OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

3/25/2015

Certified Mail

No	TOXIC REVIEW
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MODELING SUBMITTED
No	SYNTHETIC MINOR TO AVOID TITLE V
Yes	FEDERALLY ENFORCABLE PTIO (FEPTIO)
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Thomas Steib
DETREX CORPORATION, ASHTABULA PLANT
1100 STATE RD
ASHTABULA, OH 44004

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL AND OPERATE
Facility ID: 0204010192
Permit Number: P0109304
Permit Type: OAC Chapter 3745-31 Modification
County: Ashtabula

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install and Operate (PTIO) which will allow you to install, modify, and/or operate the described emissions unit(s) in the manner indicated in the permit. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**

How to appeal this permit

The issuance of this PTIO is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

If you have any questions, please contact Ohio EPA DAPC, Northeast District Office at (330)963-1200or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,

Erica R. Engel-Ishida, Manager
Permit Issuance and Data Management Section, DAPC

Cc: Ohio EPA-NEDO

Response to Comments

Facility ID:	0204010192
Facility Name:	DETREX CORPORATION, ASHTABULA PLANT
Facility Description:	Chemical manufacture
Facility Address:	1100 STATE RD, Ashtabula, OH 44004, Ashtabula County
Permit:	P0109304, Permit-To-Install and Operate - OAC Chapter 3745-31 Modification
A public notice for the draft permit issuance was published in the Ohio EPA Weekly Review and appeared in The Star Beacon on 02/20/2015. The comment period ended on 03/22/2015.	
Hearing date (if held)	None.
Hearing Public Notice Date (if different from draft public notice)	Not applicable.

The following comments were received during the comment period specified. Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format. PDF copies of the original comments in the format submitted are available upon request.

1. Topic: Simultaneous use of two oxidizers.

a. Comment: The emissions calculations in d. on page 21 is for NO_X which assumes only one thermal oxidizer is running at one time. At times, we (Detrex) will have two thermal oxidizers running. Please clarify that we can use two oxidizers, and whether/how the use of two oxidizers would change the equations.

b. Response: NO_X Emissions from Thermal Oxidizer(s) - pp. 11 & 12 term C.1.b)(1) for (P200) ZDDP and p. 24 term C.2.b)(1) for (P201) Fat Sulfurization include the following limits: The NO_X emissions shall not exceed 0.0919 pound of nitrogen oxides (NO_X) emissions per million Btu (lb./mmBtu) of actual heat input and 2.09 tons/year. For the emissions estimates it was assumed that the larger 5.2 mmBtu/hr. Natural Gas-fired Flame Ox Model 3 could be run at maximum capacity continuously or 8760 hrs./yr. at each emissions unit. For the scenario where Detrex may wish to use both oxidizers to control emissions from only P200 or only P201, then we can estimate the maximum annual fuel usage of the 5.2 mmBtu/hr. burner. Using the heat value of 1089 Btu/scf of natural gas fuel as noted in the permit application the maximum annual fuel usage at each of P200 & P201 could be:

5.2×10^6 Btu/hr. x scf/1089 Btu x mmscf/10^6 scf = 4.775023×10^{-3}mmscf/hr.
4.775023×10^{-3}mmscf/hr. x 8760 hrs./yr. = 41.8292 mmscf/yr.
To comply with the annual NO_X limit no more than 41.83 mmscf/yr. should be attributed to either P201 or P200.

2. Topic: Record Keeping of Visible Emissions Checks

a. Comment: Page 13 of 35, and page 27 of 35 on visible emissions daily checks/monitoring and recordkeeping for P200 and P201. At both places, it says "If visible emissions are present, a visible emissions incident has occurred." In the tables on page 12 and on page 25, OAC Rule 3745-17-07(A)(1) is provided and the visible emission limitation is stated as "Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6 minute average, except as provided by the rule." What should we (Detrex) record-log in/or report if there are visible emissions present from the stack, but the visible emissions are less than the emission limitation? Do we log in visible emissions that are observed but are representative of normal operations and in compliance with the emission limitation? Please clarify what is expected here.

b. Response: Term d)(2) for both EUs state, " … The presence or absence of any visible emissions shall be noted in an operations log." Ideally the record should ask the observer if the EU is operating at the time of observation, and if yes then to make a negative or affirmative remark on whether visible emissions are seen. Only if visible emissions are seen shall the observer note:

i. the color of the emissions;

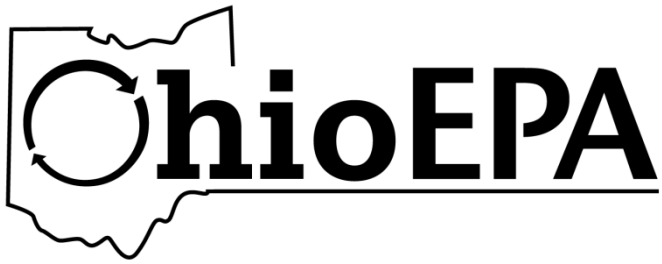
ii. whether the emissions are representative of normal operations;

iii. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

iv. the total duration of any visible emissions incident; and

v. any corrective actions taken to minimize or eliminate the visible emissions.

Term d)(2) is written for an observer who does not have training in U.S. EPA Method 9 opacity readings. Term d)(2) is meant to have the permit holder make note of the date of visible emissions events and take corrective actions if the emissions are thicker (higher) than normal. Ohio EPA would not recommend saying that if visible emissions are representative of normal operations then compliance with the 20% opacity, as a 6-min average limit is documented since Method 9 opacity readings will not be performed.



FINAL

Division of Air Pollution Control
Permit-to-Install and Operate
for
DETREX CORPORATION, ASHTABULA PLANT

Facility ID:	0204010192
Permit Number:	P0109304
Permit Type:	OAC Chapter 3745-31 Modification
Issued:	3/25/2015
Effective:	3/25/2015
Expiration:	5/8/2018

Division of Air Pollution Control
Permit-to-Install and Operate
for
DETREX CORPORATION, ASHTABULA PLANT

Table of Contents

Authorization

Facility ID:	0204010192
Application Number(s):	A0043529, A0043530, A0049055
Permit Number:	P0109304
Permit Description:	Chapter 31 modification of (P200) DPA/ZDDP mfg. and (P201) Fat Sulfurization to include use of a natural gas-fired thermal oxidizer to control emissions of OC and H2S and odors.
Permit Type:	OAC Chapter 3745-31 Modification
Permit Fee:	$700.00
Issue Date:	3/25/2015
Effective Date:	3/25/2015
Expiration Date:	5/8/2018

Permit Evaluation Report (PER) Annual Date: Jan 1 - Dec 31, Due Feb 15

This document constitutes issuance to:

DETREX CORPORATION, ASHTABULA PLANT
1100 STATE RD
Ashtabula, OH 44004

of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 44087
(330)963-1200

The above named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s))listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the described emissions unit(s) will operate in compliance with applicable State and federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Craig W. Butler
Director

Authorization (continued)

Permit Number: P0109304
Permit Description: Chapter 31 modification of (P200) DPA/ZDDP mfg. and (P201) Fat Sulfurization to include use of a natural gas-fired thermal oxidizer to control emissions of OC and H2S and odors.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	**P200**
Company Equipment ID:	ZDDP Process
Superseded Permit Number:	02-15609
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P201**
Company Equipment ID:	Light Color/Low Odor Fat Sulfurization
Superseded Permit Number:	02-22976
General Permit Category and Type:	Not Applicable

A. Standard Terms and Conditions

1. What does this permit-to-install and operate ("PTIO") allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above, is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

- PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11, or based on a time and materials charge for permit application review and permit processing if required by the Director.

  You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

- Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. For facilities that are permitted as synthetic minor sources, the fee schedule is adjusted annually for inflation. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is

very important that you submit a complete renewal permit application (postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the "Authorization" page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended by up to 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions of this permit will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective, and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.

10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the [DO/LAA] in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction, but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emission unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as beingpermanently shut down without first applying for and obtaining a permit pursuantto OAC Chapter 3745-31.

13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must assume the responsibilities of the transferor permit holder.

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.

B. Facility-Wide Terms and Conditions

1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

   a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

      (1) None.

   b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

      (1) None.

C. Emissions Unit Terms and Conditions

1. P200, ZDDP Process

Operations, Property and/or Equipment Description:

Sodium dialkyldithiophosphate (DPA) operation with an R-11 vertical condenser for alcohol materials recovery, and a zinc dialkyldithiophosphate (ZDDP) operation with an R-12 horizontal condenser for alcohol materials recovery. Each operation vents to a main caustic scrubber and a secondary caustic scrubber to control hydrogen sulfide (H_2S) emissions which vent to a thermal oxidizer to control emissions of organic compounds (OCs) and H_2S and to minimize odors.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. d)(6) through d)(9) and e)(2)i

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3)	The organic compound (OC) emissions shall not exceed 77.3 lbs/day and 14.1 tons/year. The hydrogen sulfide (H_2S) emissions shall not exceed 0.02 lb/hr and 0.09 ton/year. See b)(2)a.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	The permittee shall install a burner on the thermal oxidizer designed to meet 0.0919pound of nitrogen oxides (NO_X) emissions per million Btu (lb/mmBtu) of actual heat input. See b)(2)b and b)(2)c.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_Xemissions from this air contaminant source since the potential to emit is less than 10 tons/yr. See b)(2)d.
d.	OAC rule 3745-31-05(D)(2)	The NO_X emissions shall not exceed0.0919 pound of nitrogen oxides (NO_X) emissions per million Btu (lb./mmBtu) of actual heat input and 2.09 tons/year. See b)(2)b.
e.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.
f.	OAC rule 3745-17-10(B)(1)	The particulate emissions from the thermal oxidizer burner shall not exceed 0.020 lb/mmBtu of actual heat input.
g.	OAC rule 3745-17-11(B)	The particulate emissions from the production operations shall not exceed 4.57 lbs/hr.

(2) Additional Terms and Conditions

a. In order to minimize or eliminate the OC and H_2S emissions and odors the following measures will be employed:

i. The emissions from this emissions unit shall be vented to the primary caustic scrubber at all times the emissions unit is in operation.

ii. The exhaust gases from theprimary caustic scrubbershall be vented to thesecondary caustic scrubber at all times the emissions unit is in operation.

iii. The exhaust gases from thesecondary caustic scrubbershall be vented to athermal oxidizerat all times the emissions unit is in operation.

iv. The OC emissions from this emissions unit shall be vented to a thermal oxidizer that shall meet the operational, monitoring, and record keeping requirements of this permit, when the emissions unit is in operation.

b. The thermal oxidizer shall only employ natural gas fuel at all times anyoxidizer is in operation.

c. This Best Available Technology (BAT) emissions limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-03(A)(3)(a)(ii) (the

less than 10 tons/year BAT exemption) into the Ohio State Implementation Plan (SIP).

d. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons/year BAT exemption) as part of the Ohio SIP.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel in any thermal oxidizer other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in the thermal oxidizer.

(2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

(3) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable air pollution capture and control equipment parameters, that shall be maintained in order to demonstrate compliance are as follows:

a. The use of hoods, fans, and/or other equipment to adequately enclose, contain, capture, vent, and control OC and H_2S emissions from this emissions unit shall include the following:

i. an enclosed conveyor, enclosed feed bin and enclosed mixing vessel during feed of phosphorous pentasulfide (P_2S_5);

ii. a capture exhaust fan system current on the product filter station**,**when the filter is in operation, shall not be less than 2 amps;

iii. the static pressure at the gas fan inlet to the primary thermal oxidizer "Flame Ox 3" when in active operation shall be at least1.5inches ofwater vacuum; and

iv. thestatic pressure at the gas fan inlet to the backup thermal oxidizer "Flame Ox 2" when in active operation shall beat least1.5 inches of water vacuum.

b. the primary scrubber liquid pump vacuum pressureshall not be less than 5 inches water;

c. prior to the start of each batch, the primary scrubber liquid shall be analyzed to ensure that there is sufficient free sodium hydroxide (NaOH) to absorb the H_2S that will be generated in the upcoming batch;

d. prior to the start of each batch, the secondary scrubber liquid shall be analyzed to ensure that there is at least 20% (by weight) free NaOH;

e. the secondary scrubber static pressure shall not be less than 5incheswater gauge;

f. the combustion temperature within the primary thermal oxidizer "Flame Ox 3" during any period of time when the emissions unit controlled by this thermal oxidizer is in operation, shall not be less than 50 degrees Fahrenheit below the average temperature measured during the most recent performance test that demonstrated the emissions unit was in compliance;and

g. the combustion temperature within the backup thermal oxidizer "Flame Ox 2" during any period of time when the emissions unit controlled by this thermal oxidizer is in operation, shall not be less than 50 degrees Fahrenheit below the average temperature during the most recent performance test that demonstrated the emissions unit was in compliance.

(4) The permittee shall properly install, operate, and maintain equipment to continuously monitor theair pollution control equipment parameters specified in d)(3) during operation of this emissions unit, including periods of startup and shutdown.The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s),with any modifications deemed necessary by the permittee.

The permittee shall record the air pollution control equipment parameters specified in d)(3) on a once per 8-hour basis. The permittee shall collect and record the following information each day the emissions unit is in operation:

a. a log or record of the operating time for the capture (collection) system, the primary caustic scrubber, the secondary caustic scrubber, the primary thermal oxidizer, the secondary thermal oxidizer, the monitoring equipment, and the associated emissions unit(s).

(5) Whenever the monitored value for any parameter deviates from the range(s) or minimum limit(s) established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the control equipment parameters within the acceptable range(s), or at or above the minimum limit(s) specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date the corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. theair pollution control equipment parameters specified in d)(3)immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

These range(s) and/orlimit(s) for theair pollution control equipment parameters specified in d)(3)are effective for the duration of this permit, unless revisions are requested by the

permittee and approved in writing by the Ohio EPA Northeast District Office. The permittee may request revisions to the permitted range or limit for the air pollution control equipment parameters specified in d)(3) based upon information obtained during future performance tests that demonstrate compliance with the allowable H_2S and OC emission rates for this emissions unit. In addition, approved revisions to the range or limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(6) The PTI application for this emissions unit, P200, was evaluated based on the actual materials and the design parameters of the emissions unit's(s') exhaust system, as specified by the permittee. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy")was applied to this emissions unit for each pollutant, using data from the permit application; and modeling was performed for each pollutantemitted at over one ton per year using an air dispersion model such as SCREEN3, AERMOD, or ISCST3, or other Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration result(s) from the approved air dispersion model, was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:

a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):

   i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or

   ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.

b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).

c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "X" hours per day and "Y" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

$$TLV/10 \times 8/X \times 5/Y = 4\ TLV/XY = MAGLC$$

d. The following summarizes the results of dispersion modeling for the significant toxic contaminants (emitted at 1 or more tons/year) or "worst case" pollutants:

Pollutant: 4-methyl-2-pentanol.

TLV (micrograms per cubic meter, $\mu g/m^3$): 104,496.

Maximum Hourly Emission Rate (lbs./hr.): 3.0067

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m^3): 71.

MAGLC (ug/m^3): 2,488.

The permittee, has demonstrated that emissions of4-methyl-2-pentanol, from emissions unit(s) P200, is calculated to be less than eighty per cent of the maximum acceptable ground level concentration (MAGLC); any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F).

(7) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration, the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:

a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and

c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Air Toxic Policy" has been documented. If the change(s) meet(s) the definition of a "modification", the permittee shall apply for and obtain a finalPTIO prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

(8) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Air Toxic Policy":

a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);

b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the"Air Toxic Policy";

c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the"Air Toxic Policy", initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and

d. the documentation of the initial evaluation of compliance with the"Air Toxic Policy", and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.

(9) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPANortheast District Office by the due date identified in the Authorization section of this permit. The PER shall cover a reporting period of no more than 12 months for each air contaminant source identified in this permit. It is recommended that the PER is submitted electronically through the Ohio EPA's "e-Business Center: Air Services" although PERs can be submitted via U.S. postal service or can be hand delivered.

(2) The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements in d)(1) through d)(5):

a. all days when a fuel other than natural gas was burned in any thermal oxidizer associated with this emissions unit;

b. all days during which any visible particulate emissions were observed from the stack serving this emissions unit;

c. any corrective actions taken to minimize or eliminate the visible particulate emissions;

d. each period of time (start time and date, and end time and date)whenany of the air pollutioncapture and control equipment parameters were outside of the appropriate range or exceeded the applicable limit specified in d)(3);

e. any period of time (start time and date, and end time and date) when the emissions unit was in operation and when any of the following events occur:

i. process emissions were not vented to the primary caustic scrubber;

ii. primary caustic scrubber exhaust gases were not vented to the secondary scrubber; and

iii. secondary caustic scrubber gases were not vented to a thermal oxidizer.

f. each incident of deviation described in “b”, “d” and “e.i through e.iii” where a prompt investigation was not conducted;

g. each incident of deviation described in “b”, “d” and “e.i through e.iii” where prompt corrective action, that would bring the visible particulate emissions or air pollution control equipment parameters specified in d)(3)into compliance with the appropriate range or limit contained in this permit was determined to be necessary and was not taken;

h. each incident of deviation described in “b”, “d” and “e.i through e.iii” where proper records were not maintained for the investigation and/or the corrective action(s),as identified in the monitoring and record keeping requirements of this permit; and

i. any changes made to a parameter or value used in the dispersion model, that was used to demonstrate compliance with the **“**Air Toxic Policy”, through the predicted 1-hour maximum ground-level concentration. If no changes to the emissions, emissions unit(s), or the exhaust stack have been made, then the report shall include a statement to this effect.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible particulate emissions from the stack shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance with the stack visible particulate emission limitation shall be demonstrated through visible particulate emission observations performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

b. Emission Limitation:

The particulate emissions from the thermal oxidizer burner shall not exceed 0.020 lb/mmBtu of actual heat input from the thermal oxidizer burner.

The NO_Xemissions shall not exceed 0.0919 lb./mmBtu of actual heat input.

Applicable Compliance Method:

Compliance may be based on the following equation:

$Pollutant(lb/mmBtu)_i = EF_i$ xscf/1089 Btu

where:

$Pollutant(lb/mmBtu)_i$ = the pollutant emissions rate, in lb/mmBtu of actual heat input, from the combustion of natural gas fuel. The PE rate is estimated to be 0.0017 lb/mmBtu. The NO_X emissions rate is estimated to be 0.0919 lb/mmBtu.

EF_i = an emission factor for from the combustion of natural gas fuel.

EF_{PE} = a factor for the PE rate from the combustion of natural gas fuel, which is 1.9 lbs. PE per million standard cubic feet found in Table 1.4-2, AP42 Chap 1.4 (7/1998).

EF_{NOx} = a factor for the NO_X emissions from the combustion of natural gas fuel, which 100 lbs. NO_X per million standard cubic feet found in Table 1.4-1, AP42 Chap 1.4 (7/1998).

scf/1089 Btu = the inverse of the heat value of the natural gas fuel as stated in the application for PTIO P0109304.

If required, the permittee shall demonstrate compliance with the emission limitation(s) through emission tests performed in accordance with the following methods:

40 CFR Part 60, Appendix A, Methods 1 through 5 for PE; and
40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 for NO_X.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

c. Emission Limitation:

The particulate emissions from the production operations shall not exceed 4.57 lbs/hr.

Applicable Compliance Method:

Compliance may be based on the following equation:

Determination of the maximum, controlled hourly emissions from the raw material feed operation:

PE(HR) = PWR/batch x ton_{MTL}/2000 lbs PWR x Batches/day x day/24 hrs x EF x (1 – $CE_{SCRBR\ 1}$) x (1 – $CE_{SCRBR\ 2}$)

where:

PE(HR) = the maximum, controlled particulate emissions from the raw material feed operation were estimated to be 6.1 x 10^{-5}lb PE/hr;

PWR = the maximum process weight rate per batch of the operation, which is 47,000lbs_{MTL}/batch as stated in the application for Permit to Install/Operate (PTIO) P0109304;

Batches = the maximum number of batches that may be processed in a 24-hr day, which is 1.2 batches/day as stated in the application for PTIO P0109304;

EF = the factor for uncontrolled pollutant emissions, which is 0.52lb PE_{UNCTRL}/$ton_{PRODUCT}$, U.S. EPA's WebFIRE database for materials feed to a mixer via an enclosed conveyor for superphosphate (P_2O_5) production (SCC 30102805);

$CE_{SCRBR\ 1}$ = efficiency of the primary scrubber control device, which is 0.99 (99%) as stated in the application for PTIO P0109304; and

$CE_{SCRBR\ 2}$ = efficiency of the secondary scrubber control device, which is 0.99 (99%) as stated in the application for PTIO P0109304.

If required, the permittee shall demonstrate compliance with the lb/hr emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

d. Emission Limitation:

The NO_X emissions shall not exceed 2.09 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

NO_X(YR) = NO_x(lb/mmBtu) x H x 8760 hrs/yr x ton NO_X/2000 lbs NO_X.

where:

NO_X(YR) = the worst case NO_X emissions, which was estimated to be 2.09 tons/year;

NO_x(lb/mmBtu) = the NO_X emissions rate per heat input, as determined in f)(1)b and

H = the worst case heat input, in million Btu/hr. of the thermal oxidizer, which is 5.2mmBtu/hr for the primary thermal oxidizer "Flame Ox 3", as stated in the application for PTIO P0109304.

e. Emission Limitation:

The OC emissions shall not exceed 77.3 lbs/day.

Applicable Compliance Method:

Compliance was demonstrated on 2/11/2014 & 2/12/2014 with a Method 25A test of thermal oxidizer no. 2 exhaust that showed total hydrocarbons at non-detect levels so that the emissions rate would be 0 lb OC/day. The average temperature within the combustion zone of thermal oxidizer no. 2 was 1819^{o}F.

Likewise, on 2/14/2014 a Method 25A test of thermal oxidizer no. 3 exhaust showed total hydrocarbons at non-detect levels so that the emissions rate would be 0 lb OC/day. The average temperature within the combustion zone was 1818^{o}F.

On 2/14/14 a Method 25A test and a Method 16 test of thermal oxidizer no. 3 exhaust showed total hydrocarbons at non-detect levels so that emissions rate would be 0 lb OC/day and non-detect levels of H_2S so that emissions rate would be 0.00 lb H_2S/hr., respectively. The average incinerator temperature was 1818^{o}F within the combustion zone.

If required, the permittee shall demonstrate compliance with the daily emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 25A.Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

f. Emission Limitation:

The OC emissions shall not exceed 14.1 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

OC(YR) = OC(DAY)x 365days/yr x ton OC/2000 lbs OC

where:

OC(YR) = the maximum annual, controlled emissions were estimated to be 14.1 tons OC/day, as stated in the application for PTIO P0109304.

g. Emission Limitation:

The H_2S emissions shall not exceed 0.02 lb/hr.

Applicable Compliance Method:

Compliance was demonstrated on2/11/20114 & 2/12/2014 with aMethod 16 test of thermal oxidizer no. 2 that showednon-detect levels of hydrogen sulfide so that emissions rate would be 0.00 lb H_2S/hr. Likewise, on 2/14/2014 a Method 16 test of thermal oxidizer no. 3 showed non-detect levels of hydrogen sulfide so that emissions rate would be 0.00 lb H_2S/hr.

If required, the permittee shall demonstrate compliance with the annual emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 16. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

h. Emission Limitation:

The H_2S emissions shall not exceed 0.09 ton/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

$H_2S(YR) = H_2S(HR) \times 8760hrs/yr \times ton\ H_2S/2000\ lbs H_2S$

where:

$H_2S(YR)$ = the maximum, controlled annual H_2Semissions, which are estimated to be 7.36×10^{-4} ton H_2S/yr.

g) Miscellaneous Requirements

(1) Emissions unit P200 was recently permitted within permit to install (PTI) 02-15609, issued November 20, 2001, as emissions unit P001 at Elco Corp. – Ashtabula, facility id. 0204000417. Elco Corp. is a subsidiary of Detrex Corporation.

(2) In addition to the exhaust gases from the R11 reactor, the R12 reactor and the product filter station associated with emissions unit P200, Detrex has elected to route exhaust gases to the associated air pollution control system (primary caustic scrubber, secondary caustic scrubber and a thermal oxidizer) in order to minimize odors from (P201) Light Color/Low Odor Fat Sulfurization.

(3) The permittee shall comply with the Orders of the Director's Final Findings and Orders, effective on December 24, 2014, and any modification as specified in section IX. of the Findings and Orders until termination as specified in section VI.

2. P201, Light Color/Low Odor Fat Sulfurization

Operations, Property and/or Equipment Description:

Light color/low odor fat sulfurization with a main caustic scrubber and a secondary caustic scrubber to control hydrogen sulfide (H_2S) emissions which vent to a thermal oxidizer to control emissions of organic compounds (OCs) and H_2S and to minimize odors.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. b)(2)a and d)(6)

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3)	See b)(2)a and b)(2)b.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	The permittee shall install a burner on the thermal oxidizer designed to meet 0.0919pound of nitrogen oxides (NO_X) emissions per million Btu (lb/mmBtu) of actual heat input. See b)(2)c and b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_Xemissions from this air contaminant source since the potential to emit is less than 10 tons/year. See b)(2)e.
d.	OAC rule 3745-31-05(D)(2)	The NO_X emissions shall not exceed0.0919 pound of nitrogen oxides (NO_X) emissions per million Btu (lb/mmBtu) of actual heat input and 2.09 tons/year. See b)(2)c.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
e.	OAC rule 3745-31-05(F) – voluntary restriction to avoid state modeling requirements.	The hydrogen sulfide (H_2S) emissions shall not exceed 0.9 ton/year. See b)(2)f and d)(5).
f.	OAC rule 3745-31-05(F) – voluntary restriction to avoid BAT.	The organic compound (OC) emissions shall not exceed 9.9 tons/year. See b)(2)g.
g.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.
h.	OAC rule 3745-17-10(B)(1)	The particulate emissions from the thermal oxidizer burner shall not exceed 0.020 pound per million Btu (lb/mmBtu) of actual heat input.
i.	OAC rule 3745-17-11(B)	The particulate emissions from the production operations shall not exceed 1.074 lbs/hr.

(2) Additional Terms and Conditions

a. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the particulate emissions (PE) from this air contaminant source since the uncontrolled potential to emit for PE is less than 10 tons/year.

b. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the H_2S and OC emissions from this air contaminant source since this Permit to Install/Operate P0109304takes into account the voluntary restrictions specified in b)(2)f and b)(2)g, respectively.

c. The thermal oxidizer shall only employ natural gas fuel at all times any oxidizer is in operation.

d. This BAT emissions limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-03(A)(3)(a)(ii) (the less than 10 tons/year BAT exemption) into the Ohio State Implementation Plan (SIP).

e. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons/year BAT exemption) as part of the Ohio SIP.

f. Permit-to-install and operate (PTIO) P0109304 for this air contaminant source takes into account the following voluntary restrictions (including the use of any applicable air pollution control equipment), as proposed by the permittee, for the purpose of avoiding modeling to demonstrate compliance with the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), which was not necessary because the emissions unit’s maximum annual emissions for each toxic air contaminant,

as defined in OAC rule 3745-114-01, such as H_2S, will be less than 1.0 ton per year:

i. The emissions from this emissions unit shall be vented to theprimary caustic scrubber upon completion of the batch reaction and a nitrogen purge through the reactor vessel for at least one hourto remove residual H_2S emissions.

Upon completion of the nitrogen purge step, the reactor vessel is purged with air and the exhaust gases may be directly vented to the thermal oxidizer, bypassing the primary and secondary caustic scrubbers for at least two (2)hours.

ii. The exhaust gases from theprimary caustic scrubbershall be vented to thesecondary caustic scrubber upon completion of the batch reaction and the cooling of the materials within the reactor vessel for at least two (2) hours to remove residual H_2S emissions.

iii. The exhaust gases from thesecondary caustic scrubbershall be vented to athermal oxidizerupon completion of the batch reaction and the cooling of the materials within the reactor vessel forat least two (2) hoursto remove residual H_2S emissions.

g. Permit-to-install and operate (PTIO) P0109304 for this air contaminant source takes into account the following voluntary restrictions (including the use of any applicable air pollution control equipment), as proposed by the permittee, for the purpose of avoiding BAT requirements under OAC rule 3745-31-05(A(3):

The emissions from this emissions unit shall be vented to an OC emissionscontrol device that shall meet the operational, monitoring, and record keeping requirements of this permit, when the emissions unit is in operation.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel in any thermal oxidizer other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in the thermal oxidizer.

(2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

(3) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable air pollution capture and control equipment parameters, that shall be maintained in order to demonstrate compliance are as follows:

a. the primary scrubber liquid pump vacuum pressure shall not be less than 5 inches water;

b. prior to the start of each batch, the primary scrubber liquid shall be analyzed to ensure that there is sufficient free sodium hydroxide (NaOH) to absorb the H_2S that will be generated in the upcoming batch;

c. the secondary scrubber static pressure shall not be less than 5 inches water gauge;

d. the static pressure at the gas fan inlet to the primary thermal oxidizer “Flame Ox 3” when in active operation shall be at least 1.5inches ofwater vacuum;

e. the static pressure at the gas fan inlet to the backup thermal oxidizer “Flame Ox 2” when in active operation shall beat least1.5inches of water vacuum;

f. the combustion temperature within the primary thermal oxidizer “Flame Ox 3” during any period of time when the emissions unit controlled by the thermal oxidizer is in operation, shall not be less than 1500 degrees Fahrenheit whenever exhaust gases from emissions unit (P200) DPA & ZDDP mfg. are not vented to the primary thermal oxidizer; and

g. the combustion temperature within the backup thermal oxidizer “Flame Ox 2” during any period of time when the emissions unit controlled by the thermal oxidizer is in operation, shall not be less than 1500 degrees Fahrenheit whenever exhaust gases from emissions unit (P200) DPA & ZDDP mfg. are not vented to the secondary thermal oxidizer.

(4) The permittee shall properly install, operate, and maintain equipment to continuously monitor theair pollution control equipment parameters specified in d)(3) during operation of this emissions unit, including periods of startup and shutdown.The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s),with any modifications deemed necessary by the permittee.

The permittee shall record the air pollution control equipment parameters specified in d)(3) on a once per 8-hour basis. The permittee shall collect and record the following information each day the emissions unit is in operation:

a. a log or record of the operating time for the capture (collection) system, the primary caustic scrubber, the secondary caustic scrubber, the primary thermal oxidizer, the secondary thermal oxidizer, the monitoring equipment, and the associated emissions unit(s).

(5) Whenever the monitored value for any parameter deviates from the range(s) or minimum limit(s) established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the control equipment parameters within the acceptable range(s), or at or above the minimum limit(s) specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date the corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. theair pollution control equipment parameters specified in d)(3)immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

These range(s) and/or limit(s) for theair pollution control equipment parameters specified in d)(3)are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northeast District Office. The permittee may request revisions to the permitted range or limit for the air pollution control equipment parameters specified in d)(3) based upon information obtained during future performance tests that demonstrate compliance with the allowable H_2S and OC emission rates for this emissions unit. In addition, approved revisions to the range or limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(6) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary because the emissions unit’s maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modifiedpermit-to-install and operate (PTIO) prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTIO.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPANortheast District Office by the due date identified in the Authorization section of this permit. The PER shall cover a reporting period of no more than 12 months for each air contaminant source identified in this permit. It is recommended that the PER is submitted electronically through the Ohio EPA’s “e-Business Center: Air Services” although PERs can be submitted via U.S. postal service or can be hand delivered.

(2) The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements in d)(1) through d)(5):

a. all days when a fuel other than natural gas was burned in any thermal oxidizer associated with this emissions unit;

b. all days during which any visible particulate emissions were observed from the stack serving this emissions unit;

c. any corrective actions taken to minimize or eliminate the visible particulate emissions;

d. each period of time (start time and date, and end time and date)whenany of the air pollutioncapture and control equipment parameters were outside of the appropriate range or exceeded the applicable limit specified in d)(3);

e. any period of time (start time and date, and end time and date) when the emissions unit was in operation and when any of the following events occur:

i. process emissions were not vented to the primary caustic scrubber upon completion of the batch reaction duringthe nitrogen purge;

ii. primary caustic scrubber exhaust gases were not vented to the secondary scrubber upon completion of the batch reaction duringthe nitrogen purge;

iii. process emissions were directly vented to a thermal oxidizer prior to the completion of the nitrogen purge; and

iv. secondary caustic scrubber gases were not vented to a thermal oxidizer during the nitrogen purge.

f. each incident of deviation described in “b”, “d” and “e.i through e.iv” where a prompt investigation was not conducted;

g. each incident of deviation described in “b”, “d” and “e.i through e.iv” where prompt corrective action, that would bring the visible particulate emissions or air pollution control equipment parameters specified in d)(3)into compliance with the appropriate range or limit contained in this permit, was determined to be necessary and was not taken; and

h. each incident of deviation described in “b”, “d” and “e.i through e.iv” where proper records were not maintained for the investigation and/or the corrective action(s),as identified in the monitoring and record keeping requirements of this permit.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible particulate emissions from the stack shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance with the stack visible particulate emission limitation shall be demonstrated through visible particulate emission observations performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

b. Emission Limitation:

The particulate emissions from the thermal oxidizer burner shall not exceed 0.020 lb/mmBtu of actual heat input from the thermal oxidizer burner.

The NO_X emissions shall not exceed 0.0919 lb/mmBtu of actual heat input.

Applicable Compliance Method:

Compliance may be based on the following equation:

$Pollutant(lb/mmBtu)_i = EF_i$ x scf/1089 Btu

where:

$Pollutant(lb/mmBtu)_i$ = the pollutant emissions rate, in lb/mmBtu of actual heat input, from the combustion of natural gas fuel. The PE rate is estimated to be 0.0017 lb PE/mmBtu. The NO_X emissions rate is estimated to be 0.0919 lb/mmBtu.

EF_i = an emission factor for the combustion of natural gas fuel.

EF_{PE} = a factor for the PE rate from the combustion of natural gas fuel, which is 1.9 lbs. PE per million standard cubic feet found in Table 1.4-2, AP42 Chap 1.4 (7/1998).

EF_{NOx} = a factor for the NO_X emissions from the combustion of natural gas fuel, which 100 lbs. NO_X per million standard cubic feet found in Table 1.4-1, AP42 Chap 1.4 (7/1998).

scf/1089 Btu = the inverse of the heat value of the natural gas fuel as stated in the application for PTIO P0109304.

If required, the permittee shall demonstrate compliance with the emission limitation(s) through emission tests performed in accordance with the following methods:

40 CFR Part 60, Appendix A, Methods 1 through 5 for PE; and

40 CFR Part 60, Appendix A, Methods 1 through 4 and 7 for NO_X.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

c. Emission Limitation:

The NO_X emissions shall not exceed 2.09 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

$NO_X(YR) = NO_x(lb/mmBtu)$ x H x 8760 hrs/yr x ton NO_X/2000 lbs NO_X

where:

NO_X(YR) = the worst case NO_X emissions, which was estimated to be 2.09 tons/year;

NO_x(lb/mmBtu) = the NO_X emissions rate per heat input, as determined in f)(1)b; and

H = the worst case heat input, in million Btu/hr of the thermal oxidizer, which is 5.2 mmBtu/hr for the primary thermal oxidizer "Flame Ox 3", as stated in the application for PTIO P0109304.

d. Emission Limitation:

The particulate emissions from the production operations shall not exceed 1.074 lbs/hr.

Applicable Compliance Method:

Compliance may be based on the following equation:

Determination of the maximum, controlled hourly emissions from the raw material feed operation:

PE(HR) = PWR/batch x batch/Hrs x Solids Content x EF x (1 – $CE_{SCRBR\ 1}$) x (1 – $CE_{SCRBR\ 2}$).

where:

PE(HR) = the maximum, controlled particulate emissions from the raw material feed operation were estimated to be 4.3 x 10^{-5}lb PE/hr;

PWR_i = the maximum process weight rate per batch of the operation, which is 6500lbs_{MTL}/batch as stated in the application for PTI P0109304;

Hrs = the batch process time, which is 24 hours;

Solids Content = the maximum solids content, which is 0.1606 lb_{SOLIDS}/lb_{MTL} (16.06% solids content)as stated in the application for PTI P0109304;

EF = the factor for uncontrolled pollutant emissions, which is 0.01lb PE_{UNCTRL}/lb_{SOLIDS}in AP-42 Chap. 6.4 (5/1983) for paint & varnish manufacturing;

$CE_{SCRBR\ 1}$ = efficiency of the primary scrubber control device, which is 0.99 (99%) as stated in the application for PTI P0109304; and

$CE_{SCRBR\ 2}$ = efficiency of the secondary scrubber control device, which is 0.99 (99%) as stated in the application for PTI P0109304.

If required, the permittee shall demonstrate compliance with the lb/hr emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5.

e. Emission Limitation:

The H_2S emissions shall not exceed 0.9 ton/year.

Applicable Compliance Method:

Compliance may be based on the following equations:

i. Determination of the hourly H_2S emissions from the nitrogen purge of the reactor gases vented to the dual scrubbers and athermal oxidizer:

$H_2S(HR)_{N2\ PURGE}$ = PWR/batch x batch/Hrs x lb H_2S_{INPUT}/lb_{MTLS} x EF x$(1 - CE_{SCRBR1})$ x $(1 - CE_{SCRBR2})$ x $(1 - CE_{TO})$

where:

$H_2S(HR)_{N2\ PURGE}$ = the maximum, controlled H_2S emissions during the nitrogen purge process operation, which is estimated to be 7.04 x 10^{-6}lb H_2S/hr;

PWR = the maximum process weight rate per batch of the operation, which is 6500 lbs_{MTL}/batch as stated in the application for PTI P0109304;

Hrs = the batch process time, which is 24 hours;

lb H_2S_{INPUT}/lb_{MTLS} = the H_2S content in the batch materials as a decimal fraction, which is 0.26 lb H_2S_{INPUT}/lb_{MTLS}, as stated in the application for PTI P0109304;

EF =the factor for uncontrolled pollutant emissions, which is 0.05 lb H_2S_{UNCTRL}/lbH_2S_{INPUT}, as stated in the application for PTI P0109304;

CE_{SCRBR1} = efficiency of the primary scrubber control device, which is 0.99 (99%), as stated in the application for PTI P0109304;

CE_{SCRBR2} = efficiency of the secondary scrubber control device, which is 0.99 (99%), as stated in the application for PTI P0109304; and

CE_{TO} = efficiency of the thermal oxidizer control device, which is 0.98 (98%), as stated in the application for PTI P0109304.

ii. Determination of the hourly H_2S emissions from the airpurge of the reactor gases vented directly to athermal oxidizer:

$H_2S(HR)_{AIR\ PURGE}$ = PWR/hr x EF x $(1 - CE_{TO})$

where:

$H_2S(HR)_{AIR\ PURGE}$ = the maximum, controlled H_2S emissions during the air purge process operation, which is estimated to be 0.0015 lb H_2S/hr;

PWR/hr. = the average mass of product remaining in the reaction vessels during the air purge process operation, which is 1500 $lbs_{PRODUCT}$/hr, as stated in the application for PTI P0109304;

EF = the factor for uncontrolled pollutant emissions during the air purge cycle, which is1.0 x 10^{-6}lb $H_2S_{UNCTRL}/lb_{PRODUCT}$., as stated in the application for PTI P0109304; and

CE_{TO} = efficiency of the thermal oxidizer control device, which is 0.98 (98%), as stated in the application for PTI P0109304.

iii. Determination of the annual H_2S emissions from all process operations:

$H_2S(YR) = \{[H_2S(HR)_{N2\ PURGE} \times Hrs_{N2\ PURGE}/day] + [H_2S(HR)_{AIR\ PURGE} \times Hrs_{AIR\ PURGE}/day]\} \times 365$ days/year x ton H_2S/2000 lbsH_2S

where:

$H_2S(YR)$ = the annual H_2S emissions from the nitrogen purge process and the air purge process, combined, which was estimated to be 0.00142 ton H_2S/year;

$Hrs_{N2\ PURGE}$/day = the nitrogen purge process time, which is a maximum of 19 hrs/day; and

$Hrs_{AIR\ PURGE}$/day = the air purge process time, which is a maximum of 5 hrs/day.

If required, the permittee shall demonstrate compliance with the annual emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 16. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

f. Emission Limitation:

The OC emissions shall not exceed 9.9 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

$OC(YR) = PWR/batch \times batch/Hrs \times lbfat/lb_{MTLS} \times EF \times (1 - CE_{TO})$
x ton OC/2000 lbs OC x 8760 hrs./yr

where:

OC(YR) = the annual OC emissions, which was estimated to be 0.196 ton OC/yr;

PWR = the maximum process weight rate per batch of the operation, which is 6500 lbs_{MTL}/batch as stated in the application for PTI P0109304;

Hrs = the batch process time, which is 24 hours;

$lbfat/lb_{MTLS}$ = the fat content in the batch materials as a decimal fraction, which is 0.8255 $lbfat/lb_{MTLS}$ (such as 1-decene, methyl oleate or triglycerides from pigskin grease), as stated in the application for PTI P0109304;

EF = the factor for uncontrolled pollutant emissions, which is 0.01 $lbOC_{UNCTRL}$/lb fat, as stated in the application for PTI P0109304; and

CE_{TO} = efficiency of the thermal oxidizer control device, which is 0.98 (98%), as stated in the application for PTI P0109304.

If required, the permittee shall demonstrate compliance with the daily emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 25A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) Emissions unit P201 was initially permitted within permit to install (PTI) 02-22976, issued June 12, 1998, as emissions unit P002 at Elco Corp. – Ashtabula, facility id. 0204000417. Elco Corp. is a subsidiary of Detrex Corporation.

(2) In addition to the exhaust gases from the fat sulfurization reactor associated with emissions unit P201,Detrex has elected to route exhaust gases to the associated air pollution control system (primary caustic scrubber, secondary caustic scrubber and a thermal oxidizer) in order to minimize odors from the R11 reactor, the R12 reactor and the product filter station associated with emissions unit P200.