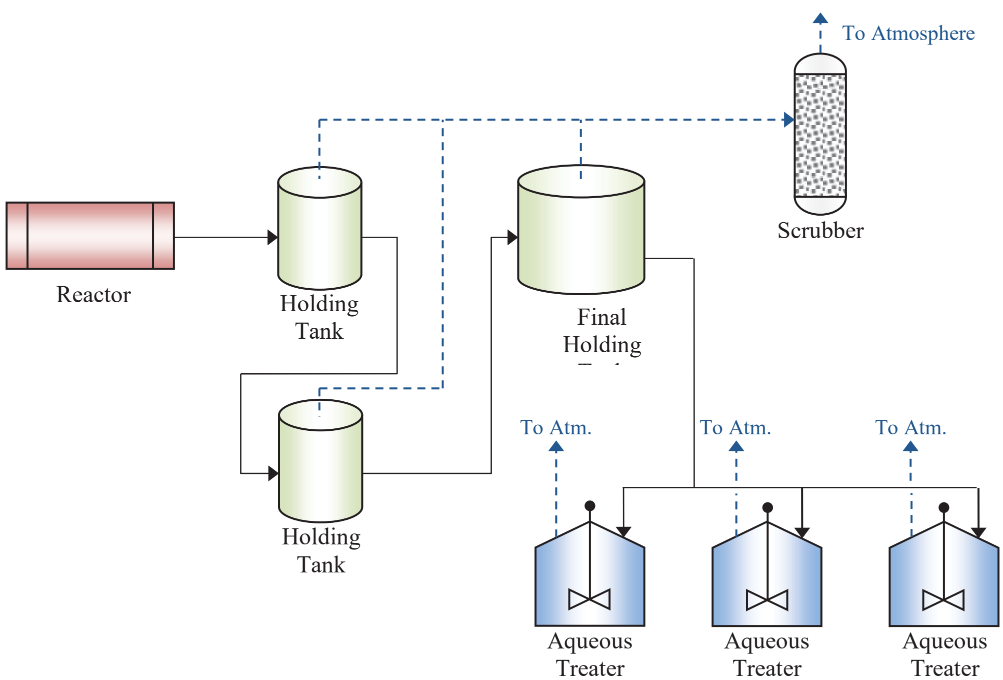
Heat Polymerization Stills
Section V.A.



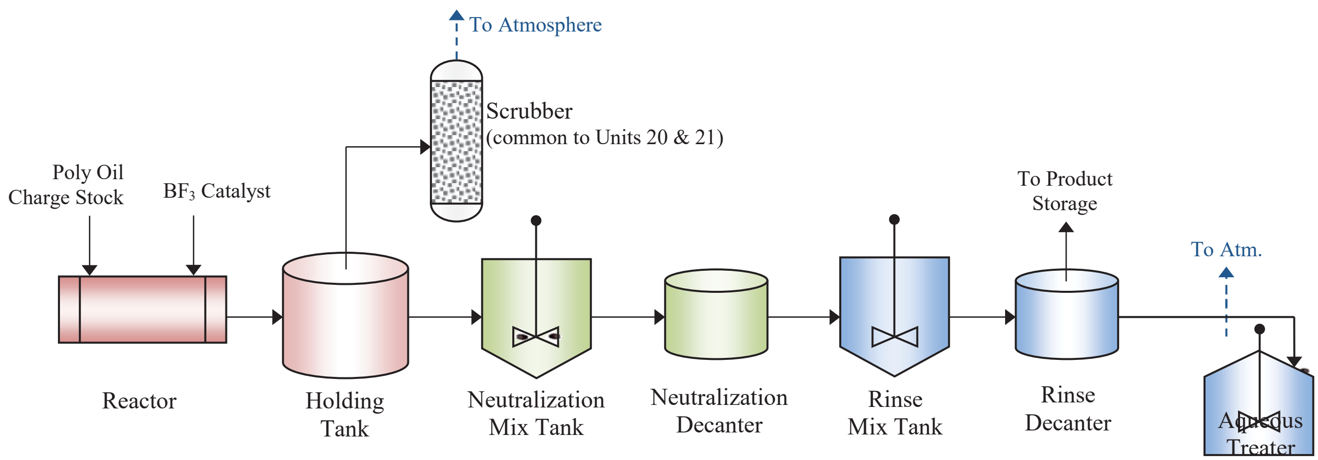
Unit #20 Catalytic Resin & Polyoil Neutralization
Section V.B.



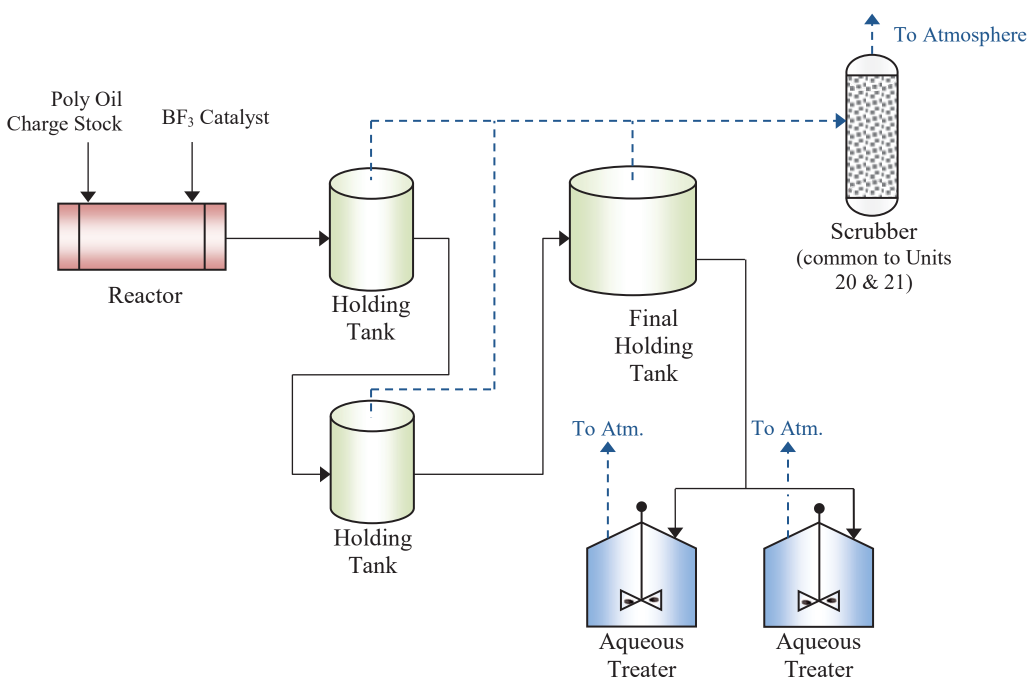
Unit #21 Catalytic Resin & Polyoil Neutralization
Section V.C.



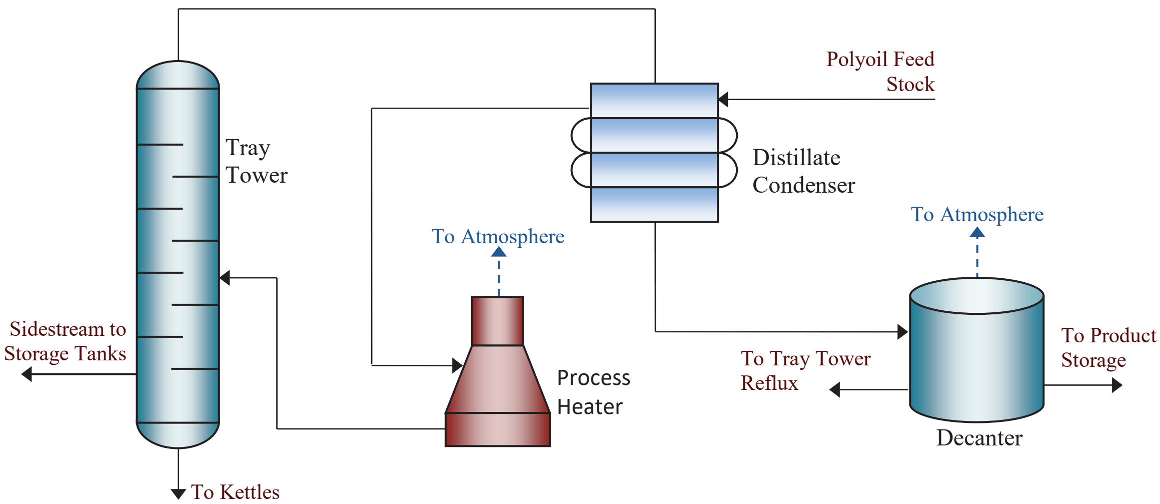
Unit #20 Catalytic Resin & Polyoil Neutralization (Alternative Operating Scenario)
Section VII.A.



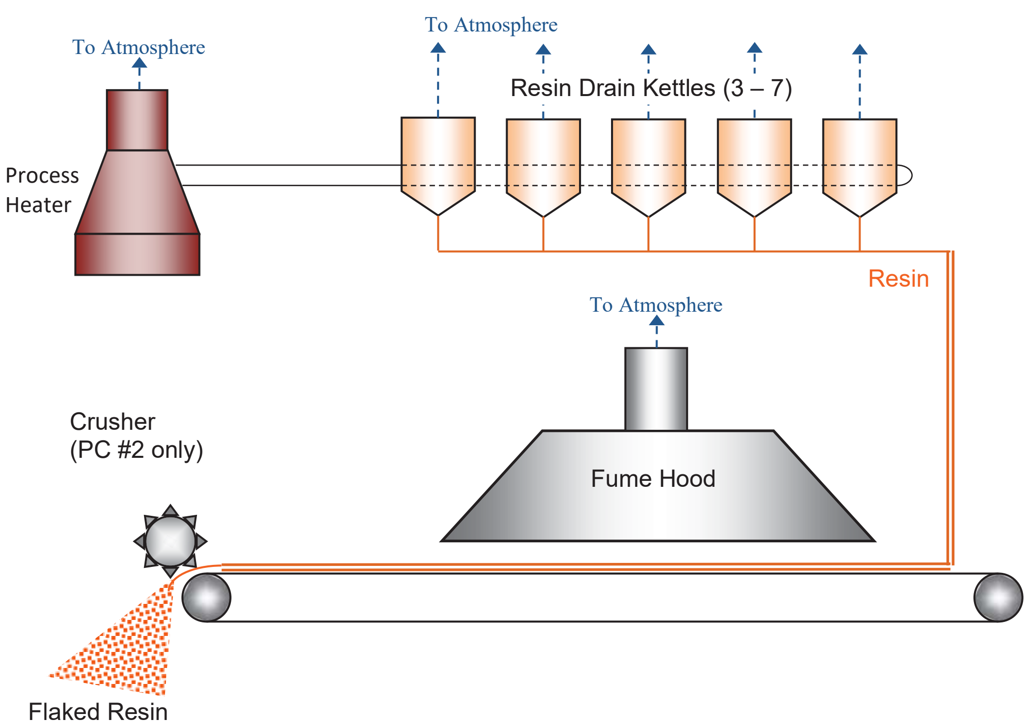
Unit #21 Catalytic Resin & Polyoil Neutralization (Alternative Operating Scenario)
Section VII.A.



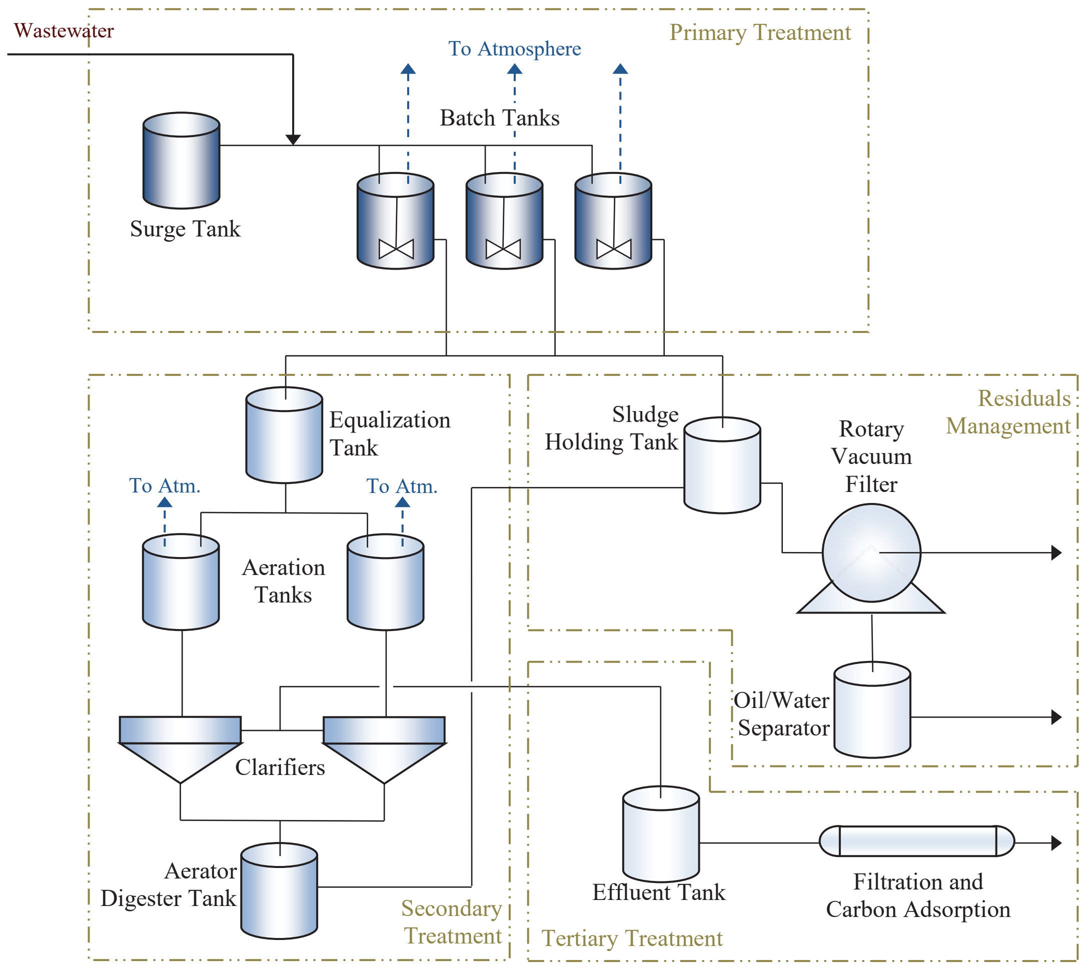
Continuous Stills
Section V.D.



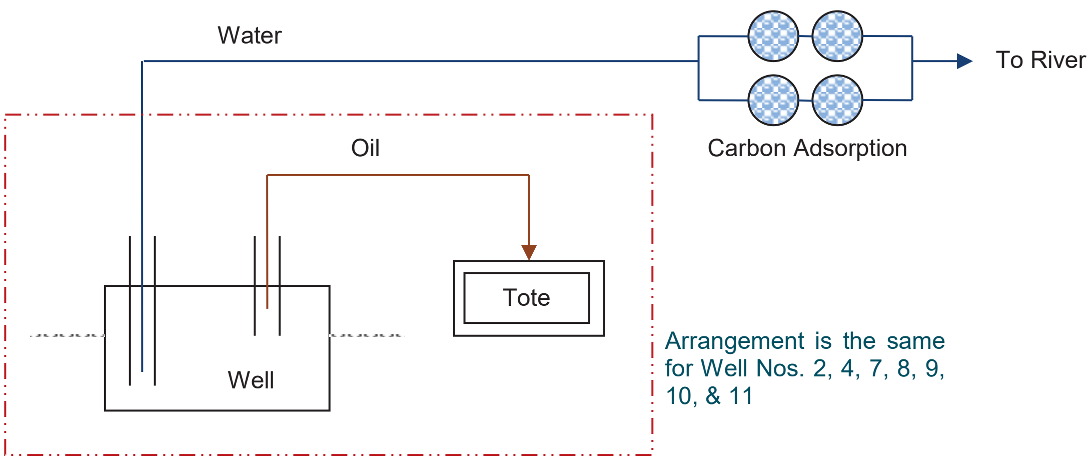
Packaging Centers
Sections V.E, V.F, and V.G.



Wastewater Collection, Conveyance, and Treatment
Section V.H.



Groundwater Remediation System
Section VI.A.



DECLARATION OF POLICY

Pollution prevention is recognized as the preferred strategy (over pollution control) for reducing risk to air resources. Accordingly, pollution prevention measures should be integrated into air pollution control programs wherever possible, and the adoption by sources of cost-effective compliance strategies, incorporating pollution prevention, is encouraged. The Department will give expedited consideration to any permit modification request based on pollution prevention principles.

The permittee is subject to the terms and conditions set forth below. These terms and conditions constitute provisions of *Allegheny County Health Department Rules and Regulations, Article XXI Air Pollution Control*. The subject equipment has been conditionally approved for operation. The equipment shall be operated in conformity with the plans, specifications, conditions, and instructions which are part of your application, and may be periodically inspected for compliance by the Department. In the event that the terms and conditions of this permit or the applicable provisions of Article XXI conflict with the application for this permit, these terms and conditions and the applicable provisions of Article XXI shall prevail. Additionally, nothing in this permit relieves the permittee from the obligation to comply with all applicable Federal, State and Local laws and regulations.

III. GENERAL CONDITIONS - Major Source

1. Prohibition of Air Pollution (§2101.11)

It shall be a violation of this permit to fail to comply with, or to cause or assist in the violation of, any requirement of this permit, or any order or permit issued pursuant to authority granted by Article XXI. The permittee shall not willfully, negligently, or through the failure to provide and operate necessary control equipment or to take necessary precautions, operate any source of air contaminants in such manner that emissions from such source:

a. Exceed the amounts permitted by this permit or by any order or permit issued pursuant to Article XXI;
b. Cause an exceedance of the ambient air quality standards established by Article XXI §2101.10; or
c. May reasonably be anticipated to endanger the public health, safety, or welfare.

2. Definitions (§2101.20)

a. Except as specifically provided in this permit, terms used retain the meaning accorded them under the applicable provisions and requirements of Article XXI. Whenever used in this permit, or in any action taken pursuant to this permit, the words and phrases shall have the meanings stated, unless the context clearly indicates otherwise.

b. Unless specified otherwise in this permit or in the applicable regulation, the term "*year*" shall mean any twelve (12) consecutive months.

3. Conditions (§2102.03.c)

It shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02, for any person to fail to comply with any terms or conditions set forth in this permit.

4. Certification (§2102.01)

Any report or compliance certification submitted under this permit shall contain written certification by a responsible official as to truth, accuracy, and completeness. This certification and any other certification required under this permit shall be signed by a responsible official of the source, and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

5. Transfers (§2102.03.e)

This permit shall not be transferrable from one person to another, except in accordance with Article XXI §2102.03.e and in cases of change-in-ownership which are documented to the satisfaction of the Department, and shall be valid only for the specific sources and equipment for which this permit was issued. The transfer of permits in the case of change-in-ownership may be made consistent with the administrative permit amendment procedure of Article XXI §2103.14.b. The required documentation and fee must be received by the Department at least 30 days before the intended transfer date.

6. Term (§2103.12.e, §2103.13.a)

a. This permit shall remain valid for five (5) years from the date of issuance, or such other shorter period if required by the Clean Air Act, unless revoked. The terms and conditions of an expired permit shall automatically continue pending issuance of a new operating permit provided the permittee has submitted a timely and complete application and paid applicable fees required under Article XXI Part C, and the Department through no fault of the permittee is unable to issue or deny a new permit before the expiration of the previous permit.
b. Expiration. Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted consistent with the requirements of Article XXI Part C.

7. Need to Halt or Reduce Activity Not a Defense (§2103.12.f.2)

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

8. Property Rights (§2103.12.f.4)

This permit does not convey any property rights of any sort, or any exclusive privilege.

9. Duty to Provide Information (§2103.12.f.5)

a. The permittee shall furnish to the Department in writing within a reasonable time, any information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of any records required to be kept by the permit.

b. Upon cause shown by the permittee the records, reports, or information, or a particular portion thereof, claimed by the permittee to be confidential shall be submitted to the Department in accordance with the requirements of Article XXI, §2101.07.d.4. Information submitted to the Department under a claim of confidentiality, shall be available to the US EPA and the PADEP upon request and without restriction. Upon request of the permittee the confidential information may be submitted to the USEPA and PADEP directly. Emission data or any portions of any draft, proposed, or issued permits shall not be considered confidential.

10. Modification of Section 112(b) Pollutants which are VOCs or PM10 (§2103.12.f.7)

Except where precluded under the Clean Air Act or federal regulations promulgated under the Clean Air Act, if this permit limits the emissions of VOCs or PM_{10} but does not limit the emissions of any hazardous air pollutants, the mixture of hazardous air pollutants which are VOCs or PM_{10} can be modified so long as no permit emission limitations are violated. A log of all mixtures and changes shall be kept and reported to the Department with the next report required after each change.

11. Right to Access (§2103.12.h.2)

Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized Department and other federal, state, county, and local government representatives to:

a. Enter upon the permittee's premises where a permitted source is located or an emissions-related activity is conducted, or where records are or should be kept under the conditions of the permit;
b. Have access to, copy and remove, at reasonable times, any records that must be kept under the conditions of the permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
d. As authorized by either Article XXI or the Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements.

12. Certification of Compliance (§2103.12.h.5, §2103.22.i.1)

a. The permittee shall submit on an annual basis, certification of compliance with all terms and conditions contained in this permit, including emission limitations, standards, or work practices. The certification of compliance shall be made consistent with General Condition 4 above and shall include the following information at a minimum:

1) The identification of each term or condition of the permit that is the basis of the certification;
2) The compliance status;
3) Whether any noncompliance was continuous or intermittent;
4) The method(s) used for determining the compliance status of the source, currently and over the reporting period consistent with the provisions of this permit; and
5) Such other facts as the Department may require to determine the compliance status of the source.

b. All certifications of compliance must be submitted to the Department by March 1 of each year for the time period beginning January 1 of the previous year and ending December 31 of the same year. The first report shall be due March 16, 2016 for the time period beginning on the issuance date of this permit through December 31, 2015. Compliance certifications may be emailed to the Administrator at R3 APD Permits@epa.gov in lieu of mailing a hard copy.

13. Record Keeping Requirements (§2103.12.j.1)

a. The permittee shall maintain records of required monitoring information that include the following:

1) The date, place as defined in the permit, and time of sampling or measurements;
2) The date(s) analyses were performed;
3) The company or entity that performed the analyses;
4) The analytical techniques or methods used;
5) The results of such analyses; and
6) The operating parameters existing at the time of sampling or measurement.

b. The permittee shall maintain and make available to the Department, upon request, records including computerized records that may be necessary to comply with the reporting and emission statements in Article XXI §2108.01.e. Such records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions.

14. Retention of Records (§2103.12.j.2)

The permittee shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

15. Reporting Requirements (§2103.12.k)

a. The permittee shall submit reports of any required monitoring at least every six (6) months. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by the Responsible Official.

b. Prompt reporting of deviations from permit requirements is required, including those attributable to upset conditions as defined in this permit and Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.

c. All reports submitted to the Department shall comply with the certification requirements of General Condition III.4 above.

d. Semiannual reports required by this permit shall be submitted to the Department as follows:
1) One semiannual report is due by July 31 of each year for the time period beginning January 1 and ending June 30.
2) One semiannual report is due by January 31 of each year for the time period beginning July 1 and ending December 31.
3) The first semiannual report shall be due July 31, 2018 for the time period beginning on the issuance date of this permit through June 30, 2018.

e. Reports may be submitted electronically to AQReports@alleghenycounty.us. Certification by the responsible official in accordance with General Condition III.4 above shall be provided separately via hard copy.

16. Severability Requirement (§2103.12.l)

The provisions of this permit are severable, and if any provision of this permit is determined by a court of competent jurisdiction to be invalid or unenforceable, such a determination will not affect the remaining provisions of this permit.

17. Existing Source Reactivations (§2103.13.d)

The permittee shall not reactivate any source that has been out of operation or production for a period of one year or more unless the permittee has submitted a reactivation plan request to, and received a written reactivation plan approval from, the Department. Existing source reactivations shall meet all requirements of Article XXI §2103.13.d.

18. Administrative Permit Amendment Procedures (§2103.14.b, §2103.24.b)

An administrative permit amendment may be made consistent with the procedures of Article XXI §2103.14.b and §2103.24.b. Administrative permit amendments are not authorized for any amendment precluded by the Clean Air Act or the regulations thereunder.

19. Revisions and Minor Permit Modification Procedures (§2103.14.c, §2103.24.a)

Sources may apply for revisions and minor permit modifications on an expedited basis in accordance with Article XXI §2103.14.c and §2103.24.a.

20. Significant Permit Modifications (§2103.14.d)

Significant permit modifications shall meet all requirements of the applicable subparts of Article XXI, Part C, including those for applications, fees, public participation, review by affected States, and review by EPA, as they apply to permit issuance and permit renewal. The approval of a significant permit modification, if the entire permit has been reopened for review, shall commence a new full five (5) year permit term. The Department shall take final action on all such permits within nine (9) months following receipt of a complete application.

21. Duty to Comply (§2103.12.f.1, §2103.22.g)

The permittee shall comply with all permit conditions and all other applicable requirements at all times. Any permit noncompliance constitutes a violation of the Clean Air Act, the Air Pollution Control Act, and Article XXI and is grounds for any and all enforcement action, including, but not limited to, permit termination, revocation and reissuance, or modification, and denial of a permit renewal application.

22. Renewals (§2103.13.b., §2103.23.a)

Renewal of this permit is subject to the same fees and procedural requirements, including those for public participation and affected State and EPA review, that apply to initial permit issuance. The application for renewal shall be submitted at least six (6) months but not more than eighteen (18) months prior to expiration of this permit. The application shall also include submission of a supplemental compliance review as required by Article XXI §2102.01.

23. Reopenings for Cause (§2103.15, §2103.25.a, §2103.12.f.3)

a. This permit shall be reopened and reissued under any of the following circumstances:

1) Additional requirements under the Clean Air Act become applicable to a major source with a remaining permit term of three (3) or more years. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended solely due to the failure of the Department to act on a permit renewal application in a timely fashion.
2) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into this permit.
3) The Department or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.
4) The Administrator or the Department determines that this permit must be reissued or revoked to assure compliance with the applicable requirements.

b. This permit may be modified; revoked, reopened, and reissued; or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes, for changes that are provided for in this permit.

24. Reopenings for Cause by the EPA (§2103.25.b)

This permit may be modified, reopened and reissued, revoked or terminated for cause by the EPA in accordance with procedures specified in Article XXI §2103.25.b.

25. Annual Operating Permit Administration Fee (§2103.40)

In each year during the term of this permit, on or before the last day of the month in which the application for this permit was submitted, the permittee shall submit to the Department, in addition to any other applicable administration fees, an Annual Operating Permit Administration Fee in accordance with §2103.40 by check or money order payable to the "Allegheny County Air Pollution Control Fund" in the amount specified in the fee schedule applicable at that time.

26. Annual Major Source Emissions Fees Requirements (§2103.41)

No later than September 1 of each year, the permittee shall pay an annual emission fee in accordance with Article XXI §2103.41 for each ton of a regulated pollutant (except for carbon monoxide) actually emitted from the source. The permittee shall not be required to pay an emission fee for emissions of more than 4,000 tons of each regulated pollutant. The emission fee shall be increased in each year after 1995 by the percentage, if any, by which the Consumer Price Index for the most recent calendar year exceeds the Consumer Price Index for the previous calendar year.

27. **Other Requirements not Affected (§2104.08, §2105.02)**

Compliance with the requirements of this permit shall not in any manner relieve any person from the duty to fully comply with any other applicable Federal, State, or County statute, rule, regulation, or the like, including but not limited to the odor emission standards under Article XXI §2104.04, any applicable NSPSs, NESHAPs, MACTs, or Generally Achievable Control Technology (GACT) standards now or hereafter established by the EPA, and any applicable requirements of BACT or LAER as provided by Article XXI, any condition contained in any applicable Installation or Operating Permit and/or any additional or more stringent requirements contained in an order issued to such person pursuant to Article XXI Part I.

28. **Termination of Operation (§2108.01.a)**

In the event that operation of any source of air contaminants is permanently terminated, the person responsible for such source shall so report, in writing, to the Department within 60 days of such termination.

29. **Emissions Inventory Statements (§2108.01.e & g)**

a. Emissions inventory statements in accordance with Article XXI §2108.01.e shall be submitted to the Department by March 15 of each year for the preceding calendar year. The Department may require more frequent submittals if the Department determines that more frequent submissions are required by the EPA or that analysis of the data on a more frequent basis is necessary to implement the requirements of Article XXI or the Clean Air Act.
b. The failure to submit any report or update within the time specified, the knowing submission of false information, or the willful failure to submit a complete report shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

30. **Tests by the Department (§2108.02.d)**

Notwithstanding any tests conducted pursuant to Article XXI §2108.02, the Department or another entity designated by the Department may conduct emissions testing on any source or air pollution control equipment. At the request of the Department, the person responsible for such source or equipment shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance of such tests.

31. **Other Rights and Remedies Preserved (§2109.02.b)**

Nothing in this permit shall be construed as impairing any right or remedy now existing or hereafter created in equity, common law or statutory law with respect to air pollution, nor shall any court be deprived of such jurisdiction for the reason that such air pollution constitutes a violation of this permit.

32. **Enforcement and Emergency Orders (§2109.03, §2109.05)**

a. The person responsible for this source shall be subject to any and all enforcement and emergency orders issued to it by the Department in accordance with Article XXI §2109.03, §2109.04 and §2109.05.

b. Upon request, any person aggrieved by an Enforcement Order or Emergency Order shall be granted a hearing as provided by Article XXI §2109.03.d; provided however, that an Emergency Order shall continue in full force and effect notwithstanding the pendency of any such appeal.

c. Failure to comply with an Enforcement Order or immediately comply with an Emergency Order shall be a violation of this permit thus giving rise to the remedies provided by Article XXI §2109.02.

33. Penalties, Fines, and Interest (§2109.07.a)

A source that fails to pay any fee required under this permit when due shall pay a civil penalty of 50% of the fee amount, plus interest on the fee amount computed in accordance with Article XXI §2109.06.a.4 from the date the fee was required to be paid. In addition, the source may have this permit revoked for failure to pay any fee required.

34. Appeals (§2109.10)

In accordance with State Law and County regulations and ordinances, any person aggrieved by an order or other final action of the Department issued pursuant to Article XXI or any unsuccessful petitioner to the Administrator under Article XXI Part C, Subpart 2, shall have the right to appeal the action to the Director in accordance with the applicable County regulations and ordinances.

35. Risk Management (§2104.08, 40 CFR Part 68)

This source, as defined in 40 CFR Part 68.3, is subject to Part 68. This stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. This stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification as required by *General Condition III.12* above.

36. Permit Shield (§2103.22)

a. The permittee's compliance with the conditions of this permit shall be deemed compliance with all major source applicable requirements as of the date of permit issuance, provided that:

1) Such major source applicable requirements are included and are specifically identified in the permit; or

2) The Department, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

b. Nothing in Article XXI §2103.22.e or the Title V Permit shall alter or affect the following:

1) The provisions of Section 303 of the Clean Air Act and the provisions of Article XXI regarding emergency orders, including the authority of the Administrator and the Department under such provisions;
2) The liability of any person who owns, operates, or allows to be operated, a source in violation of any major source applicable requirements prior to or at the time of permit issuance;
3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; or

4) The ability of the EPA or the County to obtain information from the permittee pursuant to Section 114 of the Clean Air Act, the provisions of Article XXI and State law.

c. Unless precluded by the Clean Air Act or regulations therein, final action by the Department on administrative amendments, minor and significant permit modifications, and operational flexibility changes shall be covered by the permit shield provided such amendments, modifications and changes meet the relevant requirements of Article XXI.

d. The permit shield authorized under Article XXI §2103.22 is in effect for the permit terms and conditions as identified in this permit.

37. Circumvention (§2101.14)

For purposes of determining compliance with the provisions of this permit and Article XXI, no credit shall be given to any person for any device or technique, including but not limited to the operation of any source with unnecessary amounts of air, the combining of separate sources except as specifically permitted by Article XXI and the Department, the use of stacks exceeding Good Engineering Practice height as defined by regulations promulgated by the US EPA at 40 CFR §§51.100 and 51.110 and Subpart I, and other dispersion techniques, which without reducing the amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise violate the provisions of this Article; except that, for purposes of determining compliance with Article §2104.04 concerning odors, credit for such devices or techniques, except for the use of a masking agent, may be given.

38. Duty to Supplement and Correct Relevant Facts (§2103.12.d.2)

a. The permittee shall provide additional information as necessary to address requirements that become applicable to the source after the date it files a complete application but prior to the Department taking action on the permit application.

b. The permittee shall provide supplementary fact or corrected information upon becoming aware that incorrect information has been submitted or relevant facts were not submitted.

c. Except as otherwise required by this permit and Article XXI, the Clean Air Act, or the regulations thereunder, the permittee shall submit additional information as necessary to address changes occurring at the source after the date it files a complete application but prior to the Department taking action on the permit application.

d. The applicant shall submit information requested by the Department which is reasonably necessary to evaluate the permit application.

39. Effect (§2102.03.g.)

Except as specifically otherwise provided under Article XXI, Part C, issuance of a permit pursuant to Article XXI Part B or Part C shall not in any manner relieve any person of the duty to fully comply with the requirements of this permit, Article XXI or any other provision of law, nor shall it in any manner preclude or affect the right of the Department to initiate any enforcement action whatsoever for violations of this permit or Article XXI, whether occurring before or after the issuance of such permit. Further, except as specifically otherwise provided under Article XXI Part C the issuance of a permit shall not be a defense to any nuisance action, nor shall such permit be construed as a certificate of compliance with the requirements of this permit or Article XXI.

40. Installation Permits (§2102.04.a.1.)

It shall be a violation of this permit giving rise to the remedies set forth in Article XXI Part I for any person to install, modify, replace, reconstruct, or reactivate any source or air pollution control equipment which would require an installation permit or permit modification in accordance with Article XXI Part B or Part C.

~PERMIT SHIELD IN EFFECT~

IV. SITE LEVEL TERMS AND CONDITIONS

1. Reporting of Upset Conditions (§2103.12.k.2)

The permittee shall promptly report all deviations from permit requirements, including those attributable to upset conditions as defined in Article XXI §2108.01.c, the probable cause of such deviations, and any corrective actions or preventive measures taken.

2. Visible Emissions (§2104.01.a)

Except as provided for by Article XXI §2108.01.d pertaining to a cold start, no person shall operate, or allow to be operated, any source in such manner that the opacity of visible emissions from a flue or process fugitive emissions from such source, excluding uncombined water:

a. Equal or exceed an opacity of 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,
b. Equal or exceed an opacity of 60% at any time.

3. Odor Emissions (§2104.04) (County-only enforceable)

No person shall operate, or allow to be operated, any source in such manner that emissions of malodorous matter from such source are perceptible beyond the property line.

4. Materials Handling (§2104.05)

The permittee shall not conduct, or allow to be conducted, any materials handling operation in such manner that emissions from such operation are visible at or beyond the property line.

5. Operation and Maintenance (§2105.03)

All air pollution control equipment required by this permit or any order under Article XXI, and all equivalent compliance techniques approved by the Department, shall be properly installed, maintained, and operated consistently with good air pollution control practice.

6. Open Burning (§2105.50)

No person shall conduct, or allow to be conducted, the open burning of any material, except where the Department has issued an Open Burning Permit to such person in accordance with Article XXI §2105.50 or where the open burning is conducted solely for the purpose of non-commercial preparation of food for human consumption, recreation, light, ornament, or provision of warmth for outside workers, and in a manner which contributes a negligible amount of air contaminants.

7. Shutdown of Control Equipment (§2108.01.b)

a. In the event any air pollution control equipment is shut down for reasons other than a breakdown, the person responsible for such equipment shall report, in writing, to the Department the intent to shut down such equipment at least 24 hours prior to the planned shutdown. Notwithstanding the submission of such report, the equipment shall not be shut down until the approval of the Department is obtained; provided, however, that no such report shall be required if the source(s) served by such air pollution control equipment is also shut down at all times that such equipment is shut down.

b. The Department shall act on all requested shutdowns as promptly as possible. If the Department does not take action on such requests within ten (10) calendar days of receipt of the notice, the request shall be deemed denied, and upon request, the owner or operator of the affected source shall have a right to appeal in accordance with the provisions of Article XI.

c. The prior report required by Site Level Condition IV.7.a above shall include:

1) Identification of the specific equipment to be shut down, its location and permit number (if permitted), together with an identification of the source(s) affected;
2) The reasons for the shutdown;
3) The expected length of time that the equipment will be out of service;
4) Identification of the nature and quantity of emissions likely to occur during the shutdown;
5) Measures, including extra labor and equipment, which will be taken to minimize the length of the shutdown, the amount of air contaminants emitted, or the ambient effects of the emissions;
6) Measures which will be taken to shut down or curtail the affected source(s) or the reasons why it is impossible or impracticable to shut down or curtail the affected source(s) during the shutdown; and
7) Such other information as may be required by the Department.

8. Breakdowns (§2108.01.c)

a. In the event that any air pollution control equipment, process equipment, or other source of air contaminants breaks down in such manner as to have a substantial likelihood of causing the emission of air contaminants in violation of this permit, or of causing the emission into the open air of potentially toxic or hazardous materials, the person responsible for such equipment or source shall immediately, but in no event later than sixty (60) minutes after the commencement of the breakdown, notify the Department of such breakdown and shall, as expeditiously as possible but in no event later than seven (7) days after the original notification, provide written notice to the Department.

b. To the maximum extent possible, all oral and written notices required shall include all pertinent facts, including:

1) Identification of the specific equipment which has broken down, its location and permit number (if permitted), together with an identification of all related devices, equipment, and other sources which will be affected.
2) The nature and probable cause of the breakdown.
3) The expected length of time that the equipment will be inoperable or that the emissions will continue.
4) Identification of the specific material(s) which are being, or are likely to be emitted, together with a statement concerning its toxic qualities, including its qualities as an irritant, and its potential for causing illness, disability, or mortality.
5) The estimated quantity of each material being or likely to be emitted.
6) Measures, including extra labor and equipment, taken or to be taken to minimize the length of the breakdown, the amount of air contaminants emitted, or the ambient effects of the emissions, together with an implementation schedule.
7) Measures being taken to shut down or curtail the affected source(s) or the reasons why it is impossible or impractical to shut down the source(s), or any part thereof, during the breakdown.

c. Notices required shall be updated, in writing, as needed to advise the Department of changes in the information contained therein. In addition, any changes concerning potentially toxic or hazardous emissions shall be reported immediately. All additional information requested by the Department shall be submitted as expeditiously as practicable.

d. Unless otherwise directed by the Department, the Department shall be notified whenever the condition causing the breakdown is corrected or the equipment or other source is placed back in operation by no later than 9:00 AM on the next County business day. Within seven (7) days thereafter, written notice shall be submitted pursuant to Paragraphs a and b above.

e. Breakdown reporting shall not apply to breakdowns of air pollution control equipment which occur during the initial startup of said equipment, provided that emissions resulting from the breakdown are of the same nature and quantity as the emissions occurring prior to startup of the air pollution control equipment.

f. In no case shall the reporting of a breakdown prevent prosecution for any violation of this permit or Article XXI.

9. Cold Start (§2108.01.d)

In the event of a cold start on any fuel-burning or combustion equipment, except stationary internal combustion engines and combustion turbines used by utilities to meet peak load demands, the person responsible for such equipment shall report in writing to the Department the intent to perform such cold start at least 24 hours prior to the planned cold start. Such report shall identify the equipment and fuel(s) involved and shall include the expected time and duration of the startup. Upon written application from the person responsible for fuel-burning or combustion equipment which is routinely used to meet peak load demands and which is shown by experience not to be excessively emissive during a cold start, the Department may waive these requirements and may instead require periodic reports listing all cold starts which occurred during the report period. The Department shall make such waiver in writing, specifying such terms and conditions as are appropriate to achieve the purposes of Article XXI. Such waiver may be terminated by the Department at any time by written notice to the applicant.

10. Monitoring of Malodorous Matter Beyond Facility Boundaries (§2104.04) (County-only enforceable)

The permittee shall take all reasonable action as may be necessary to prevent malodorous matter from becoming perceptible beyond facility boundaries. Further, the permittee shall perform such observations as may be deemed necessary along facility boundaries to insure that malodorous matter beyond the facility boundary in accordance with Article XXI §2107.13 is not perceptible and record all findings and corrective action measures taken.

11. Orders (§2108.01.f)

In addition to meeting the requirements of General Condition III.28 and Site Level Conditions IV.7 through IV.10 above, inclusive, the person responsible for any source shall, upon order by the Department, report to the Department such information as the Department may require in order to assess the actual and potential contribution of the source to air quality. The order shall specify a reasonable time in which to make such a report.

12. Violations (§2108.01.g)

The failure to submit any report or update thereof required by General Condition III.28 and Site Level Conditions IV.7 through IV.11 above, inclusive, within the time specified, the knowing submission of false information, or the willful failure to submit a complete report shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

13. Emissions Testing (§2108.02)

a. On or before December 31, 1981, and at two-year intervals thereafter, any person who operates, or allows to be operated, any piece of equipment or process which has an allowable emission rate, of 100 or more tons per year of particulate matter, sulfur oxides or volatile organic compounds shall conduct, or cause to be conducted, for such equipment or process such emissions tests as are necessary to demonstrate compliance with the applicable emission limitation(s) of this permit and shall submit the results of such tests to the Department in writing. Emissions testing conducted pursuant to this section shall comply with all applicable requirements of Article XXI §2108.02.e.

b. **Orders.** In addition to meeting the requirements of Site Level Condition IV.13.a above, the person responsible for any source shall, upon order by the Department, conduct, or cause to be conducted, such emissions tests as specified by the Department within such reasonable time as is specified by the Department. Test results shall be submitted in writing to the Department within 20 days after completion of the tests, unless a different period is specified in the Department's order. Emissions testing shall comply with all applicable requirements of Article XXI §2108.02.e.

c. **Tests by the Department.** Notwithstanding any tests conducted pursuant to Site Level Conditions IV.13.a and IV.13.b above, the Department or another entity designated by the Department may conduct emissions testing on any source or air pollution control equipment. At the request of the Department, the person responsible for such source or equipment shall provide adequate sampling ports, safe sampling platforms and adequate utilities for the performance of such tests.

d. **Testing Requirements.** No later than 45 days prior to conducting any tests required by this permit, the person responsible for the affected source shall submit for the Department's approval a written test protocol explaining the intended testing plan, including any deviations from standard testing procedures, the proposed operating conditions of the source during the test, calibration data for specific test equipment and a demonstration that the tests will be conducted under the direct supervision of persons qualified by training and experience satisfactory to the Department to conduct such tests. In addition, at least 30 days prior to conducting such tests, the person responsible shall notify the Department in writing of the time(s) and date(s) on which the tests will be conducted and shall allow Department personnel to observe such tests, record data, provide pre-weighed filters, analyze samples in a County laboratory and to take samples for independent analysis. Test results shall be comprehensively and accurately reported in the units of measurement specified by the applicable emission limitations of this permit.

e. Test methods and procedures shall conform to the applicable reference method set forth in this permit or Article XXI Part G, or where those methods are not applicable, to an alternative sampling and testing procedure approved by the Department consistent with Article XXI §2108.02.e.2.

f. **Violations**. The failure to perform tests as required by this permit or an order of the Department, the failure to submit test results within the time specified, the knowing submission of false information, the willful failure to submit complete results, or the refusal to allow the Department, upon presentation of a search warrant, to conduct tests, shall be a violation of this permit giving rise to the remedies provided by Article XXI §2109.02.

14. Abrasive Blasting (§2105.51)

a. Except where such blasting is a part of a process requiring an operating permit , no person shall conduct or allow to be conducted, abrasive blasting or power tool cleaning of any surface, structure, or part thereof, which has a total area greater than 1,000 square feet unless such abrasive blasting complies with all applicable requirements of Article XXI §2105.51.

b. In addition to complying with all applicable provisions of §2105.51, no person shall conduct, or allow to be conducted, abrasive blasting of any surface unless such abrasive blasting also complies with all other applicable requirements of Article XXI unless such requirements are specifically addressed by §2105.51.

15. Asbestos Abatement (§2105.62, §2105.63)

In the event of removal, encasement, or encapsulation of Asbestos-Containing Material (ACM) at a facility or in the event of the demolition of any facility, the permittee shall comply with all applicable provisions of Article XXI §2105.62 and §2105.63.

16. Protection of Stratospheric Ozone (40 CFR Part 82)

a. Permittee shall comply with the standards for labeling of products using ozone-depleting substances pursuant to 40 CFR Part 82, Subpart E:
   1) All containers in which a Class I or Class II substance is stored or transported, all products containing a Class I substance, and all products directly manufactured with a process that uses a Class I substance must bear the required warning statement if it is being introduced into interstate commerce pursuant to §82.106;
   2) The placement of the required warning statement must comply with the requirements pursuant to §82.108;
   3) The form of the label bearing the required warning statement must comply with the requirements pursuant to §82.110; and
   4) No person may modify, remove or interfere with the required warning statement except as described in §82.112.

b. Permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F:
   1) Persons opening appliances for maintenance, service, repair or disposal must comply with the prohibitions and required practices pursuant to §82.154 and §82.156;
   2) Equipment used during the maintenance, service, repair or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158;
   3) Persons maintaining, servicing, repairing or disposing of appliances, must be certified by an approved technician certification program pursuant to §82.161;
   4) Persons maintaining, servicing, repairing or disposing of appliances must certify to the Administrator of the U.S. Environmental Protection Agency pursuant to §82.162;
   5) Persons disposing of small appliances, motor vehicle air conditioners (MVAC) and MVAC-like appliances, must comply with the record keeping requirements pursuant to §82.166;
   6) Owners of commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to §82.156; and

7) Owners or operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.

c. If the permittee manufactures, transforms, destroys, imports or exports a Class I or Class II substance, the Permittee is subject to all the requirements as specified in 40 CFR Part 82, Subpart A (Production and Consumption Controls).

d. If the permittee performs a service on a motor vehicle that involves an ozone-depleting substance, refrigerant or regulated substitute substance in the MVAC, the Permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B (Servicing of Motor Vehicle Air Conditioners).

e. The permittee may switch from any ozone-depleting substance to any alternative that is listed as acceptable in the Significant New Alternatives Policy (SNAP) program promulgated pursuant to 40 CFR Part 82, Subpart G.

17. Volatile Organic Compound Storage Tanks (§2105.12.a)

No person shall place or store, or allow to be placed or stored, a volatile organic compound having a vapor pressure of 1.5 psia or greater under actual storage conditions in any aboveground stationary storage tank having a capacity equal to or greater than 2,000 gallons but less than or equal to 40,000 gallons, unless there is in operation on such tank pressure relief valves which are set to release at the higher of 0.7 psig of pressure or 0.3 psig of vacuum or at the highest possible pressure and vacuum in accordance with State or local fire codes, National Fire Prevention Association guidelines, or other national consensus standard approved in writing by the Department. Petroleum liquid storage vessels that are used to store produced crude oil and condensate prior to lease custody transfer are exempt from these requirements.

18. Permit Source Premises (§2105.40)

a. **General.** No person shall operate, or allow to be operated, any source for which a permit is required by Article XXI Part C in such manner that emissions from any open land, roadway, haul road, yard, or other premises located upon the source or from any material being transported within such source or from any source-owned access road, haul road, or parking lot over five (5) parking spaces:

1) Are visible at or beyond the property line of such source;
2) Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or
3) Have an opacity of 60% or more at any time.

b. **Deposition on Other Premises.** Visible emissions from any solid or liquid material that has been deposited by any means from a source onto any other premises shall be considered emissions from such source within the meaning of Site Level Condition IV.18.a above.

19. Parking Lots and Roadways (§2105.42)

a. The permittee shall not maintain for use, or allow to be used, any parking lot over 50 parking spaces or used by more than 50 vehicles in any day or any other roadway carrying more than 100 vehicles in any day or 15 vehicles in any hour in such manner that emissions from such parking lot or roadway:

1) Are visible at or beyond the property line;
2) Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any 60 minute period; or
3) Have an opacity of 60% or more at any time.

b. Visible emissions from any solid or liquid material that has been deposited by any means from a parking lot or roadway onto any other premises shall be considered emissions from such parking lot or roadway.

c. Site Level Condition IV.19.a above shall apply during any repairs or maintenance done to such parking lot or roadway.

d. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.19 may be enforced by any municipal or local government unit having jurisdiction over the place where such parking lots or roadways are located. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.19.

20. Permit Source Transport (§2105.43)

a. No person shall transport, or allow to be transported, any solid or liquid material outside the boundary line of any source for which a permit is required by Article XXI Part C in such manner that there is any visible emission, leak, spill, or other escape of such material during transport.

b. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.20 may be enforced by any municipal or local government unit having jurisdiction over the place where such visible emission, leak, spill, or other escape of material during transport occurs. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violation of Site Level Condition IV.20.

21. Construction and Land Clearing (§2105.45)

a. No person shall conduct, or allow to be conducted, any construction or land clearing activities in such manner that the opacity of emissions from such activities:

1) Equal or exceed 20% for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or
2) Equal or exceed 60% at any time.

b. Notwithstanding any other provision of this permit, the prohibitions of Site Level Condition IV.21 may be enforced by any municipal or local government unit having jurisdiction over the place where such construction or land clearing activities occur. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.21.

22. Mining (§2105.46)

No person shall conduct, or allow to be conducted, any mining activities in such manner that emissions from such activities:

a. Are visible at or beyond the property line;
b. Have an opacity of 20% or more for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period; or,
c. Have an opacity of 60% or more at any time.

23. Demolition (§2105.47)

a. No person shall conduct, or allow to be conducted, any demolition activities in such manner that the opacity of the emissions from such activities equal or exceed 20% for a period or periods aggregating more than three (3) minutes in any 60 minute period.

b. Notwithstanding any other provisions of this permit, the prohibitions of Site Level Condition IV.23 may be enforced by any municipal or local government unit having jurisdiction over the place where such demolition activities occur. Such enforcement shall be in accordance with the laws governing such municipal or local government unit. In addition, the Department may pursue the remedies provided by Article XXI §2109.02 for any violations of Site Level Condition IV.23.

24. Fugitive Emissions (§2105.49)

The person responsible for a source of fugitive emissions, in addition to complying with all other applicable provisions of this permit shall take all reasonable actions to prevent fugitive air contaminants from becoming airborne. Such actions may include, but are not limited to:

a. The use of asphalt, oil, water, or suitable chemicals for dust control;
b. The paving and maintenance of roadways, parking lots and the like;
c. The prompt removal of earth or other material which has been deposited by leaks from transport, erosion or other means;
d. The adoption of work or other practices to minimize emissions;
e. Enclosure of the source; and
f. The proper hooding, venting, and collection of fugitive emissions.

25. Episode Plans (§2106.02)

The permittee shall upon written request of the Department, submit a source curtailment plan, consistent with good industrial practice and safe operating procedures, designed to reduce emissions of air contaminants during air pollution episodes. Such plans shall meet the requirements of Article XXI §2106.02.

26. New Source Performance Standards (§2105.05)

a. It shall be a violation of this permit giving rise to the remedies provided by §2109.02 of Article XXI for any person to operate, or allow to be operated, any source in a manner that does not comply with all requirements of any applicable NSPS now or hereafter established by the EPA, except if such person has obtained from EPA a waiver pursuant to Section 111 or Section 129 of the Clean Air Act or is otherwise lawfully temporarily relieved of the duty to comply with such requirements.

b. Any person who operates, or allows to be operated, any source subject to any NSPS shall conduct, or cause to be conducted, such tests, measurements, monitoring and the like as is required by such standard. All notices, reports, test results and the like as are required by such standard shall be submitted to the Department in the manner and time specified by such standard. All information, data and the like which is required to be maintained by such standard shall be made available to the Department upon request for inspection and copying.

27. National Emission Standards for Hazardous Air Pollutants (§2104.08)

a. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 61, Subpart FF – *National Emission Standard for Benzene Waste Operations*.

b. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines*.

c. The permittee shall comply with each applicable emission limitation, work practice standard, and operation and maintenance requirement of 40 CFR Part 63, Subpart GGGGG – *National Emission Standards for Hazardous Air Pollutants: Site Remediation*.

28. Greenhouse Gas Reporting (40 CFR Part 98)

If the facility emits 25,000 metric tons or more of carbon dioxide equivalent (CO_2e) in any 12-month period, the facility shall submit reports to the US EPA in accordance with 40 CFR Part 98.

29. Benzene Waste Operations – 40 CFR Part 61, Subpart FF (§2104.08)

a. The total annual benzene quantity from facility waste is the sum of the annual benzene quantity for each waste stream at the facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent. The benzene quantity in a waste stream is to be counted only once without multiple counting if other waste streams are mixed with or generated from the original waste stream. Other specific requirements for calculating the total annual benzene waste quantity are as follows: [§61.342(a)(2)-(4)]
   1) The benzene in a material subject to 40 CFR Part 61, Subpart FF that is sold is included in the calculation of the total annual benzene quantity if the material has an annual average water content greater than 10 percent. [§61.342(a)(2)]
   2) Benzene in wastes generated by remediation activities conducted at the facility, such as the excavation of contaminated soil, pumping and treatment of groundwater, and the recovery of product from soil or groundwater, is not included in the calculation of total annual benzene quantity for that facility.
   3) The total annual benzene quantity is determined based upon the quantity of benzene in the waste before any waste treatment occurs to remove the benzene.

b. Compliance with 40 CFR Part 61, Subpart FF will be determined by review of facility records and results from tests and inspections using methods and procedures specified in §61.355(a)-(c) of Subpart FF. [§61.342(g)]

c. If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the permittee shall: [§61.355(a)(5)]

1) Comply with the recordkeeping requirements of condition IV.29.d and reporting requirements of condition IV.29.e below; and
2) Repeat the determination of total annual benzene quantity from facility waste whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.
3) The permittee shall calculate the total annual benzene quantity from facility waste according to the procedures outlined in 40 CFR Part 61, Subpart FF, §61.355(b) and (c).

d. The permittee shall maintain records that identify each waste stream at the facility subject to 40 CFR Part 61, Subpart FF, and indicate whether or not the waste stream is controlled for benzene emissions. In addition the permittee shall maintain the following records: [§61.356(b)(1)]
1) For each waste stream not controlled for benzene emissions, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

e. If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the permittee shall submit to the Department a report that updates the information listed in the following paragraphs whenever there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more. [§61.357(b); §61.357(a)(3)(i)-(vi)]
1) Whether or not the water content of the waste stream is greater than 10 percent;
2) Whether or not the waste stream is a process wastewater stream, product tank drawdown, or landfill leachate;
3) Annual waste quantity for the waste stream;
4) Range of benzene concentrations for the waste stream;
5) Annual average flow-weighted benzene concentration for the waste stream; and
6) Annual benzene quantity for the waste stream.

30. Leak Detection and Repair (§2105.06, Plan Approval Order and Agreement Upon Consent Number 230, dated December 13, 1996)

a. The permittee shall conduct a Leak Detection and Repair (LDAR) program at the facility at all times when facility operations may result in fugitive emissions of VOCs. Such LDAR program shall consist of the following: [RACT Order #230, 1.8; 25 Pa Code §129.99]
1) Components applicable to the LDAR program shall be all accessible valves, pumps, and safety pressure relief valves in light oil service.
2) The subject components shall be monitored visually and with a VOC analyzer, and shall be tagged or labeled using Neville's component identification system.
3) Initially, each non difficult/unsafe subject component shall be monitored on a monthly basis. Any component for which a leak is not detected for two successive months shall be monitored on a quarterly basis. Any component for which a leak is not detected for two successive quarters shall then be monitored on an annual basis. Difficult/unsafe components shall be monitored annually.
4) Visual leaks are determined if the component is visually leaking or dripping product from the component. Leaks determined using the analytical test method are an instrument reading exceeding 10,000 parts per million by volume.
5) If a component is designated as leaking by either the visual or analytical method, the component

will not be designated as a "leaker". Instead:

a) A first attempt of repair of the component will be performed for the purposes of stopping or reducing leakage, using best available practices, until the component can achieve non-leaking status.
b) Should this attempt fail, the component will be repaired or replaced and the monitoring will revert to the previous inspection schedule. Two successful monitoring events will allow the new or repaired component to again move up the progression of monthly, quarterly, and annual inspection frequency.

6) Recordkeeping of labeled or tagged monitoring components will be maintained, and include the type of component with available specifications, dates of monitoring, instrument readings, and location of the component.

b. The permittee shall maintain all appropriate records to demonstrate compliance with the requirements of both §2105.06 of Article XXI and RACT Order #230. Such records shall provide sufficient data to clearly demonstrate that all requirements of both §2105.06 of Article XXI and RACT Order #230 are being met. [RACT Order #230, 1.9; 25 Pa Code §129.100]

c. The facility shall retain all records required by both §2105.06 of Article XXI and RACT Order #230 for at least 2 years, and shall make the same available to the Department upon request. [RACT Order #230, 1.10; 25 Pa Code §129.100]

31. HAP LDAR Implementation (§2103.20.b.4)

a. Upon issuance of this permit the permittee shall continue to implement a Hazardous Air Pollutant Leak Detection and Repair (HAP LDAR) program to monitor equipment in HAP service throughout the facility. Such HAP LDAR program shall consist of the following:

1) The permittee shall maintain an electronic registry to identify all components in HAP service.
2) Monitoring shall be conducted on a different set of one-third of all components every 12-month period, in accordance with condition IV.31.b below. All components shall be tested at least once every three (3) years.
3) If, for each component type where the average percent leaking value is greater than or equal to 2%, the facility shall increase the monitoring frequency for that component type to once every 12-month period for all components of that type. This monitoring frequency shall be maintained until the leak rate for that component type is demonstrated to be less than 2% over a 24-month period, at which time the permittee may return to the monitoring schedule in condition IV.31.a.2) above.
4) For each type of component, a leak is defined as follows:
   a) valves: 500 ppm_v
   b) pump seals: 1,000 ppm_v
   c) pressure relief valves: 500 ppm_v
   d) agitator seals: 10,000 ppm_v
   e) flanges: 500 ppm_v
   f) screw connectors: 500 ppm_v
   g) manways: 500 ppm_v
   h) gauge hatches: 500 ppm_v
   i) instruments: 500 ppm_v
   j) open-ended lines: 500 ppm_v

b. Monitoring of all components shall be conducted in accordance with Method 21 of 40 CFR Part 60, Appendix A.

1) The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21;
2) Monitoring shall be performed when the applicable equipment is in HAP material service.

c. When a leak is detected, the permittee shall attach a weatherproof and readily visible identification to the leaking component. The identification may be removed after the component has been repaired and the component is demonstrated as having no leak.

d. The permittee shall repair each leak detected as soon as practical, but not later than 15 calendar days after it is detected, except as provided in condition IV.31.e below. A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

e. The permittee may delay repair of leaking components under the following conditions:
1) It is technically infeasible to repair the leak without a process unit or facility shutdown, in which case the leak shall be repaired during the next shutdown;
2) The equipment is isolated from the process and does not remain in regulated material service;
3) The permittee determines that emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair;
4) The component is designated unsafe-to-repair.

f. Mass emissions of HAP shall be calculated using the *Correlation Approach* methods in the US EPA document “Protocol for Equipment Leak Emissions Estimates”, EPA-453/R-95-017, November 1995, with an applied calculated HAP content (as a percent of total VOC), or other method approved by the Department.

g. For each leak detected, the following information shall be recorded:
1) The date of first attempt to repair the leak.
2) The date of successful repair of the leak.
3) Maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A at the time the leak is successfully repaired or determined to be nonrepairable.
4) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak as specified in conditions a) and b) below:
   a) The permittee may develop a written procedure that identifies the conditions that justify a delay of repair as outlined in condition IV.31.e above.
   b) If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.
5) Dates of shutdowns that occur while the equipment is unrepaired.

h. The permittee shall keep records of the number and types of components subject to the HAP LDAR program.

i. The permittee shall report the following HAP LDAR information for any monitoring event conducted during the applicable period in the semiannual report required under General Condition III.15 above:
1) For each type of equipment listed under condition IV.31.a.4) above, report in a summary format by equipment type, the number of components for which leaks were detected and for valves, pumps and connectors show the percent leakers, and the total number of components monitored. Also include the number of leaking components that were not repaired as required by condition IV.31.d above, and for valves and connectors, identify the number of components

that are determined to be nonrepairable.

2) Where any delay of repair is utilized pursuant to condition IV.31.e above, report that delay of repair has occurred and report the number of instances of delay of repair.
3) The estimated fugitive HAP emissions as determined under condition IV.31.f above.

~PERMIT SHIELD IN EFFECT~

V. EMISSION UNIT LEVEL TERMS AND CONDITIONS

A. Process P001: Heat Polymerization Stills #15, #16, #18, #19, & Unit 43

Process Description: Heat Polymerization Units
Facility ID: Heat Poly Stills #15, #16, #18, #19, and Unit 43
Raw Materials: resin-forming feedstock, additives
Control Device: 18.9 MMBtu/hr natural gas-fired thermal oxidizer (AEI Econ-Abator System)

As identified above, Process P001 consists of the equipment listed under the heading "Heat Polymerization Stills" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate, or allow to be operated, Nos. 15, 16, 18, and 19 Stills and Unit 43 unless all vapors from the ejector stack or vacuum pump vent, the two receiver vents, and the barometric sump vent are piped to the thermal oxidizer. [IP #0060-I006, V.A.1.a; §2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

b. The thermal oxidizer shall be properly operated and maintained according to good engineering practices, manufacturer's recommendations, and the following conditions at all times while treating process emissions: [IP #0060-I001, V.A.1.b-d; IP #0060-I006, V.A.1.c; §2103.12.a.2.B; 25 PA Code §129.97(c)(2)]
1) The minimum VOC and HAP destruction efficiency shall be 98% by weight;
2) The minimum residence time shall be 0.5 seconds;
3) The minimum operating temperature shall be 1,400 °F at all times.

c. Emissions from the thermal oxidizer stack S101 shall not exceed the emissions limitations in Table V-A-1 below: [IP #0060-I001, V.A.1.a; OP #4051008-000-42507; OP #4051008-000-42505; OP #4051008-000-76201; #4051008-000-76202; 25 PA Code §129.97(c)(2)]

TABLE V-A-1 Thermal Oxidizer Emission Limitations

Pollutant	Short-term Limits (lb/hr[1])		Long-term Limits (tpy[2])
	Natural Gas	Propane	
Particulate Matter[3]	0.15	0.17	0.73
Particulate Matter <10 µm (PM_{10}) [3]	0.15	0.17	0.73
Particulate Matter <2.5 µm ($PM_{2.5}$) [3]	0.15	0.17	0.73
Nitrogen Oxides (NO_X)	2.13	3.09	13.53
Sulfur Oxides (SO_X)	0.02	0.01	0.06
Carbon Monoxide (CO)	1.79	1.79	7.84
Volatile Organic Compounds (VOC)	2.92	3.04	4.87
Hazardous Air Pollutants (HAP)	0.11	0.12	0.28

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

d. The permittee shall not operate, nor allow to be operated, the thermal oxidizer using a fuel other than utility-grade natural gas, except in the case of emergencies when propane may be used. [IP #0060-I006, V.A.1.d; §2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

2. Testing Requirements:

a. Sufficient test ports shall be installed and located in the ductwork from each Unit to the thermal oxidizer, such that the emissions from each process unit (Units 15, 16, 18, 19, and 43) may be sampled separately in accordance with Article XXI §2108.02 procedures. The permittee may propose an alternate method of determining the emissions from an individual unit for Department approval. If the alternate method is insufficient to determine emissions due to operation of a specific unit, then the test ports must be installed. [IP #0060-I006, V.A.2.a; §2103.12.h.1]

b. No later than 45 days prior to conducting the compliance test, a written test protocol shall be submitted for the Department's approval explaining the intended testing plan, in accordance with the requirements of Article XXI, §2108.02.e, including any deviations from standard testing procedures. In addition, at least thirty (30) days prior to conducting such test, the Department shall be notified in writing of the time(s) and date(s) on which the compliance testing will be conducted. The Department shall be allowed to observe such tests, record data, provide pre-weighted filters, analyze samples in a County laboratory, and to take samples for independent analysis. [IP #0060-I001, V.A.1.e.2); §2108.02.e]

c. Emissions testing shall be performed once every five (5) years in accordance with Site Level Condition IV.13 ("Emissions Testing") and §2108.02 as follows: [IP #0060-I006, V.A.1.e.4); IP #0060-I006, V.A.2.b-c; §2103.12.h; §2108.02]

1) Testing shall be performed simultaneously at the inlet and the outlet of the thermal oxidizer to demonstrate compliance with the VOC and HAP destruction efficiency required by condition V.A.1.b.1) above.
2) Testing (inlet and outlet) shall consist of three one-hour test runs conducted at maximum VOC and HAP emission production and maximum gas flow through the thermal oxidizer.
3) The thermal oxidizer operating temperature, inlet and outlet gas flow rate and VOC & HAP inlet and outlet emissions shall be continuously monitored and recorded during the emissions testing.
4) EPA Test Method 18 or Method 25A shall be used to determine the thermal oxidizer inlet and outlet concentrations of VOC.
5) EPA Test Method 18 shall be used to determine the thermal oxidizer inlet and outlet concentrations of ethylbenzene, styrene, naphthalene, xylenes, and total HAPs.
6) Testing shall be conducted to demonstrate that a minimum residence time of 0.5 seconds or greater will be maintained at the thermal oxidizer under all operating conditions of the Units.

d. The comprehensive and accurate compliance test results shall be reported in units of measurement specified by the applicable emission limitations of this permit to the Department within thirty (30) days of completion of the aforementioned compliance test. [IP #0060-I001, V.A.1.e.3); §2108.02.c]

e. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Article XXI §2108.02. [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall inspect the thermal oxidizer and associated ductwork weekly for proper operation as well as for integrity of the thermal oxidizer, process equipment, and gaseous collection systems. [IP #0060-I001, V.A.2.a; IP #0060-I006, V.A.3.a; §2103.12.i]

b. The thermal oxidizer shall be equipped with instrumentation that continuously monitors the thermal oxidizer combustion chamber temperature to within ±10°F of the actual temperature, and records to within ½°F of the measured temperature at all times when the thermal oxidizer is controlling emissions from the stills. The permittee shall calibrate and at all times properly maintain the continuous temperature monitor and recorder in accordance with manufacturer's specifications or documented preventive maintenance and quality assurance practices. [IP #0060-I006, V.A.1.e, V.A.3.b; §2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for Nos. 15, 16, 18, and 19 Stills, Unit 43, thermal oxidizer, associated process equipment, and gaseous collection systems: [IP #0060-I001, V.A.3.a; IP #0060-I006, V.A.4.a; RACT Order #230, 1.9; §2103.12.j]
1) All data obtained under condition V.A.3.b above;
2) Results of inspections required by condition V.A.3.a above;
3) Date and times of any period when the continuous temperature monitor required by condition V.A.3.b above is not in operation;
4) Batch cycle times;
5) Batch yield;
6) Raw material per batch;
7) Stack test protocols and reports; and
8) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [IP #0060-I006, V.A.4.b; §2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [IP #0060-I001, V.A.4.a; IP #0060-I006, V.A.5.a; §2103.12.k]
1) Calendar dates covered in the reporting period;
2) Total number of batches and total batch operating time per month; and
3) Monthly high, monthly low, and monthly average thermal oxidizer temperatures.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2108.01.c]

6. Work Practice Standards:

a. The permittee shall do the following for the Nos. 15, 16, 18, and 19 Stills, Unit 43, and the associated thermal oxidizer: [§2105.03]

1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Nos. 15, 16, 18, and 19 Stills, Unit 43, and the associated thermal oxidizer shall be: [RACT Order #230, 1.1; §2105.03]

1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

B. Process P006: Unit 20

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 20
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Process P006 consists of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 20 unless the Reactor is vented to the Holding Tank, and the Holding Tank is equipped with a conservation vent set at a minimum of 1.3 inches of water column. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

b. Total throughput through Unit 20 shall not exceed 66,600,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 96 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 20 process shall not exceed the emissions limitations in Table V-B-1 below: [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

TABLE V-B-1: Unit 20 Emissions Limitations

Pollutant	Unit 20 Total (for all process phases)	
	lb/product change[1]	tpy[2]
Volatile Organic Compounds (VOC)	37.32	1.93
Hazardous Air Pollutants (HAP)	4.44	0.23

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. The permittee shall not use boron trifluoride (BF_3) as a catalyst in Unit 20 unless all BF_3 emissions from the Unit 20 Reactor and Holding Tank are being controlled by a packed-bed scrubber. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall visually inspect the BF_3 scrubber required under condition V.B.1.d at least once per shift for visible emissions. If visible emissions are detected inside of the scrubber, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for the Unit 20 Reactor and associated equipment: [RACT Order #230, 1.9; §2103.12.j]

1) Number of product changes per month and the rolling 12-month total;
2) Poly oil addition rate (lb/hr) and the rolling 12-month total;
3) Type of poly oil used per batch; and
4) If the rolling 12-month total throughput of poly oil exceeds 60,000,000 lbs or if the rolling 12-month total number of product changes exceeds 86, the calculated estimated emissions per month.

b. The permittee shall keep and maintain records of any compositional analyses of poly oil processed in Unit 20. [RACT Order #230, 1.9; §2103.12.j]

c. The permittee shall keep and maintain the following data for the packed-bed scrubber: [§2103.12.j]

1) The amount of BF_3 catalyst used in the reactor per batch; and
2) A log of the monitoring required under condition V.B.3 indicating the time and date of the inspection.

d. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

e. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]

1) Calendar dates covered in the reporting period;
2) All batch information required to be recorded under condition V.B.4.a above; and
3) Packed-bed scrubber information required to be recorded under condition V.B.4.c.1) above.

b. The permittee shall notify the Department within 15 days any time a poly oil with a HAP composition other than the ones listed below is used. The notification shall include a copy of the analysis performed under condition V.B.4.b above: [§2103.12.k]

1) Nevchem
2) Nevpene
3) FT-11-134
4) NI-100

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for Unit 20 and all associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Unit 20 and all associated equipment shall be: [RACT Order #230, 1.1; §2105.03]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

C. Process P007: Unit 21

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Process P007 consists of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 21 unless the Aqueous Treaters are equipped with conservation vents. Each conservation vent shall have a set point above the maximum vapor pressure of the material being processed. [§2103.12.a.2.B]

b. Total throughput through Unit 21 shall not exceed 89,400,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table V-C-1 below: [§2103.12.a.2.B]

TABLE V-C-1: Unit 21 Holding Tower and Holding Tank Emission Limitations

Pollutant	Unit 21 Holding Towers & Tank	
	Short-term (lb/product change[1])	Long-term (tpy[2])
Volatile Organic Compounds (VOC)	21.09	**0.55**
Hazardous Air Pollutants (HAP)	10.55	**0.28**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. The Unit 21 Holding Towers and Final Holding Tank shall not emit more than 21.09 lb per product change [25 Pa Code §129.99]

e. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table V-C-2 below: [§2103.12.a.2.B]

TABLE V-C-2: Unit 21 Aqueous Treater Emission Limitations

Pollutant	Unit 21 Aqueous Treaters			
	Treater #4 (lb/batch)[1]	Treater #10 (lb/batch)[1]	Treater #11 (lb/batch)[1]	Long-term (tpy)[2,3]
Volatile Organic Compounds (VOC)	22.13	10.26	12.99	**6.23**
Hazardous Air Pollutants (HAP)	12.41	5.75	7.28	**3.50**

1. Maximum emissions based on material charging.
2. A year is defined as any consecutive 12-month period.
3. Total for all three aqueous treaters.

f. The permittee shall not use boron trifluoride (BF_3) as a catalyst in Unit 21 unless all BF_3 emissions from the Holding Towers and Final Holding Tank are being controlled by a packed-bed scrubber. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall visually inspect the BF_3 scrubber required under condition V.C.1.f at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for the Unit 21 Holding Towers and Final Holding Tank: [RACT Order #230, 1.9; §2103.12.j]
   1) Number of product changes per month and the rolling 12-month total;
   2) Poly oil addition rate (lb/hr) and the rolling 12-month total;
   3) Number of solvent flushes per batch; and
   4) If the rolling 12-month total throughput of poly oil exceeds 80,500,000 lbs or if the rolling 12-month total number of product changes exceeds 47, the calculated estimated emissions per month.

b. The permittee shall keep and maintain the following data for the Unit 21 Aqueous Treaters: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
   1) Number of batch fillings per treater per month and the rolling 12-month total;
   2) Amount of water used per treater per batch;
   3) Number of washings per treater per batch; and
   4) If the rolling 12-month total of batches exceeds any of the following, the calculated estimated emissions per month:
      a) Treater #4, 221 batches;
      b) Treater #10, 363 batches; or
      c) Treater #11, 296 batches.

c. The permittee shall keep and maintain records of any compositional analyses of poly oil processed in Unit 21. [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]

d. The permittee shall keep and maintain the following data for the packed-bed scrubber: [§2103.12.j]
   1) The amount of BF_3 catalyst used in the reactor per batch; and
   2) A log of the monitoring required under condition V.C.3.

e. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2102.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
1) Calendar dates covered in the reporting period;
2) All batch information required to be recorded under conditions V.C.4.a and V.C.4.b above; and
3) Packed-bed scrubber information required to be recorded under condition V.C.4.d.1) above.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for Unit 21 and all associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Unit 21 and all associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

D. Processes P008 & P009: Continuous Stills #3 and #4

Process Description: Continuous Stills
Facility ID: No. 3 Continuous Still & No. 4 Continuous Still
Raw Materials: polyoil, resin-forming feedstock, additives
Control Device: none

As identified above, Processes P008 & P009 consist of the equipment listed under the heading "Continuous Stills" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The number of product changes shall be limited to 365 in any 12-month period in each continuous still. [§2103.12.a.2.B]

b. The No. 3 and No. 4 Continuous Stills shall not exceed the emissions limitations in Table V-D-1 below: [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

TABLE V-D-1: No. 3 & No. 4 Continuous Still Emission Limitations

Pollutant	No. 3 Continuous Still		No. 4 Continuous Still	
	Short-term (lb/prod. change)[1]	Long-term (tpy)[2]	Short-term (lb/prod. change)[1]	Long-term (tpy)[2]
Volatile Organic Compounds (VOC)	14.00	**2.56**	76.00	**13.87**
Hazardous Air Pollutants (HAP)	1.66	**0.31**	6.13	**1.12**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

c. The No. 4 Continuous Still shall not emit more than 76.00 lb per product change. [25 PA Code §129.99]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following data for both the No. 3 and No. 4 Continuous Stills and associated equipment: [RACT Order #230, 1.9; §2103.12.j; 25 PA Code §129.100]
   1) Number of product changes per month and the rolling 12-month total;
   2) Total operating times;

3) Type and amount of daily raw materials used;
4) Type and amount of daily resins produced; and
5) For each still, if the rolling 12-month total number of product changes exceeds 330, the calculated estimated emissions per month.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; RACT Order #230, 1.10; 25 PA Code §129.100]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
1) Calendar dates covered in the reporting period; and
2) Total number of product changes and operating time per month.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 3 and No. 4 Continuous Stills and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The No. 3 and No. 4 Continuous Stills and associated equipment shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

E. Process P011: No. 2 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 2 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P011 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 2 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I007a, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I007a, V.A.1.b; §2103.12.a.2.B; 25 PA Code §129.99]

c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I007a, V.A.1.c; §2103.12.a.2.B]

d. Fugitive emission from pumps, valves, compressors, and safety pressure relief valves in the No. 2 Packaging Center shall not exceed 1.49 tons/yr of VOCs. [IP #0060-I007a, V.A.1.e; §2103.12.a.2.B]

e. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.1.f; §2103.12.a.2.B]

f. Emissions from the No. 2 Packaging Center shall not exceed the following at any time: [IP #0060-I007a, V.A.1.g; §2103.12.a.2.B]

Table V-E-1: No. 2 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[4]	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
PM_{10}[(4)]	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
$PM_{2.5}$[(4)]	Crusher, Large & Small Bagging Stations, and Flaking (total emissions)	0.38	**1.67**
VOC	Resin Drain Kettles[3]	0.51	**15.56**
	No. 2 Flaking Belt	1.86	**8.14**
HAP	Resin Drain Kettles[3]	0.01	**0.36**
	No. 2 Flaking Belt	0.04	**0.19**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months.
3. Short-term emissions are per kettle (lb/hr per kettle). There are seven (7) total drain kettles.
4. All particulate matter emission limits are for filterable particulate.

2. **Testing Requirements:**

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 ("Emissions Testing) and §2108.02. [IP #0060-I007a, V.A.2.a-b; §2103.12.h; 25 PA Code §129.100]
  1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.E.1.f above;
  2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
  3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
  4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
  5) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
  6) Any alternative test methods approved by the Department.

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. **Monitoring Requirements:**

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [IP #0060-I007a, V.A.3.a; §2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 2 Packaging Center baghouse. [IP #0060-I007a, V.A.3.b; §2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [IP #0060-I007a, V.A.3.c; §2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 2 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I007a, V.A.3.d; §2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall record the following information for the No. 2 Packaging Center to demonstrate

compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I007a, V.A.4.a; §2103.12.j; 25 PA Code §129.100]

1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month);
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.E.3.d above.

b. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [IP #0060-I007a, V.A.4.c; §2103.12.j.2; 25 PA Code §129.100]

5. **Reporting Requirements:**

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I007a, V.A.5.a; §2103.12.k]

b. The semiannual report shall include the following information at a minimum: [IP #0060-I007a, V.A.5.b; §2103.12.k]

1) Calendar dates covered in the reporting period;
2) Monthly data required by conditions V.E.4.a.1), 3), and 4) above; and
3) Reasons for any non-compliance with the emission standards.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I007a, V.A.5.c; §2103.12.k]

6. **Work Practice Standards:**

a. The permittee shall do the following for the No. 2 Packaging Center and associated equipment: [§2105.03]

1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I007a, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

F. Process P012: No. 3 Packaging Center

Process Description: Pastillating and Packaging
Facility ID: No. 3 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P012 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 3 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99; 25 PA Code §129.97(c)(2)]

b. Emissions from the Resin Pastillating Belt shall not exceed 0.51 lbs of VOC per ton of resin produced. [§2103.12.a.2.B; 25 PA Code §129.99]

c. Emissions from the Resin Pastillating Belt shall not exceed 0.02 lbs of HAP per ton of resin produced. [§2103.12.a.2.B]

d. The permittee shall not operate the bagging stations unless all emissions are directed to the No. 3 Packaging Center baghouse. [2103.12.a.2.B]

e. Emissions from the No. 3 Packaging Center shall not exceed the following at any time: [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

TABLE V-F-1: No. 3 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[5]	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
PM_{10}(5)	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
$PM_{2.5}$(5)	Large & Small Bagging Stations, and Pastillating (total emissions)	0.25	**1.09**
VOC	Resin Drain Kettles[3]	0.71	**21.78**
	No. 3 Pastillating Belt	1.53	**6.69**
	Pouring[4]	0.94	**1.96**
HAP	Resin Drain Kettles[3]	0.03	**0.71**
	No. 3 Pastillating Belt	0.05	**0.22**
	Pouring[4]	0.03	**0.08**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months. There are seven (7) total drain kettles.

3. Short-term emissions are per kettle (lb/hr per kettle).
4. Product is either poured, pastillated, or loaded under Section V.J.
5. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. An emissions test shall be performed within 18 months after issuance of this permit in accordance with Site Level condition IV.13 ("Emissions Testing") and §2108.02. [§2103.12.h; 25 PA Code §129.100]
   1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the pastillating belt VOC emission limits in condition V.F.1.e above;
   2) Testing shall be conducted at maximum pastillating belt production and shall consist of three (3) 1-hour test runs;
   3) The outlet gas flow rate and VOC emissions shall be continuously monitored and recorded during the emissions testing;
   4) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
   5) Any alternative test methods approved by the Department.

b. Emissions testing for VOC and HAP shall be performed within six (6) months after actual throughput of resin on the pastillating belt first exceeds 24,000,000 pounds in any rolling 12-month period and every five (5) years thereafter. [§2103.12.h]
   1) Emissions testing of VOC shall be in accordance with condition V.F.2.a above;
   2) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs.

c. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 3 Packaging Center baghouse. [§2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 3 Packaging Center process equipment and control device once per week to ensure the equipment exhaust system, including material handling enclosures, is not compromised by damage, malfunction, or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [§2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall record the following information for the No. 3 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [§2103.12.j; 25 PA Code §129.100]
   1) Process operation time, raw material usage, and production records (daily, monthly, and 12-month);
   2) Date of kettle fillings, amount filled, and type of fill (resin or resin solution) for the reporting period;
   3) Total amount of throughput on the pastillating belt (daily, monthly, and 12-month);
   4) Total amount of final product packaged at the bagging areas (monthly and 12-month);
   5) Total amount of final product from the pouring station (monthly and 12-month);
   6) Total calculated VOC and HAP emissions from the resin drain kettles, pastillating belt, and pouring station, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
   7) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.F.3.d above.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

5. **Reporting Requirements:**

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period; and
   2) Monthly and 12-month data required by conditions V.F.4.a.1), 4), 5), and 6) above.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. **Work Practice Standards:**

a. The permittee shall do the following for the No. 3 Packaging Center and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer's recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

G. Process P013: No. 5 Packaging Center

Process Description: Flaking and Packaging
Facility ID: No. 5 Packaging Center
Raw Materials: liquid hydrocarbon resins, flaked solid hydrocarbon resins
Control Device: pulse-jet fabric filter (Mikropul 48S-8-20)

As identified above, Process P013 consists of the equipment listed under the heading "Flaking and Packaging" in Table II-1 in the Facility Description, Section II.

1. Restrictions:

a. The permittee shall not operate the No. 5 Packaging Center unless the equipment is properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. Proper operation and maintenance shall include the use of covers on all kettles after the initial kettle charging and during process operations, and the use of enclosures on all solids handling transfer equipment. [IP #0060-I008, V.A.1.a; RACT Order #230, 1.5; §2105.03; 25 PA Code §129.99]

b. Emissions from the Resin Flaking Belt shall not exceed 0.338 lbs of VOC per ton of resin produced. [IP #0060-I008, V.A.1.b; §2103.12.a.2.B; 25 PA Code §129.99]

c. Emissions from the Resin Flaking Belt shall not exceed 0.008 lbs of HAP per ton of resin produced. [IP #0060-I008, V.A.1.c; §2103.12.a.2.B]

d. The permittee shall not operate the crusher or bagging stations unless all emissions are directed to the No. 5 Packaging Center baghouse. [2103.12.a.2.B]

e. Emissions from the No. 5 Packaging Center shall not exceed the following at any time: [IP #0060-I008, V.A.1.e; OP #4051008-000-66500; §2103.12.a.2.B]

TABLE V-G-1: No. 5 Packaging Center Emission Limitations

	Process	Short-term (lb/hr)[1]	Long-term (tpy)[2]
Particulate Matter[4]	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
PM_{10}[(4)]	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
$PM_{2.5}$[(4)]	Large & Small Bagging Stations, and Flaking (total emissions)	0.25	**1.09**
VOC	Resin Drain Kettles[3]	1.07	**14.00**
	No. 5 Flaking Belt	1.67	**7.33**
HAP	Resin Drain Kettles[3]	0.04	**0.46**
	No. 5 Flaking Belt	0.04	**0.17**

1. Based on a 3-hour average.
2. A year is defined as any 12 consecutive months.
3. Short-term emissions are per kettle (lb/hr/kettle). There are three (3) total drain kettles.
4. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. Emissions testing shall be performed at least once every five (5) years, in accordance with Site Level condition IV.13 (“Emissions Testing”) and §2108.02. [IP #0060-I008, V.A.2.a & b; §2103.12.h; 25 PA Code §129.100]
   1) Testing shall be performed at the outlet of the fume hood to demonstrate compliance with the flaking belt VOC and HAP emission limits in condition V.G.1.e above;
   2) Testing shall be conducted at maximum flaker production and shall consist of three (3) 1-hour test runs;
   3) The outlet gas flow rate and VOC and HAP emissions shall be continuously monitored and recorded during the emissions testing;
   4) Molten resin feed rate and finished resin produced shall be recorded for each test run;
   5) Type of resin produced shall be recorded for each test run;
   6) EPA Test Method 25A shall be used to determine outlet concentrations and mass emission rates (lb/hr) of VOC;
   7) EPA Test Method 18 shall be used to determine outlet concentrations and mass emission rates (lb/hr) of total HAPs; or
   8) Any alternative test methods approved by the Department.

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall provide instrumentation to measure baghouse pressure drop to within ½” w.c. of the actual pressure drop at all times. The instrumentation shall be maintained in good working condition at all times, and shall be located in an easily accessible location. [§2103.12.i]

b. The permittee shall monitor and record the differential pressure drop across each baghouse compartment weekly for the No. 5 Packaging Center baghouse. [§2103.12.i]

c. The permittee shall inspect the fabric filter for evidence of particulate matter leaks at least annually, and shall repair any leaks as necessary. Bags shall be inspected annually, while the fabric filter is not in operation, for tears, scuffs, abrasions, or holes. Bags shall be replaced as necessary. [§2103.12.i]

d. The permittee shall perform an EPA Test Method 22 visual inspection of the No. 5 Flaking Belt, exhaust hood, and associated duct work once per week to ensure the equipment is operating properly, and that the integrity of the system is not compromised by damage, malfunction or deterioration. Immediate repairs shall be made to correct obvious failures or deficiencies. [IP #0060-I008, V.A.3; §2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall record the following information for the No. 5 Packaging Center to demonstrate compliance with the requirements of this permit. Such records shall provide sufficient data and calculations to clearly demonstrate that the applicable requirements are being met, and shall include but not be limited to the following: [IP #0060-I008, V.A.4.a; §2103.12.j] ; 25 PA Code §129.100
   1) Process operation time, raw material usage, and production records (daily, monthly, and 12-

month);
2) Date of kettle fillings and amount filled during the reporting period;
3) Total amount of final product packaged at the bagging areas (monthly and 12-month);
4) Total calculated VOC and HAP emissions from the resin drain kettles and the flaker belt, as well as the calculation methods and emission factors used to determine those emissions (monthly and 12-month rolling totals);
5) Records of all emission unit and control equipment inspections, emission test reports, and any maintenance, inspection, calibration, and/or replacement of such equipment required by condition V.G.3.d above.

b. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

c. All records shall be retained by the facility in accordance with General Condition III.14. These records shall be made available to the Department upon request for inspection and/or copying. [§2103.12.j.2; 25 PA Code §129.100]

5. **Reporting Requirements:**

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [IP #0060-I008, V.A.5.a; §2103.12.k]

b. The semiannual report shall include the following information: [IP #0060-I008, V.A.5.b; §2103.12.k]
1) Calendar dates covered in the reporting period; and
2) Monthly and 12-month data required by conditions V.G.4.a.1), 3), and 4) above;
3) Non-compliance information required by condition V.G.4.b above, and
4) Reasons for any non-compliance with the emission standards.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k]

6. **Work Practice Standards:**

a. The permittee shall do the following for the No. 5 Packaging Center and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. The permittee shall calibrate, maintain, and operate all instrumentation, process equipment, and control equipment according to manufacturer’s recommendations, good engineering control practices, and the applicable terms and conditions of this permit. [IP #0060-I008, V.A.6; RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

H. Process P014: Wastewater Collection, Conveyance, and Treatment

Facility ID: Wastewater Collection System
Raw Materials: industrial process wastewaters, water treatment chemicals, biological treatment nutrients, storm waters
Control Device(s): none

As identified above, Process P014 consists of equipment listed under the heading "Other Processes – Wastewater Collection, Conveyance, and Treatment" in Table II-1 in the Facility Description, Section II, as well as all catch basins and other water collection locations within the facility.

1. Restrictions:

a. The permittee shall not operate or allow to be operated the Surge Tank (#5001), Batch Tanks (#2011-2013), and Sludge Holding Tank (#2010) unless each is covered with a fixed roof. [§2103.12.a.2.B]

b. Emissions from the wastewater collection and conveyance system shall not exceed the following at any time: [§2103.12.a.2.B]

TABLE V-H-1: Wastewater Conveyance System Emission Limitations

POLLUTANT	Yearly Emissions (tons/yr)[1]
Volatile Organic Compounds (VOCs)	**3.36**
Hazardous Air Pollutants (HAPs)	**1.08**

1. A year is defined as any consecutive 12-month period.

c. Emissions from the batch tanks, equalization tank, biological treatment system, and other vessels in the wastewater treatment system shall not exceed the following at any time: [§2103.12.a.2.B; IP #90-I-0058-P; 25 PA Code §129.97(c)(2)]

TABLE V-H-2: Wastewater Treatment System Emission Limitations

POLLUTANT	Batch Tanks	Equalization Tank	Aeration Tanks
	tpy[1]	tpy[1]	tpy[1]
Volatile Organic Compounds (VOCs)	**10.28**	**1.79**	**1.37**
Hazardous Air Pollutants (HAPs)	**1.52**	**0.73**	**0.87**

1. A year is defined as any consecutive 12-month period.

d. The permittee shall not operate or allow to be operated the Rotary Vacuum Filter unless Boiler #6 is in operation. The Rotary Vacuum Filter shall not be operated unless all emissions from the vacuum pump are vented to Boiler #6. [§2103.12.a.2.B; 25 PA Code §129.99]

2. **Testing Requirements:**

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. **Monitoring Requirements:**

a. The permittee shall take monthly Photo Ionization Detector (PID) readings (or equivalent monitoring device as approved by the Department) of each manhole/catch basin for the contaminated water system just below the manhole/catch basin opening for VOCs and HAPs. [§2103.12.i]

b. The permittee may reduce the frequency of manhole/catch basin PID readings from monthly to quarterly if total emissions from the contaminated water conveyance system do not exceed the limits in condition V.H.1.b above for twelve (12) consecutive monthly readings. [§2103.12.i]
   1) The permittee may reduce the frequency from quarterly to semiannually if total emissions do not exceed the limits in condition V.H.1.b above for three (3) consecutive years.
   2) If emissions exceed the limits in condition V.H.1.b above, the permittee shall resume more frequent readings.

c. The PID monitoring device shall be calibrated using isobutylene gas in order to generate readings that have the same "PID or Isobutylene Units" as the PID readings from the "Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) Emission Estimate for Wastewater Conveyance and Treatment" report (published by Malcolm Pirnie, Inc., January 2008). [§2103.12.i]

d. The permittee shall measure the VOC and total HAP concentrations of the wastewater influent to the Equalization Tank on a quarterly basis. [§2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall keep rolling 12-month records of VOC and HAP emission calculations for the wastewater conveyance system based on the PID readings required by conditions V.H.3.a and V.H.3.b above and the emission factors determined in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c above, or other factors approved by the Department. [§2103.12.j]

b. The permittee shall keep records of the following for the wastewater treatment system: [§2103.12.j]
   1) A table of all PID readings conducted.
   2) Daily, monthly, and rolling 12-month wastewater flow volume treated.
   3) Quarterly wastewater influent concentrations samples required under condition V.H.3.d above.

c. If the recorded values of the quarterly wastewater concentrations in condition V.H.4.b.3) exceed the values in the January 2008 wastewater emissions estimate report referenced in condition V.H.3.c, the permittee shall re-evaluate the emissions estimate using TOXCHEM or other model program as approved by the Department. [§2103.12.j]

d. The permittee shall record all instances of operation of the Rotary Vacuum Filter, including date, time, and duration of operation and total throughput of wastewater to the unit. [§2103.12.j; 25 PA Code §129.100]

e. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. **Reporting Requirements:**

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
1) Calendar dates covered in the reporting period.
2) Estimated VOC and HAP emissions from the wastewater conveyance system required under condition V.H.4.a above.
3) A summary of the PID readings required to be maintained under condition V.H.4.b.1) above.
4) The monthly wastewater volume recorded under condition V.H.4.b.2) above.
5) Estimated VOC and HAP emissions from the wastewater treatment system.
6) All information for the Rotary Vacuum Filter required to be recorded by condition V.H.4.d above for the time period of the report.

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. **Work Practice Standards:**

a. The permittee shall do the following for the Wastewater Collection, Conveyance, and Treatment system: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Wastewater Collection, Conveyance, and Treatment system shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

I. Process P015: Resin Rework Tanks

Facility ID: Tanks N2 and N4
Raw Materials: resins, rosins, distillate oils
Control Device(s): double-pipe surface condenser

1. Restrictions:

a. The permittee shall not operate or allow to be operated the resin rework tanks N2 and N4 unless all emissions are vented through a condenser. [RACT Order #230, §1.3; §2103.12.a.2.B; 25 PA Code §129.99]

b. Emissions from the resin rework tanks at the exit of the condenser shall not exceed the emissions limitations in Table V-I-1 below: [§2103.12.a.B]

TABLE V-I-1: Resin Rework Tank Emission Limitations

POLLUTANT	Hourly Emissions (lb/hr)[1]	Yearly Emissions (tons/yr)[2]
Volatile Organic Compounds (VOCs)	3.78	**16.55**
Hazardous Air Pollutants (HAPs)	0.08	**0.32**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.

c. The average monthly inlet coolant temperature on the condenser shall not exceed 90 °F. [RACT Order #230, §1.3.a; §2103.12.a.2.B]

2. Testing Requirements:

a. The permittee shall perform an one-time test within 24-months of the issuance date of this permit in accordance with Site Level Condition IV.13 (“Emissions Testing”) and Article XXI §2108.02. [§2102.12.h; §2108.02]

b. Emissions testing shall be performed at the outlet of the condenser for VOC in accordance with EPA Reference Methods 25 and the Allegheny County Health Department Source Testing Manual, or any alternative test method as approved by the Department. Testing shall be performed during the period of maximum emissions from the process and shall consist of three (3) test runs, each performed over the entire vessel loading period. The following information shall be reported as part of the emissions test report: [§2103.12.h; §2108.02]
1) VOC emissions (in lb/hr);
2) Vessel loading duration;
3) Coolant inlet temperature (continuous);
4) Outlet vapor temperature (continuous); and
5) Resin production rate (gallons/batch; lb/batch)

c. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. **Monitoring Requirements:**

a. The permittee shall install, operate, and maintain a condenser coolant inlet temperature instrument that continuously monitors the coolant inlet temperature to a standard accuracy of the greater of ±2.2 °C or ±0.75% of the temperature measured. The permittee shall at all times properly maintain and calibrate the continuous temperature monitor and recorder in accordance with manufacturer's specifications and good engineering practices. [§2103.12.i]

b. Monitoring data recorded during periods of monitoring system breakdowns, repairs, preventive maintenance, calibration checks, zero (low-level) and high-level adjustments, periods of non-operation of the process unit (or portion thereof) resulting in cessation of the emissions to which the monitoring applies, shall not be included in any average to determine compliance, except monitoring data is to be collected during periods of startup, shutdown and malfunction. [§2103.12.i]

c. The permittee shall seek Department approval of any alternative monitoring systems. [§2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall maintain the following records for the condenser: [§2103.12.j; 25 PA Code §129.100]
   1) A record of condenser coolant inlet temperature values measured at least once every 15 minutes; or
   2) A record of block average values for 15-minute or shorter periods calculated from all measured coolant inlet temperature values during each period or from at least one measured data value per minute if measure more frequently than once per minute;
   3) Hours of operation;
   4) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment; and
   5) Resin production data.

b. The permittee shall record the following information any time the coolant inlet temperature monitor required by condition V.I.3.a above is offline while the Resin Rework Tanks are in operation: [§2103.12.j]
   1) Date and time the unit went offline;
   2) Duration of offline status; and
   3) Cause of offline status.

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2; 25 PA Code §129.100]

5. **Reporting Requirements:**

a. The permittee shall report the following information to the Department semiannually in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [§2103.12.k]

1) Calendar dates covered in the reporting period;
2) Hours of operation; and
3) Any instances of non-compliance

b. The permittee shall report all information in condition V.I.4.b regarding the coolant inlet temperature monitor in the semiannual report. [§2103.12.k]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Resin Rework Tanks and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Resin Rework Tanks and condenser shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1, 1.3; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

J. Process P016: Final Product Loading

Facility ID: LX-830 Fuel Oil Barge Loading and Final Product Tankcar & Tank Wagon Loading
Raw Materials: Petroleum hydrocarbon resins, distillate fuel oils, and distillate oils
Control Device(s): none

1. Restrictions:

a. Emissions from the Final Product Loading process shall not exceed the emissions limits in Table V-J-1 below: [§2103.12.a.2.B]

TABLE V-J-1: Final Product Loading Emission Limitations

POLLUTANT	Barge Loading		Tankcar & Tank Wagon Loading		Total
	lb/hr[1]	tpy[2]	lb/hr[1]	tpy[2]	tpy[2]
Volatile Organic Compounds (VOCs)	13.30	0.79	22.52	18.24	**19.03**
Hazardous Air Pollutants	0.64	0.04	0.26	0.21	**0.25**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.

b. The rate of barge loading shall not exceed 850 gallons per minute, and total transfer of material transferred to barges shall not exceed 6.0 million gallons in any 12-month period. [§2103.12.a.2.B]

c. The rate of tankcar/tank wagon loading shall not exceed 250 gallons per minute, and total transfer of material transferred to tankcars or tank wagons shall not exceed 24.3 million gallons in any 12-month period. [§2103.12.a.2.B]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records for each batch of product loaded: [§2103.12.j; 25 PA Code §129.100]
1) Date and time of loading operations;
2) Type of loading (barge or tankcar);
3) Amount of material transferred;
4) Type of material transferred; and
5) Temperature of material during loading of tankcars or tank wagons.

b. The permittee shall record the calculated estimated emissions per month if the total amount of material loaded to barges exceeds 5.4 million gallons in any rolling 12-month period, or if the total amount of material loaded to tankcars or tank wagons exceeds 21.9 million gallons in any rolling 12-month period. [§2103.12.j]

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain, at a minimum, the following: [§2103.12.k]
   1) Calendar dates covered in the reporting period; and
   2) All loading information required to be recorded under condition V.J.4.a above;
   3) In lieu of the actual temperatures recorded under condition V.J.4.a.5) above, the permittee may report the temperature of the material at the storage tank.

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the product loading systems and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. The Barge Loading and Tankcar & Tank Wagon Loading processes shall be: [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]
   1) Properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions; and
   2) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

K. B001, B002, B003, B004, & B015: Heat Poly Still Process Heaters

Process Description:	Heat Poly Still Process Heaters				
Facility ID:	#15 Still Process Heater (B001)	#16 Still Process Heater (B002)	#18 Still Process Heater (B003)	#19 Still Process Heater (B004)	Unit 43 Process Heater (B015)
Max. Design Rate:	7.5 MMBtu/hr	6.1 MMBtu/hr	8.0 MMBtu/hr	7.5 MMBtu/hr	7.5 MMBtu/hr
Fuel(s):	natural gas, liquid propane				
Control Device:	none				

1. Restrictions:

a. Only natural gas shall be combusted in the Still Process Heaters except in the case of emergencies when liquid propane may be used. [§2103.12.a.2.B]

b. The amount of fuel combusted in the Still Process Heaters shall not exceed the following: [§2103.12.a.2.B]
1) No. 15 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane;
2) No. 16 Still Process Heater: 5,980 scf/hr or 52.4 mmscf/yr of natural gas, and 66.7 gal/hr or 33,340 gal/yr of propane;
3) No. 18 Still Process Heater: 7,850 scf/hr or 68.7 mmscf/yr of natural gas, and 87.4 gal/hr or 43,750 gal/yr of propane;
4) No. 19 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane; and
5) Unit 43 Still Process Heater: 7,360 scf/hr or 64.4 mmscf/yr of natural gas, and 82.0 gal/hr or 40,990 gal/yr of propane.

c. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

d. Emissions from the No. 15, No. 16, No. 18, and No. 19 Still Process Heaters shall not exceed the emissions limitations in Table V-K-1 below: [OP #4051008-000-23903; OP #4051008-000-00904, OP #4051008-000-24100; OP #4051008-000-23902; §2104.02.a.1.A]

TABLE V-K-1: No. 15, No. 16, No. 18 & No. 19 Still Process Heater Emission Limitations

Pollutant	No. 15 Heater			No. 16 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.27**	0.05	0.06	**0.22**
PM_{10}[(3)]	0.06	0.07	**0.27**	0.05	0.06	**0.22**
$PM_{2.5}$[(3)]	0.06	0.07	**0.27**	0.05	0.06	**0.22**
Nitrogen Oxides (NO_X)	0.85	1.23	**3.80**	0.69	1.00	**3.09**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.71	0.71	**3.11**	0.58	0.58	**2.53**
VOC	0.05	0.10	**0.22**	0.04	0.08	**0.18**

Pollutant	No. 18 Heater			No. 19 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.28**	0.06	0.07	**0.27**
PM_{10}(3)	0.06	0.07	**0.28**	0.06	0.07	**0.27**
$PM_{2.5}$(3)	0.06	0.07	**0.28**	0.06	0.07	**0.27**
Nitrogen Oxides (NO_X)	0.90	1.32	**4.05**	0.85	1.23	**3.80**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.76	0.75	**3.32**	0.71	0.71	**3.11**
VOC	0.05	0.10	**0.23**	0.05	0.10	**0.22**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

e. Emissions from the Unit 43 Process Heater shall not exceed the emissions limitations in Table V-K-2 below: [IP #0060-I001; §2104.02.a.1.A]

TABLE V-K-2: Unit 43 Process Heater Emission Limitations

Pollutant	Unit 43 Heater		
	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.06	0.07	**0.27**
PM_{10}(3)	0.06	0.07	**0.27**
$PM_{2.5}$(3)	0.06	0.07	**0.27**
Nitrogen Oxides (NO_X)	0.85	1.23	**3.80**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**
Carbon Monoxide (CO)	0.71	0.71	**3.11**
VOC	0.05	0.10	**0.22**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
   1) Monthly fuel usage;
   2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) The records of fuel combustion required under condition V.K.4.a above;
   3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.K.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Heat Polymerization Still Process Heaters and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Heat Polymerization Still Process Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

L. B006 & B007: Continuous Still Process Heaters

Process Description:	Continuous Still Process Heaters	
Facility ID:	No. 3 Continuous Still Process Heater (B006)	No. 4 Continuous Still Process Heater (B007)
Max. Design Rate:	5.25 MMBtu/hr	10.5 MMBtu/hr
Fuel(s):	natural gas, liquid propane (No. 4)	
Control Device:	none	

1. Restrictions:

a. The permittee shall submit a written "Reactivation Plan" to the Department for approval prior to restarting the No. 4 Continuous Still Process Heater in accordance with General Condition III.17. [§2103.13.d]

b. Only natural gas shall be combusted in the Continuous Still Process Heaters except in the case of emergencies when liquid propane may be used in the No.4 Heater. [§2103.12.a.2.B]

c. The amount of fuel combusted in the Continuous Still Process Heaters shall not exceed the following: [§2103.12.a.2.B]
1) No. 3 Continuous Still Process Heater: 5,150 scf/hr or 45.1 mmscf/yr of natural gas; and
2) No. 4 Continuous Still Process Heater: 10,300 scf/hr or 90.2 mmscf/yr of natural gas, and 114.8 gal/hr or 57,380 gal/yr of propane.

d. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

e. Emissions from the No. 3 and No. 4 Continuous Still Process Heaters shall not exceed the emissions limitations in Table V-L-1 below: [§2103.12.a.1.A; §2104.02.a.1.A]

TABLE V-L-1: No. 3 & No. 4 Continuous Still Process Heater Emission Limitations

Pollutant	No. 3 Cont. Still Heater		No. 4 Cont. Still Heater		
	lb/hr[1] (nat. gas)	tpy[2]	lb/hr[1] (nat. gas)	lb/hr[1] (propane)	tpy[2]
Particulate Matter[3]	0.04	**0.18**	0.09	0.10	**0.37**
PM_{10}(3)	0.04	**0.18**	0.09	0.10	**0.37**
$PM_{2.5}$(3)	0.04	**0.18**	0.09	0.10	**0.37**
Nitrogen Oxides (NO_X)	0.59	**2.59**	1.19	1.72	**5.32**
Sulfur Oxides (SO_X)	0.01	**0.02**	0.01	0.01	**0.03**
Carbon Monoxide (CO)	0.50	**2.18**	1.00	0.99	**4.36**
VOC	0.03	**0.14**	0.07	0.14	**0.31**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. Record Keeping Requirements:

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
   1) Monthly fuel usage;
   2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. Reporting Requirements:

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
   1) Calendar dates covered in the reporting period;
   2) The records of fuel combustion required under condition V.L.4.a above;
   3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.L.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the Continuous Still Process Heaters and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Continuous Still Process Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

M. B009, B010, & B011: Packaging Center Heaters

Process Description:	Packaging Center Heaters		
Facility ID:	No. 2 Packaging Center Heater (B009)	No. 3 Packaging Center Heater (B010)	No. 5 Packaging Center Heater (B011)
Max. Design Rate:	5.0 MMBtu/hr	3.91 MMBtu/hr	3.0 MMBtu/hr
Fuel(s):	natural gas, liquid propane		
Control Device:	none		

1. Restrictions:

a. Only natural gas shall be combusted in the Packaging Center Heaters except in the case of emergencies when liquid propane may be used. [§2103.12.a.2.B]

b. The amount of fuel combusted in the Packaging Center Heaters shall not exceed the following: [§2103.12.a.2.B]
1) No. 2 Packaging Center Heater: 4,910 scf/hr or 42.9 mmscf/yr of natural gas, and 54.6 gal/hr or 27,330 gal/yr of propane;
2) No. 3 Packaging Center Heater: 3,840 scf/hr or 33.6 mmscf/yr of natural gas, and 42.7 gal/hr or 21,370 gal/yr of propane; and
3) No. 5 Packaging Center Heater: 2,950 scf/hr or 25.8 mmscf/yr of natural gas, and 32.8 gal/hr or 16,400 gal/yr of propane.

c. Emissions of particulate matter shall not exceed 0.008 lb/MMBtu. [§2104.02.a.1.A]

d. Emissions from the Packaging Center Heaters shall not exceed the emissions limitations in Table V-M-1 below: [OP #4051008-000-00905; OP #4051008-000-00901; §2104.02.a.1.A]

TABLE V-M-1: Packaging Center Heater Emission Limitations

Pollutant	No. 2 Packaging Center Heater			No. 3 Packaging Center Heater			No. 5 Packaging Center Heater		
	lb/hr[1] *nat. gas*	lb/hr[1] *propane*	tpy[2]	lb/hr[1] *nat. gas*	lb/hr[1] *propane*	tpy[2]	lb/hr[1] *nat. gas*	lb/hr[1] *propane*	tpy[2]
Particulate Matter[3]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
PM_{10}[3]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
$PM_{2.5}$[3]	0.04	0.05	**0.18**	0.03	0.04	**0.14**	0.03	0.03	**0.11**
Nitrogen Oxides (NO_X)	0.57	0.82	**2.54**	0.44	0.64	**1.98**	0.34	0.49	**1.52**
Sulfur Oxides (SO_X)	0.01	0.01	**0.02**	0.01	0.01	**0.01**	0.01	0.01	**0.01**
Carbon Monoxide (CO)	0.48	0.47	**2.08**	0.37	0.37	**1.62**	0.29	0.29	**1.25**
VOC	0.03	0.07	**0.15**	0.03	0.05	**0.12**	0.02	0.04	**0.09**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. **Testing Requirements:**

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. **Monitoring Requirements:**

The permittee shall install and maintain the necessary fuel flow meter(s) to determine and to record the monthly amount of natural gas and propane combusted. [§2103.12.i]

4. **Record Keeping Requirements:**

a. The permittee shall keep and maintain the following records: [RACT Order #230, 1.7, 1.9; §2103.12.j]
1) Monthly fuel usage;
2) Records of operation, maintenance, inspection, calibration, and/or replacement of equipment.

b. All records required under this section shall be maintained by the permittee in accordance with General Condition III.14. [§2103.12.j.2; RACT Order #230, 1.10]

5. **Reporting Requirements:**

a. The permittee shall submit semiannual reports to the Department in accordance with General Condition III.15. [§2103.12.k]

b. The semiannual report shall include the following information: [§2103.12.k]
1) Calendar dates covered in the reporting period;
2) The records of fuel combustion required under condition V.M.4.a above;
3) Reasons for any noncompliance with the emission standards;

c. Reporting instances of non-compliance in accordance with condition V.M.5.b.3) above, does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. **Work Practice Standards:**

a. The permittee shall do the following for the Packaging Center Heaters and associated equipment: [§2105.03]
1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Packaging Center Heaters shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1, 1.5; §2105.03]

~PERMIT SHIELD IN EFFECT~

N. B013: No. 6 Boiler

Facility ID: No. 6 Boiler
Max. Design Rate: 49.4 MMBtu/hr
Primary Fuel: Natural Gas
Secondary Fuel: none
Control Device(s): none

1. Restrictions:

a. At no time shall the permittee operate Boiler No. 6 using any fuel other than only utility-grade natural gas. [IP #0060-I009, V.A.1.a; §2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

b. The amount of natural gas combusted shall not exceed 47,050 scf per hour or 412.2 mmscf in any consecutive 12-month period. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

c. Emissions of particulate matter from Boiler No. 6 shall not exceed 0.008 lb/MMBtu. [IP #0060-I009, V.A.1.b; §2104.02.a.1.A; 25 PA Code §129.97(c)(2)]

d. Emissions from Boiler No. 6 shall not exceed the limitation in Table V-N-1 below: [IP #0060-I009, V.A.1.c; §2104.02.a.1.A; 25 PA Code §129.97(c)(2)]

TABLE V-N-1: Boiler #6 Emission Limitations

POLLUTANT	Short-Term	Long-Term
	lb/hr[1]	tpy[2]
Particulate Matter[3]	0.395	**1.73**
Particulate Matter < 10 µm[3]	0.395	**1.73**
Particulate Matter < 2.5 µm[3]	0.395	**1.73**
Nitrogen Oxides (NO_X)	5.411	**23.70**
Sulfur Oxides (SO_X)	0.033	**0.14**
Carbon Monoxide (CO)	4.545	**19.91**
Volatile Organic Compounds (VOCs)	0.280	**1.30**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

a. The permittee shall perform an emissions test on Boiler No. 6 within six (6) months after the amount of natural gas combusted in any rolling 12-month period first exceeds 206 mmscf to determine compliance with the NO_X limits in condition V.N.1.d above and every five (5) years thereafter. [§2103.12.h]

1) Compliance shall be determined by an average of three (3) 1-hour test runs. Testing shall be conducted in accordance with Site Level Condition IV.13 (“Emissions Testing”) and U.S. EPA Test Method 7 or other test methods approved by the Department: [§2103.12.h]

b. The Department reserves the right to require additional emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. **Monitoring Requirements:**

a. The permittee shall perform an annual adjustment or "tune-up" on Boiler No. 6 once every 12 months. Such annual tune-ups shall include: [IP #0060-I009, V.A.3.a; RACT Order #230, 1.6; §2105.06.d.2]
1) Inspection, adjustment, cleaning, or necessary replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation;
2) Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions or NO_X, and to the extent practicable, minimize emissions of carbon monoxide; and
3) Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation.

4. **Record Keeping Requirements:**

a. The permittee shall maintain all appropriate records to demonstrate compliance with the requirements of both Article XXI §2105.06 and RACT Order #230. Such records shall provide sufficient data to clearly demonstrate that all requirements of Article XXI §2105.06 and RACT Order #230 are being met. [IP #0060-I009, V.A.4.a; RACT Order #230, 1.9; §2103.12.j]

b. For the annual tune-up required under condition V.N.3.a above, the permittee shall maintain the following records: [IP #0060-I009, V.A.4.b; RACT Order #230, 1.6; §2103.12.j]
1) The date of the annual tune-up;
2) The name of the service company and/or individuals performing the annual tune-up;
3) The CO and NO_X emission rate before and after the annual tune-up; and
4) The excess oxygen rate after the annual tune-up.

c. The permittee shall maintain records of fuel usage for Boiler No. 6. [IP #0060-I009, V.A.4.c; RACT Order #230, 1.7; §2103.12.j]

d. All records shall be retained by the facility for at least five (5) years. These records shall be made available to the Department upon request for inspection and/or copying. [IP #0060-I009, V.A.1.a; RACT Order #230, 1.10; §2103.12.j.2]

5. **Reporting Requirements:**

a. The permittee shall report the following information semiannually to the Department in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report: [IP #0060-I009, V.A.5.a; §2103.12.k.1]
1) Records of the annual tune-up required under condition V.N.4.b above; and
2) Records of the fuel use required under condition V.N.4.c above.

b. Until terminated by written notice from the Department, the requirement for the permittee to report cold starts 24-hours in advance in accordance with Site Level Condition IV.9 is waived and the permittee may report all cold starts in the semiannual report required under condition V.N.5.a above. [§2103.12.k; §2108.01.d]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I009, V.A.5.b; §2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for the No. 6 Boiler: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Boiler No. 6 shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [IP #0060-I009, V.A.6; RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

O. B012: No. 8 Boiler

Facility ID: No. 8 Boiler
Max. Design Rate: 29.5 MMBtu/hr
Primary Fuel: Natural Gas
Secondary Fuel: none
Control Device(s): Induced Flue Gas Recirculation

1. Restrictions:

a. Emissions of particulate matter from Boiler No. 8 shall not exceed 0.008 lb/MMBtu. [IP #0060-I003a, V.1.a; §2104.02.a.1.A]

b. The amount of natural gas combusted shall not exceed 28,922 scf per hour or 253.4 mmscf in any consecutive 12-month period. [§2103.12.a.2.B]

c. At no time shall the permittee operate Boiler No. 8 using any fuel other than utility-grade natural gas. [IP #0060-I003a, V.1.b; §2103.12.a.2.B]

d. Emissions from Boiler No. 8 shall not exceed the limitations in Table V-O-1. below: [IP #0060-I003a, V.1.c; §2104.02.a.1.A]

TABLE V-O-1: Boiler #8 Emission Limitations

POLLUTANT	Hourly Emissions (lb/hr)[1]	Yearly Emissions (tons/yr)[2]
Particulate Matter[3]	0.24	**1.03**
Particulate Matter < 10 µm[3]	0.24	**1.03**
Particulate Matter < 2.5 µm[3]	0.24	**1.03**
Nitrogen Oxides (NO_X)	1.66	**7.28**
Sulfur Oxides (SO_X)	0.02	**0.09**
Carbon Monoxide (CO)	2.79	**12.24**
Volatile Organic Compounds (VOCs)	0.18	**0.80**

1. Based on a 3-hour average.
2. A year is defined as any consecutive 12-month period.
3. All particulate matter emission limits are for filterable particulate.

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

None, except as provided elsewhere.

4. **Record Keeping Requirements:**

a. Records shall be kept of the amount of natural gas used monthly. [IP #0060-I003a, V.4.a; §60.48c(g)]

b. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [IP #0060-I003a, V.4.b; §2103.12.j.2]

5. **Reporting Requirements:**

a. The permittee shall submit reports of monthly fuel use required by condition V.O.4.a above to the Department semiannually in accordance with General Condition III.15. [IP #0060-I003a, V.5.a; §2103.12.k]

b. Until terminated by written notice from the Department, the requirement for the permittee to report cold starts 24-hours in advance in accordance with Site Level Condition IV.9 is waived and the permittee may report all cold starts in the semiannual report required under condition V.O.5.a above. [§2103.12.k; §2108.01.d]

c. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [IP #0060-I003a, V.5.c; §2103.12.k.1]

6. **Work Practice Standards:**

a. The permittee shall do the following for the No. 8 Boiler: [§2105.03]
1) Perform regular maintenance considering the manufacturer’s or the operator’s maintenance procedures;
2) Keep records of any maintenance; and
3) Keep a copy of either the manufacturer’s or the operator’s maintenance procedures.

b. Boiler No. 8 shall be: [IP #0060-I003a, V.6.a; §2105.03]
1) Operated in such a manner as not to cause air pollution;
2) Operated and maintained in a manner consistent with good operating and maintenance practices.
3) Operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this permit.

~PERMIT SHIELD IN EFFECT~

P. D001-D012: Storage Tanks

Process Description	**Storage Tanks**					
Facility ID	D001	D002	D003	D004	D005	D006
Stored Materials	Catalytic & Misc. Poly Oil	Distillates	Heat Poly Charge Stock	LX-1144 Charge Stock	Misc.	Naphthenic/Ink /Vegetable Oil
Process Description	**Storage Tanks**					
Facility ID	D007	D008	D009	D010	D011	D012
Stored Materials	Nevchem LR	Recovered Oil	Resin Former	Resin Solutions	Unit 20 Feed Blend	Unit 21 Feed Blend

Control(s): Vapor balancing during barge off-loading on Tanks #5003 (included under D005); vent condenser and nitrogen blanketing on Tank #5003

As identified above, the storage tanks consist of the tanks listed under the heading "Storage Tanks" in Table-II in the Facility Description, Section II.

1. **Restrictions:**

a. The permittee shall store all materials in accordance with Site Level Condition IV.17. [§2103.12.a.2.B; §2105.12.a]

b. Emissions from the storage tanks shall not exceed the values in Table V-P-1 at any time: [§2103.12.a.2.B; §2105.12.b]

TABLE V-P-1: Storage Tanks Emission Limitations

Storage Tank Category		**VOC Emissions (tons/yr)**[1]	**HAP Emissions (tons/yr)**[1]
D001	Catalytic & Misc. Poly Oil	3.79	0.09
D002	Distillates	5.37	0.91
D003	Heat Poly Charge Stock	4.48	0.24
D004	LX-1144 Charge Stock	0.01	0.01
D005	Miscellaneous	1.45	0.01
D006	Naphthenic/Ink/Vegetable Oil	0.12	0.01
D007	Nevchem LR	0.07	0.01
D008	Recovered Oil	0.11	0.02
D009	Resin Former[2]	1.55	0.26
D010	Resin Solutions	21.59	0.01
D011	Unit 20 Feed Blend	0.73	0.16
D012	Unit 21 Feed Blend	2.74	0.08
Total		**42.01**	**1.77**

1. A year is defined as any consecutive 12-month period.
2. Does not include emissions from Tanks #8501-#8506. Emissions from those tanks may be found in Table V-P-2 below. See condition V.P.1.c below.

c. Combined emissions from Tanks #8501-8506 shall not exceed the limits in Table V-P-2: [IP #0060-I004, V.A.1.a; §2103.12.a.2.B]

Table V-P-2: Tanks #8501-#8506 Emissions Limitations

Pollutant	Annual Emissions (tons/yr)[1]
Volatile Organic Compounds (VOC)	3.4
Hazardous Air Pollutants (HAP)	0.6

1. A year is defined as any consecutive 12-month period.

d. The permittee shall not operate or allow to be operated Tank #5003 unless the vapor recovery system is in place. [§2103.12.a.2.B; §2105.12.b]

e. The permittee shall limit the quantity of materials transferred into Tanks #8501-8506 to no more than 12,000,000 gallons per any 12 month period. [§2105.12.b]

f. The permittee shall not store or allow to be stored in Tanks #6301-6302 and #8501-8506 any liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa at a temperature equal to the local maximum monthly average temperature as reported by the National Weather Service. The maximum true vapor pressure shall be determined as follows: [IP #0060-I004, V.A.1.d; §60.110b(b); §2103.12.a.2.B; §2105.12.b]
   1) In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss from External Floating Roof Tanks"; or
   2) As obtained from standard reference texts; or
   3) As determined by ASTM Method D2879-97; or
   4) Any other method approved by the Department.

g. The permittee shall not operate or allow to be operated Tanks #6301-6302 and #8501-8506 unless the operating parameters for the conservation and vacuum vents for each tank are a minimum of 0.58 psig and 0.05 psig respectively. [IP #0060-I004, V.A.1.e; §2103.012.a.2.B; §2105.12.b]

h. The permittee shall not store or allow to be stored any material in Tank #601 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §2105.12.b; §60.113]

i. The permittee shall not store or allow to be stored any material in Tanks #1005 and #2102 unless the maximum vapor pressure of the material stored is less than 6.9 kPa (1.0 psi). [§2103.12.a.2.B; §2105.12.b; §60.115a(d)(1)]

j. The permittee shall not operate or allow to be operated the Piperylene Tank #5003 unless a nitrogen blanketing system is in place and the vent condenser is in operation. [§2103.12.a.2.B; §2105.12.b]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall monitor the coolant temperature at the outlet of the vent condenser on the Piperylene Tank #5003. [§2103.12.i; 25 PA Code §129.99]

4. Record Keeping Requirements:

a. The permittee shall keep readily accessible records showing the dimension of the storage vessel and analysis showing the capacity of the storage vessel for the life of the source. [IP #0060-I004, V.A.3.b; §2103.12.j]

b. The permittee shall maintain a record of the volatile organic liquid (VOL) stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period. The permittee shall determine the vapor pressure using one of the methods in condition V.P.1.f above and shall indicate which method was used. [IP #0060-I004, V.A.3.c; §2103.12.j]

c. The permittee shall record and maintain records of the total yearly throughput of material and the number of turnovers in each tank. [IP #0060-I004, V.A.4.a.1; §2103.12.j]

d. The permittee shall record and maintain records of the outlet coolant temperature on the vent condenser for the Piperylene Tank #5003. [§2103.12.j; 25 PA Code §129.99]

e. The permittee shall maintain records of the calculated VOC and HAP emissions from the storage tanks on a calendar year basis. If the actual throughput of resin formers (measured as receipts) exceeds 18.7 mmgal in any rolling 12-month period, the permittee shall calculate and report the VOC and HAP emissions from the storage tanks for the 12-month period. [§2103.12.j]

f. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall notify the Department within thirty (30) days of when the maximum true vapor pressure of the liquid stored in Tanks #6301-6302 or #8501-8506 exceeds 3.5 kPa. [IP #0060-I004, V.A.4.d; §2103.12.k]

b. The permittee shall submit notification of intent to store any new material in Tanks #6301-6302 or #8501-8506 other than resin forming feedstocks or fuel oil to the Department a minimum of ten (10) working days prior to the intended store date. This notification shall at a minimum include the Material Safety Data Sheet (MSDS) and emission calculation for the new material. [IP #0060-I004, V.A.5.a.2; §2103.12.k]

c. The permittee shall report to the Department the calculated VOC and HAP emissions from the storage tanks in the previous 12-month period within 30 days upon request by the Department. [§2103.12.k]

d. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall do the following for all storage tanks and associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The storage tanks shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

VI. MISCELLANEOUS

A. Process P017: Groundwater Remediation

Process Description: Groundwater Remediation System
Facility ID: Groundwater & Oil Recovery Wells #2, #4, #7-11; #2 Dry Well; #8 Well
Max. Design Rate: 165,000 gallons of recovered oil
Raw Materials: contaminated groundwater; recovered oil
Control Device: carbon adsorption for recovered water

1. Restrictions:

a. The permittee shall collect recovered oil in containers using Container Level 2 controls meeting one of the following definitions: [§2104.08.a; 40 CFR Part 63, Subpart GGGGG, §63.7900(b)(2); §63.7901(d)(1); Subpart PP, §63.923(b); 25 PA Code §129.97(c)(2)]
   1) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in §63.923(f).
   2) A container that has been demonstrated to operate with no detectable organic emissions as defined in §63.921.
   3) A container that has been demonstrated within the preceding 12 months to be vapor-tight by using Method 27 in appendix A of 40 CFR part 60 in accordance with the procedure specified in §63.925(b) of this subpart.

b. Transfer of regulated-material in to or out of a container using Container Level 2 controls shall be conducted in such a manner as to minimize exposure of the remediated material to the atmosphere, to the extent practical, considering the physical properties of the remediated material and good engineering and safety practices for handling flammable, ignitable, explosive, or other hazardous materials. Examples of container loading procedures that meet the requirements of this paragraph include using any one of the following: [§2104.08.a; §63.7901(d)(2); §63.923(c); 25 PA Code §129.97(c)(2)]
   1) A submerged-fill pipe or other submerged-fill method to load liquids into the container;
   2) A vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operations; or
   3) A fitted opening in the top of a container through which the remediated material is filled, with subsequent purging of the transfer line before removing it from the container opening.

c. The permittee shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows: [§2104.08(a); §63.7901(d)(3); §63.923(d); 25 PA Code §129.97(c)(2)]
   1) Opening of a closure device or cover is allowed for the purpose of adding material to the container as follows:
      a) In the case when the container is filled to the intended final level in one continuous operation, the permittee shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.
      b) In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the permittee shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level, the completion of a batch loading after which no additional material will be added to the container within 15 minutes, the person

performing the loading operation leaves the immediate vicinity of the container, or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

2) Opening of a closure device or cover is allowed for the purpose of removing material from the container as follows:
   a) An empty container may be open to the atmosphere at any time (e.g., covers and closure devices are not required to be secured in the closed position on an empty container).
   b) In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container, the permittee shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.
3) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of regulated-material. Examples of such activities include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.
4) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the container internal pressure in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the container internal pressure is within the internal pressure operating range determined by the permittee based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, combustible, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the container internal pressure exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.
5) Opening of a safety device is allowed at any time conditions require it to do so to avoid an unsafe condition

d. The permittee shall transfer the remediated material to one of the following facilities: [§2104.08.a; §63.7936(b); 25 PA Code §129.97(c)(2)]
1) A facility where the remediated material will be directly disposed in a landfill or other land disposal unit according to all applicable Federal and State requirements.
2) A facility subject to 40 CFR part 63, subpart DD where the exemption under §63.680(b)(2)(iii) is waived and air emissions from the management of remediated material at the facility are controlled according to all applicable requirements in the subpart for an off-site material. Prior to sending the remediated material, the permittee shall obtain a written statement from the owner or operator of the facility to which the remediated material is sent acknowledging that the exemption under §63.680(b)(2)(iii) will be waived for all remediated material received at the facility from the permittee and the remediated material will be managed as an off-site material at the facility according to all applicable requirements. This statement must be signed

by the responsible official of the receiving facility, provide the name and address of the receiving facility, and a copy sent to the EPA Regional Office listed under Contact Information, Section I.

3) A facility where the remediated material will be managed according to all applicable requirements under 40 CFR Part 63, Subpart GGGGG.
   a) The permittee shall prepare and include a notice with each shipment or transport of remediated material from the site. This notice must state that the remediated material contains organic HAP that are to be treated according to the provisions of Subpart GGGGG. When the transport is continuous or ongoing (for example, discharge to a publicly owned treatment works), the notice must be submitted to the receiving facility owner or operator initially and whenever there is a change in the required treatment.
   b) The permittee shall not transfer the remediated material unless the owner or operator of the facility receiving the remediated material has submitted to the EPA a written certification that he or she will manage remediated material received from the facility according to the requirements of Subpart GGGGG. The receiving facility owner or operator may revoke the written certification by sending a written statement to the EPA and to the permittee providing at least 90 days notice that they rescind acceptance of responsibility for compliance with the regulatory provisions listed in Subpart GGGGG. Upon expiration of the notice period, the permittee may not transfer the remediated material to the facility.

e. The permittee shall develop a written startup, shutdown, and malfunction plan (SSMP) according to the provisions in §63.6(e)(3). [§2104.08.a; §63.7935(c); 25 PA Code §129.97(c)(2)]

f. The permittee shall control equipment leaks according to all applicable requirements under 40 CFR Part 63, Subpart UU: *National Emission Standards for Equipment Leaks – Control Level 2.* [§2104.08.a; §63.7920(b); 25 PA Code §129.97(c)(2)]

g. The permittee shall identify the equipment subject to control according to the requirements in §63.1022, including equipment designated as unsafe to monitor, and have records supporting the determinations with a written plan for monitoring the equipment according to the requirements in §63.1022(c)(4). [§2104.08.a; §63.7921(c); 25 PA Code §129.97(c)(2)]

2. Testing Requirements:

a. The permittee shall conduct a test to demonstrate that each container operates with no detectable organic emissions or that the container is vapor-tight. The permittee shall conduct the test using Method 21 (40 CFR part 60, appendix A) and the procedures in §63.925(a) to demonstrate that each container operates with no detectable organic emissions or Method 27 (40 CFR part 60, appendix A) and the procedures in §63.925(b) to demonstrate that each container is vapor-tight. [§2104.08.a; §63.7941(i)]

b. Testing of containers in accordance with condition VI.A.2.a above shall be conducted at least once every 12-months, or any time a new or repaired container is brought into service. [§2103.12.h]

c. The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. Monitoring Requirements:

a. The permittee shall inspect all remediated material containers as follows: [§2104.08(a); §63.7901(d)(1); §63.923(e); §63.926(a)]

1) In the case when a container filled or partially filled with remediated material remains unopened at the facility site for a period of 1 year or more, the container and its cover and closure devices shall be visually inspected by the permittee initially and thereafter, at least once every calendar year, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of condition VI.A.3.a.2) below.
2) When a defect is detected for the container, cover, or closure devices, the permittee must either empty the remediated material from the defective container or repair the defective container.
   a) If the permittee elects to empty the waste from the defective container, the permittee must remove the remediated material from the defective container to meet the conditions for an empty container and transfer the removed remediated material to a container that meets the applicable standards under this permit. Transfer of the remediated material must be completed no later than 5 calendar days after detection of the defect. The emptied defective container must be either repaired, destroyed, or used for purposes other than management of regulated-material.
   b) If the permittee elects not to empty the remediated material from the defective container, the permittee must repair the defective container. First efforts at repair of the defect must be made no later than 24 hours after detection and repair must be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the remediated material must be emptied from the container and the container must not be used to manage regulated-material until the defect is repaired.

b. The permittee shall demonstrate continuous compliance with the equipment leak standards required by condition VI.A.1.f by inspecting, monitoring, repairing, and maintaining records according to the requirements in §§63.1021 through 63.1039, as applicable. [§2104.08; §63.7922(c)]

4. Record Keeping Requirements:

a. The permittee shall demonstrate continuous compliance by keeping the following records: [§2104.08.a; §63.7903(b), (d)(6); §63.7922(d)]

1) The quantity and design capacity for each type of container used for remediated material remediation;
2) Date of each inspection;
3) If a defect is detected during an inspection, the location of the defect, a description of the defect, the date of detection, the corrective action taken to repair the defect, and if repair is delayed, the reason for any delay and the date completion of the repair is expected.
4) Keeping records to document compliance with the requirements according to the requirements in condition VI.A.4.c below.

b. The permittee shall maintain records of the following: [§2104.08.a; §63.7901(d)(4)]

1) That each container meets the applicable U.S. Department of Transportation regulations; or
2) The permittee shall conduct an initial test of each container for no detectable organic emissions using the procedures in §63.925(a), and have records documenting the test results; or
3) The permittee shall have demonstrated within the last 12 months that each container is vapor-tight according to the procedures in §63.925(a) and have records documenting the test results.

c. The permittee shall keep the following records: [§2104.08.a; §63.7952(a)]
1) A copy of each notification and report submitted to comply with this permit, including all documentation supporting any Initial Notification or Notification of Compliance Status that is submitted, according to the requirements in §63.10(b)(1) and (b)(2)(xiv).
2) The records in §63.6(e)(3)(iii) through (v) related to startups, shutdowns, and malfunctions

d. The permittee shall keep records of the total quantity of remediated material collected in each 12-month period. [§2103.12.j]

e. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. Records shall be kept on-site for at least 2 years after the date of each occurrence. Records may be kept off-site for the remaining 3 years. [§2103.12.j.2; §63.7953(b)-(c)]

5. Reporting Requirements:

a. The permittee shall submit compliance reports semiannually to the Department in accordance with General Condition III.15. [§2103.12.k; §63.7951(a)(5)]

b. Each compliance report shall include the following information: [§2104.08.a; §63.7951(b)]
1) Company name and address.
2) Statement by a responsible official, with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.
3) Date of report and beginning and ending dates of the reporting period.
4) If there was a startup, shutdown, or malfunction during the reporting period the permittee took action consistent with the startup, shutdown, and malfunction plan, the compliance report must include the information in §63.10(d)(5)(i).
5) If there were no deviations from any emissions limitations (including operating limit), work practice standards, or operation and maintenance requirements, a statement that there were no deviations from the emissions limitations, work practice standards, or operation and maintenance requirements during the reporting period.
6) Information on equipment leaks required in periodic reports by §63.1018(a) or §63.1039(b).

c. The permittee shall report each instance in which each emissions limitation and each operating limit was not met. This includes periods of startup, shutdown, and malfunction. The permittee shall also report each instance in which the requirements for work practice standards were not met. [§2104.08.a; §63.7935(e)]

d. If there is a startup, shutdown, or malfunction during the semiannual reporting period that was not consistent with the startup, shutdown, and malfunction plan required under condition VI.A.1.e, the permittee shall submit an immediate startup, shutdown, and malfunction report according to the requirements of §63.10(d)(5)(ii) . [§2104.08.a; §63.7951(c)]

e. The permittee shall report to the Department the 12-month rolling total of remediated material collected as required under condition VI.A.4.d. [§2103.12.k]

f. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. **Work Practice Standards:**

a. The permittee shall do the following for the Groundwater Remediation System: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. The Groundwater Remediation System and all associated equipment shall be properly operated and maintained at all times according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03]

~PERMIT SHIELD IN EFFECT~

B. Emergency Generators

Process Description:	Emergency Generators							
Facility ID:	WWTP	Heat Poly	Unit 43	BH	Building 50	Building 19A	QTL	Building 50 ICT
Max. Design Rate:	600 hp	600 hp	691 hp	242 hp	31 hp	10 hp	12 hp	29.5 hp
Type:	4SLB	4SRB	4SLB	4SLB	4SLB	4SLB	4SLB	4SLB
Fuel(s):	natural gas							
Control Device(s):	none							

1. Restrictions:

a. The permittee shall not operate or allow to be operated any emergency generator using a fuel other than utility-grade natural gas. [§2103.12.a.2.B]

b. The permittee shall not operate or allow to be operated any emergency generator in such manner that emissions of particulate matter exceed 0.012 lb/MMBtu. [§2104.02.a.1.B]

c. Each emergency generator shall not be operated for more than 500 hours, including operation for maintenance checks and readiness testing, in any 12-month period. [§2103.12.a.2.B]

d. The generators shall be fired only during emergency conditions and for a maximum of 100 hours per year each for maintenance checks and readiness testing. [§2103.12.a.2.B, C; §63.6640(f)(2)]

e. The permittee may operate each generator up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted towards the 100 hours per year provided for maintenance and testing under condition VI.B.1.d above. The 50 hours per year cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. [§2103.12.a.2.B, C; §63.6640(f)(4)]

2. Testing Requirements:

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled “Emissions Testing.” [§2103.12.h.1]

3. Monitoring Requirements:

The permittee shall install a non-resettable hour meter on all emergency generators. [§2103.12.a.2.B, C; §63.6625(f)]

4. Record Keeping Requirements:

a. The permittee shall record hours of operation recorded through the non-resettable hour meters required under condition VI.B.3. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. [§2103.12.j; §2103.12.a.2.B, C; §63.6655(f)]

b. The permittee shall keep records of the maintenance conducted on the emergency generators. [§2103.12a.2.B, C; §63.6655(e)]

c. The permittee shall record all instances of non-compliance with the conditions of this permit in accordance with General Condition III.15.b. [§2103.12.j]

d. All records and supporting documentation shall be retained in accordance with General Condition III.14, and be made available to the Department for inspection and/or copying upon request. [§2103.12.j.2]

5. Reporting Requirements:

a. The permittee shall report the hours of operation required to be recorded by Condition VI.B.4.a above to the Department semi-annually in accordance with General Condition III.15. The reports shall contain all required information for the time period of the report. [§2103.12.k]

b. Reporting instances of non-compliance does not relieve the permittee of the requirement to report breakdowns in accordance with Site Level Condition IV.8, if appropriate. [§2103.12.k.1]

6. Work Practice Standards:

a. The permittee shall not use an emergency generator for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [§2103.12.a.2.B, C; §63.6640(f)(3)]

b. The permittee shall perform the following maintenance on each generator: [§2103.12.a.2.B, C; §63.6603(a), Table 2.d.5]
1) Change oil and filter every 500 hours of operation or annually, whichever comes first;
2) Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

c. The emergency generators shall be properly operated and maintained at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. [§2105.03; §63.6605(b)]

d. The permittee shall operate and maintain the emergency generators according to the manufacturer's emission-related written instructions or shall develop a maintenance plan. This plan shall provide to the extent practicable for the maintenance and operation of each generator in a manner consistent with good air pollution control practice for minimizing emissions. [§2103.12.a.2.B, C; §63.6625(e)]

~PERMIT SHIELD IN EFFECT~

C. Sources of Minor Significance

Facility ID	Source Description	Reason for Determination of Minor Significance
G001	Hydrolaser Water Blasting/Cleaning	Maximum PTE is <1.0 tpy of particulate; no VOC or HAP is emitted
G002	Parts Washing	Maximum PTE is <2.0 tpy of VOC; HAPs are negligible
G003	R&D Laboratory Hoods	Laboratory equipment used exclusively for chemical or physical analyses
G004	Tank Cleaning & Painting	Maximum PTE is <3.75 tpy of VOC
F001	Parking Lots & Roadways	Maximum PTE is <3.4 tpy of particulate

1. Restrictions:

a. The permittee shall not exceed 2,500 gallons per year of cleaner in the Parts Washing process. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

b. The permittee shall not use or allow to be used any halogen-containing cleaners in the Parts Washing process. [§2103.12.a.2.B; 25 PA Code §129.97(c)(2)]

c. The permittee shall not exceed 2,000 gallons per year of coatings in the Tank Cleaning & Painting process. [§2103.12.a.2.B]

d. The permittee shall use only coatings compliant with Article XXI, Table 2105.10 in the Tank Cleaning & Painting process. [§2103.12.a.2.B]

e. For the parts washing process, the permittee shall keep and maintain records of the total amount and type of cleaner used. [§2103.12.j; 25 PA Code §129.97(c)(2)]

f. For the Tank Cleaning & Painting process, the permittee shall keep and maintain records of the total amount and type of all thinners and coatings used. [§2103.12.j; §2105.10.c; 25 PA Code §129.100]

~PERMIT SHIELD IN EFFECT~

VII. ALTERNATIVE OPERATING SCENARIOS

A. Process P006/P007 (Alternative): Unit 20 and Unit 21

Process Description: Catalytic Resin & Polyoil Neutralization
Facility ID: Unit 20 and Unit 21
Raw Materials: ethylene-cracking products, resin-forming feedstock, additives
Control Device: packed bed scrubber (for BF_3 removal)

As identified above, Processes P006 and P007 consist of the equipment listed under the heading "Catalytic Resin and Polyoil Neutralization" in Table II-1 in the Facility Description, Section II. Under the alternative operating scenario, the #4 Aqueous Treater/Agitator is moved from Unit 21 and placed in operation after the Rinse Decanter in Unit 20. The #4 Aqueous Treater/Agitator is not heated in this alternative scenario.

1. Restrictions:

a. The permittee shall not operate or allow to be operated Unit 20 and Unit 21 under the alternative operating scenario unless all conditions from Section V.B.1 and V.C.1 are met. [§2103.12.a.2.B]

b. Total throughput through Unit 20 shall not exceed 66,600,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 96 in any 12-month period. [§2103.12.a.2.B]

c. Emissions from the Unit 20 process shall not exceed the emissions limitations in Table VII-A-1 below: [§2103.12.a.2.B]

TABLE VII-A-1: Unit 20 Emissions Limitations

Pollutant	Unit 20 Total (for all process phases)	
	lb/product change[1]	tpy[2]
Volatile Organic Compounds (VOC)	75.28	3.76
Hazardous Air Pollutants (HAP)	8.17	0.40

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

d. The Unit 20 process shall not emit more than 75.28 lb per product change. [25 Pa Code §129.99]

e. Total throughput through Unit 21 shall not exceed 53,640,000 pounds of poly oil in any 12-month period, and the number of product changes shall not exceed 52 in any 12-month period. [§2103.12.a.2.B]

f. Emissions from the Unit 21 Holding Towers and Final Holding Tank shall not exceed the emission limitations in Table VI-A-2 below: [§2103.12.a.2.B]

TABLE VI-A-2: Unit 21 Holding Tower and Holding Tank Emission Limitations

Pollutant	Unit 21 Holding Towers & Tank	
	Short-term (lb/product change[1])	Long-term (tpy[2])
Volatile Organic Compounds (VOC)	21.09	**0.55**
Hazardous Air Pollutants (HAP)	10.55	**0.28**

1. Short-term emissions are based on the initial vessel fill-time during each product change, not the entire batch cycle time after the vessels are filled.
2. A year is defined as any consecutive 12-month period.

g. The Unit 21 Holding Towers and Final Holding Tank shall not emit more than 21.09 lb per product change. [25 Pa Code §129.99]

h. Emissions from the Unit 21 Aqueous Treaters shall not exceed the emission limitations in Table VI-A-3 below: [§2103.12.a.2.B]

TABLE VI-A-3: Unit 21 Aqueous Treater Emission Limitations

Pollutant	Unit 21 Aqueous Treaters		
	Treater #10 (lb/batch)[1]	Treater #11 (lb/batch)[1]	Long-term (tpy)[2,3]
Volatile Organic Compounds (VOC)	10.26	12.99	**3.78**
Hazardous Air Pollutants (HAP)	5.75	7.28	**2.12**

1. Maximum emissions based on material charging.
2. A year is defined as any consecutive 12-month period.
3. Total for all three aqueous treaters.

2. **Testing Requirements:**

The Department reserves the right to require emissions testing sufficient to assure compliance with the terms and conditions of this permit. Such testing shall be performed in accordance with Site Level Condition IV.13 entitled "Emissions Testing." [§2103.12.h.1]

3. **Monitoring Requirements:**

The permittee shall visually inspect the BF_3 scrubber required under conditions V.B.1.d and V.C.1.e at least once per shift for visible emissions. If visible emissions are detected, the permittee shall adjust the flow of water to the scrubber accordingly. [§2103.12.i]

4. **Record Keeping Requirements:**

The permittee shall keep and maintain all records required under sections V.B.4 and V.C.4 and indicate that the records were obtained while operating under the alternative operating scenario. [§2103.12.j]

5. **Reporting Requirements:**

The permittee shall submit reports to the Department in accordance with General Condition III.15. The reports shall contain all information required under sections V.B.5 and V.C.5 and indicate that the information pertains to operation under the alternative operating scenario. [§2103.12.k]

6. Work Practice Standards:

a. The permittee shall do the following for the Unit 20 and Unit 21 and all associated equipment: [§2105.03]
   1) Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
   2) Keep records of any maintenance; and
   3) Keep a copy of either the manufacturer's or the operator's maintenance procedures.

b. Unit 20 and Unit 21 and all associated equipment shall be properly operated and maintained at all times while operating under the alternative operating scenario according to good engineering practices, with the exception of activities to mitigate emergency conditions. [RACT Order #230, 1.1; §2105.03; 25 PA Code §129.99]

~PERMIT SHIELD IN EFFECT~

VIII. EMISSIONS LIMITATIONS SUMMARY

[This section is provided for informational purposes only and is not intended to be an applicable requirement.]

The tons per year emission limitations in this permit for the Neville Chemical Company facility are summarized in the following table:

TABLE VIII-1
Emission Limitations

Pollutant	Total (tpy*)
Particulate Matter	**13.981**
Particulate Matter <10 µm	**10.941**
Particulate Matter <2.5 µm ($PM_{2.5}$)	**10.091**
Nitrogen Oxides (NO_X)	**78.526**
Sulfur Oxides (SO_X)	**0.465**
Carbon Monoxide (CO)	**68.548**
Volatile Organic Compounds (VOC)	**214.523**
Hazardous Air Pollutants (HAP)	**16.339**
Benzene	**0.467**
Ethylbenzene	**2.080**
Naphthalene	**1.691**
Styrene	**1.483**
Xylenes	**6.299**
Greenhouse Gases (CO_2e)	**83,119**

* A year is defined as any consecutive 12-month period.