Indiana Department of Environmental Management
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Carol S. Comer
Commissioner

To:	Interested Parties
Date:	May 4, 2016
From:	Matthew Stuckey, Chief Permits Branch Office of Air Quality
Source Name:	POET Biorefining - Alexandria
Permit Level:	Interim Title V Significant Source Modification Petition Approval
Permit Number:	095-36998i-00127
Source Location:	13179 North 100 East Alexandria, Indiana
Type of Action Taken:	Modification at an existing source

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the matter referenced above.

The final decision is available on the IDEM website at: http://www.in.gov/apps/idem/caats/
To view the document, select Search option 3, then enter permit 36998i.

If you would like to request a paper copy of the permit document, please contact IDEM's central file room:

Indiana Government Center North, Room 1201
100 North Senate Avenue, MC 50-07
Indianapolis, IN 46204
Phone: 1-800-451-6027 (ext. 4-0965)
Fax (317) 232-8659

Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

(continues on next page)

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Indiana Department of Environmental Management
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Carol S. Comer
Commissioner

May 4, 2016

Dan McMahan
POET Biorefining - Alexandria
P.O. Box 717
Alexandria, IN 46001

Re: Interim Significant Source Modification Petition Approval
095-36998I-00127

Dear Mr. McMahan:

On April 14, 2016, the Office of Air Quality (OAQ) received an interim Significant Source Modification petition from POET Biorefining - Alexandria, located at 13179 North 100 East, in Alexandria, Indiana for the following changes:

- add a new (6th) fermenter,
- construct two (5th and 6th) grain bins and associated grain handling equipment,
- increase beer flow through distillation from 54,000 gallons per hour to 60,000 gallons per hour,
- Increase in DDGS dryer wetcake feed rate from 73.0 ton/hr to 78.0 ton/hr,
- increase the scrubber air flow rate from 9,000 acfm to 12,000 acfm,
- increase cooling tower water flow rate from 26,000 gallons per minute to 30,000 gallons per minute,
- increase the pressure drop range for the scrubber to between 1.0 and 12.0 inches of water, and
- replace a plate and frame heat exchanger used as a vaporizer in distillation with a kettle style vaporizer.

A public notice of the interim Significant Source Modification petition was published in the Alexandria Times-Tribune on April 13, 2006. The public comment period ended on April 26, 2006.

There were no comments received during the public comment period. This interim Significant Source Modification petition is in effect upon issuance and will expire on the effective date of the final Significant Source Modification permit.

The interim Significant Source Modification petition may be revoked after the effective date upon a written finding by the Indiana Department of Environmental Management (IDEM) that any of the reasons for denial in 326 IAC 2-13-1(h) exist or if the final Significant Source Modification permit is denied. The IDEM has reviewed this interim Significant Source Modification petition and has not found any such reason. The facilities subject to this approval may not operate until the final Significant Permit Modification is issued by OAQ.

The interim Significant Source Modification petition is federally enforceable. Detailed construction and operation conditions will be specified in the final Significant Source Modification permit 095-36998-00127.

If you have any questions regarding this interim Significant Source Modification petition, please contact Heath Hartley, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call at (800) 451-6027, and ask for Heath Hartley or extension 2-8217, or dial (317) 232-8217.

Sincerely,

Jenny Acker, Section Chief
Permits Branch
Office of Air Quality

Enclosure: Interim Permit Evaluation (3 pages)

cc: File – Madison County
Madison County Health Department
U.S. EPA, Region V
Compliance and Enforcement Branch

Indiana Department of Environmental Management
Office of Air Management

Interim Significant Source Modification Evaluation Sheet

Company Name:	POET Biorefining - Alexandria		
Location:	13179 North 100 East, Alexandria, IN 46001	**Permit No**:	095-36998I-00127
Permit Reviewer:	Heath Hartley	**Date Receipt of Application:**	4/14/2016
		Date of review:	
Description of the interim construction:	Addition of new fermenter, construct new grain bins and grain handling equipment, increase beer flow through distillation, increase scrubber air flow rate, increase cooling tower water flow rate, increase pressure drop range for the scrubber and replacing a vaporizer.		
Public Notice Period =	4/13/2016	to	4/26/2016
Public Notice Date + 3 days = 17 days =	4/29/2016		

Interim Petition Applicability: 326 IAC 2-13-1

(a) Existing Source with valid permit;

(b) Exemptions:

(1) construction of a PSD source or PSD modification;

(2) construction or modification in nonattainment area that would emit those pollutants for which the nonattainment designation is based.

(3) any modification subject to 326 IAC 2-4.1.

(c) Public notice comment period is 14 calendar days.

Instructions: Check (✓) appropriate answers and make a recommendation.

1. Did the applicant submit a written petition for an interim significant permit revision or significant source modification?

☒ Yes Go to question 2.
☐ No Ignore verbal request.

2. Did the applicant pay the applicable interim permit fee? $625 for TV, FESOP, and SSOA. $500 for MSOP.

☒ Yes Go to question 3.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(1).

Comments: _____

3. Did the applicant state acceptance of federal enforceability of an interim significant permit revision or significant source modification?

☒ Yes Go to question 4.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(D).

4. Did the applicant or its authorized agent sign the application?

☒ Yes Go to question 5.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(E).

5. Did the applicant submit a notarized affidavit stating that the applicant will proceed at its own risk (if the interim significant permit revision or significant source modification is issued), including, but not limited to:

   (a) Financial risk,

   (b) Risk that additional emission controls may be required,

   (c) Risk that the final significant permit revision or significant source modification may be denied.

   ☒ Yes Go to question 6.
   ☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(F).

6. Did the applicant begin construction prior to submitting the interim significant permit revision or significant source modification application?

   ☐ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(6).
   ☒ No Go to question 7.

7. What is the type of the interim construction?

   ☐ New Source Deny the application, pursuant to 326 IAC 2-13-1(a)
   ☒ Modification to an existing source Go to question 8.

8. Did the applicant present data in the interim significant permit revision or significant source modification that is sufficient to determine PSD, NSPS, NESHAP, and state rule compliance?

   ☒ Yes Go to question 9.
   ☐ No Deny the application pursuant to:
   326 IAC 2-13-1(c)(2)(B), for PSD;
   326 IAC 2-13-1(c)(2)(C), for NSPS or NESHAP;
   326 IAC 2-13-1(c)(2)(C), for state rules.

9. Is the proposed modification to be located in a nonattainment area?

   ☐ Yes Go to question 10.
   ☒ No Go to question 11.

   County: Madison County

   Comments: _____

10. Will the proposed modification emit the pollutant for which the area is nonattainment in quantities greater than the significant levels?

    ☐ Yes Deny the application, pursuant to 326 IAC 2-13-1(a)(2).
    ☐ No Go to question 11.

11. Did the petition include a complete description of the process?

    ☒ Yes Go to question 12.
    ☐ No Deny the petition, pursuant to 326 IAC 2-13-1(c)(2).

12. Did the interim significant permit revision or significant source modification petition contain conditions accepting either emission controls (baghouse, afterburners, scrubbers, etc.) or enforceable limits or other suitable restriction to avoid PSD applicability; as well as control parameters (incinerator operating temperature, baghouse pressure drop, etc.)? The specific limits must be explicitly spelled out (i.e.: The gas consumption of the boiler shall not exceed 29 million cubic feet per month.) A statement such as that the company agrees to conditions such that PSD rules are not applicable is not acceptable.

    ☒ Yes Go to question 13.
    ☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(B).

13. Do the emission controls and/or throughput limits prevent PSD applicability?

☒ Yes Go to question 14.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(B).

14. Will the modification, after application of all emission controls and/or throughput limitations comply with all applicable New Source Performance Standards (NSPS) (40 CFR 60)?

☒ Yes Go to question 15.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

15. Will the modification, after application of all emission controls and/or throughput limitations comply with all applicable National Emission Standards for Hazardous Air Pollutants (NESHAP)?

☒ Yes Go to question 16.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

16. Will the modification, after application of all emission controls and/or throughput limitations, comply with all applicable state rules?

☒ Yes Go to question 17.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).

17. Does the applicant dispute applicability of any applicable state or federal rule?

☐ Yes Deny the application, pursuant to 326 IAC 2-13-1(c)(2)(C).
☒ No Go to question 18.

18. Is there good reason to believe that the applicant does not intend to construct in accordance with the interim significant permit revision or significant source modification petition?

☐ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(1).
☒ No Go to question 19.

19. Is there good reason to believe that information in the petition has been falsified?

☐ Yes Deny the application, pursuant to 326 IAC 2-13-1(h)(7).
☒ No Approve the interim significant permit revision or significant source modification petition.

20. Has the petition been adequately public noticed? A proof of publication copy is necessary.

☒ Yes Go to question 21.
☐ No Deny the application, pursuant to 326 IAC 2-13-1(e).

Newspaper: Alexandria Times-Tribune

Date of publication: April 13, 2016

21. Were comments received within seventeen (17) days after the public notice of the interim significant permit revision or significant source modification?

(14 calendar days for comment period + 3 working days for mailing)

☐ Yes Evaluate the comments received, and make a recommendation.
☒ No Issue the final interim significant permit revision or significant source modification approval.

Comments: _____

Recommendation: Issue Interim

Date the applicant was informed of the decision: May 2, 2016

Method of informing the applicant:

Affidavit of Construction

I, David Hudak, being duly sworn upon my oath, depose and say:

1. I live in Madison County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of General Manager for POET Biorefining - Alexandria

3. By virtue of my position with POET Biorefining - Alexandria

   I have personal knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of POET Biorefining - Alexandria

4. I, the undersigned, have submitted an interim (minor permit revision, significant permit revision, minor source modification, significant source modification) petition to the Office of Air Quality for the construction of a new (6th) fermenter .

5. POET Biorefining - Alexandria recognizes the following risks:

   (a) own financial risk,
   (b) that IDEM may require additional or different control technology for the final approval,
   (c) that IDEM may deny issuance of the final approval, and
   (b) any additional air permitting requirements.

Further Affiant said not.
I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature: [signature]

Printed Name: David M. Hudak

Phone No.: 765 - 724 - 4384

Date: 4/13/16

STATE OF INDIANA

COUNTY OF Madison

Subscribed and sworn to me, a notary public in and for Grant

County and State of Indiana on this 13th day of April, 20 16

My Commission expires: July 26, 2022

Signature: Patricia Tomlin

Printed Name: Patricia Tomlin

PATRICIA TOMLIN
Notary Public, State of Indiana
Grant County
Commission # 655769
My Commission Expires
July 26, 2022

revised 3/23/01 drp

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

PETITION FOR INTERIM SIGNIFICANT SOURCE MODIFICATION,

Source Name:	POET Biorefining – Alexandria
Source Address:	13179 North 100 East, Alexandria, Indiana
Mailing Address:	P.O. Box 177, Alexandria, Indiana
SIC/NAICS Code:	2769/325193

POET proposes to modify its existing facility by making the changes described in the following paragraphs.

1. Fermentation

Description of the Change in Operation or Equipment

POET proposes to modify the existing fermentation process during spring 2016 by constructing a new (6th) fermenter (EU047). The additional fermenter will allow the facility to increase overall batch fermentation time to increase yield on the available starch contained within the grain received and processed. POET will use the additional fermenter solely to increase the length of the fermentation time for each batch processed at the facility. No increase in the overall amount of grain handled, ethanol produced, or associated emission rates will occur. No changes to existing emission limits are being requested.

The fermenter will have a maximum capacity of 55,400 gallons per hour.

Emissions from the fermenter will be controlled by an existing wet scrubber and an existing regenerative thermal oxidizer (RTO) operating in series. The wet scrubber has a volatile organic compound (VOC) control efficiency of 98% and a hazardous air pollutant (HAP) control efficiency of 50%. The RTO has a VOC control efficiency of 98% and a HAP control efficiency of 97%.

Potential to Emit

The new 6th fermenter will be a source of VOC and HAP emissions. During normal operating conditions, the VOC and HAP emissions from the new fermenter will be controlled by the existing wet scrubber and regenerative thermal oxidizer (RTO). The following table summarizes the uncontrolled and controlled potential to emit (PTE) from the new fermenter.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	1497	0.60
Acetaldehyde (Individual HAP)	10.71	0.16
Propionaldehyde (Individual HAP)	0.00	0.00
Methanol (Individual HAP)	0.03	0.00
Formaldehyde (Individual HAP)	0.03	0.00
Total HAP	10.76	0.16

Prevention of Significant Deterioration (PSD) Requirements

POET is an existing synthetic minor source under PSD rules. The installation of the 6th fermenter will not require an increase in the following permit limits associated with the Facility's synthetic minor permit status.

(a) Unless operating under Alternative operating Scenario No. 1 (AOS1) or No. 2 (AOS2), the scrubber (CE008) and RTO (CE009) shall control emissions from the fermentation and distillation processes. Additionally, the RTO shall control emissions from the DDGS dryers (EU025 and EU026) and, when not producing wetcake, the set of four centrifuges. The emissions from the RTO (CE009) stack exhaust (SV009) shall be limited as follows:

- VOC emissions shall not exceed 30.8 lbs/hr.
- Acetaldehyde emissions shall not exceed 1.25 lbs/hr.
- Total HAP emissions shall not exceed 1.69 lbs/hr.

(b) Alternative Operating Scenario No. 1 (AOS1)

When the Scrubber (CE008) is not operating, the RTO (CE009) shall control emissions from the fermentation and distillation processes, the DDGS dryers (EU025 and EU026), and, when not producing wetcake, the set of four centrifuges. The emissions from the RTO (CE009) stack exhaust (SV009) shall be limited as follows:

- VOC emissions shall not exceed 30.8 lbs/hr.
- Acetaldehyde emissions shall not exceed 1.25 lbs/hr.
- Total HAP emissions shall not exceed 1.69 lbs/hr.

New Source Performance Standard (NSPS) Requirements

The 6th fermenter will be subject to New Source Performance Standard (NSPS) 40 CFR 60 Subpart VVa because it will add valves and connectors that are defined as being "in VOC service". The addition of equipment in VOC service will result in an increase in the VOC emission rate from the facility and the capital cost of the 6th fermenter exceeds the capital expenditure threshold of Subpart VVa. Therefore, the installation of the 6th fermenter will be considered to be a NSPS modification.

The new equipment in VOC service associated with the 6th fermenter will be subject to the leak detection and repair (LDAR) monitoring, recordkeeping and reporting requirements of Subpart VVa. Potential emissions associated with equipment leaks from the 6th ferm are included with equipment leaks calculations provided in the Kettle Vaporizer section below.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements

There are no applicable NESHAP rules applicable to this modification.

State Rules & Requirements

POET has identified the following applicable state rules and requirements for the affected process. The following summarizes the applicable requirements and methods of compliance.

1. 326 IAC 2-2 (PSD)
    a. In order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the facility will continue to comply with the emissions limits specified in the permit, which are stated in the Prevention of Significant Deterioration (PSD) Requirements section above.
    b. In order to ensure compliance with 326 IAC 2-2 (PSD), the control equipment associated with the proposed emission units will be operated at all times that the units are in operation.

2. To comply with 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills):
   a. VOC emissions from the fermentation and distillation process will be controlled by either the scrubber or the RTO, or a combination of both.
   b. The overall VOC removal efficiency for the scrubber and RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.
   c. The overall VOC removal efficiency for the scrubber will be at least 98%, or the VOC outlet concentration will not exceed 20 ppmv.
   d. The overall VOC removal efficiency for the RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.
   e. RTO Temperature – The facility will continuously monitor the RTO operating temperature and maintain records of the 3-hour average temperature. The facility will operate the RTO above the 3-hour average temperature from the most recent valid stack test that demonstrated compliance with the established limits. If the 3-hour average temperature of the RTO falls below the 3-hour average temperature established from the most recent valid stack test that demonstrated compliance, the facility will take a reasonable response.
   f. RTO Parametric Monitoring – The facility will continuously monitor the RTO duct pressure or fan amperage and maintain records of the 3-hour average duct pressure or fan amperage. The facility will operate the RTO within the 3-hour average normal range of duct pressure or fan amperage as determined from the most recent valid stack test that demonstrated compliance with the established limits. If the 3-hour average duct pressure or fan amperage is outside the normal range, the facility will take a reasonable response.
   g. Additional Record keeping requirements –The facility will maintain monthly records of when the RTO is down. The facility will document the dates, including the time, when the system is operating under AOS1 and AOS2.
3. 326 IAC 2-7-5(1) and 326 IAC 2-7-6(1) - Visible Emissions – A trained employee of the facility will record the visible emissions from the RTO stack once per day and maintain the records of the emissions. If abnormal emissions are observed, the facility will take a reasonable response.
4. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.
5. 326 IAC 3-6 - Testing Requirements – The facility will conduct PM, PM10, PM2.5, VOC, NOx, CO and Acetaldehyde testing of the RTO as required by the Indiana Department of Environmental Management (IDEM) and at least once every five years.

2. Scrubber

Description of the Change in Operation or Equipment

Revise the normal pressure drop range for the Fermentation Scrubber (CE008) to reflect "between 1.0 and 12.0 inches of water," to be consistent with manufacturer specifications.

Replace the scrubber (CE008) fan and increase the associated stack/vent (SV008) airflow from 9,000 acfm to 12,000 acfm. The purpose of this modification is reduce high pressure conditions in the scrubber duct work.

Potential to Emit

These modifications will not change the operation of the scrubber and will not affect the emission rate or the efficiency of the scrubber.

PSD Requirements

Alternative Operating Scenario No.2 (AOS2) - When the RTO (CE009) is not operating, the Permittee shall comply with the following:

- The Scrubber shall continue to control the VOC emissions for the fermentation and distillation processes, during the periods when the RTO is down. The RTO downtime shall not exceed 500 hours per year.
- VOC emissions from the scrubber (CE008) shall not exceed 75.95 pounds per hour.
- Acetaldehyde emissions from the scrubber (CE008) shall not exceed 5.5 pounds per hour.
- The DDGS dryers (EU25 and EU26) and, when not producing wetcake, the set of four centrifuges shall not be in operation.

NSPS and NESHAP Requirements

There are no NSPS or NESHAP rules applicable to the wet scrubber modification.

State Rules & Requirements

1. 326 IAC 2-2 (PSD)
    a. In order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the facility will continue to comply with the emissions limits specified in the PSD section above.
    b. In order to ensure compliance with 326 IAC 2-2 (PSD), the control equipment associated with the proposed emission units will be operated at all times that the units are in operation.
2. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.
3. To comply with 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills):
    h. VOC emissions from the fermentation and distillation process will be controlled by either the scrubber or the RTO, or a combination of both.
    i. The overall VOC removal efficiency for the scrubber and RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.

j. The overall VOC removal efficiency for the scrubber will be at least 98%, or the VOC outlet concentration will not exceed 20 ppmv.

k. Scrubber Pressure Drop Monitoring– The facility will monitor and record the scrubber pressure drop at least once per day when the fermentation and/or distillation process is in operation. The facility will maintain records of the scrubber pressure drop. The facility shall maintain pressure drop within the normal pressure drop range, which is between 1.0 and 12.0 inches of water unless a different upper-bound or lower-bound value was determined during the latest stack test that demonstrated compliance. If the pressure drop is outside the normal range, the facility will take a reasonable response.

l. Scrubber Water Flow Rate Monitoring – The facility will monitor and record the water flow rate at least once per day when the fermentation and/or distillation process is in operation. The facility will maintain records of the water flow rate. The facility will maintain water flow rate above the minimum water flow rate established during the most recent valid stack test that demonstrated compliance with the established limits. If the water flow rate falls below the minimum flow rate, the facility will take a reasonable response.

4. 326 IAC 3-6 - Testing Requirements – The facility will conduct VOC and Acetaldehyde testing of the scrubber as required by IDEM and at least once every five years. The facility will conduct Acetaldehyde testing of the process fluid from the beer well, the bottom of the scrubber and the bottom of the beer stripper to verify that the concentration is present at less than 0.1 percent.

3. Distillation System

Description of the Change in Operation or Equipment

Increase the throughput rate of the distillation process from 54,000 gallons per hour to 60,000 gallons per hour. The purpose of the distillation throughput increase is to allow the Facility to meet its existing annual production limit of 86,000,000 gallons of denatured ethanol per year. POET is not physically modifying the distillation equipment and is not requesting an increase in the annual ethanol production limit.

Potential to Emit

The modification of distillation system will result in an increase to the lb/hr emission limits for VOC and HAP from the scrubber (CE008) and RTO (CE009) due to an increase in the inlet concentration of VOC and HAP. The following table summarizes the increase in uncontrolled and controlled PTE from the distillation system.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	282.76	5.66
Acetaldehyde (Individual HAP)	2.02	0.04
Propionaldehyde (Individual HAP)	0.00	0.00
Methanol (Individual HAP)	0.01	0.00
Formaldehyde (Individual HAP)	0.01	0.00
Total HAP	2.03	0.04

PSD Requirements

PSD requirements applicable to the distillation system are listed in the Fermentation and Scrubber sections above.

NSPS and NESHAP Requirements

There are no applicable NSPS or NESHAP rules applicable to the distillation system modification.

State Rules & Requirements

State rules & requirements applicable to the distillation system are listed in the Fermentation and Scrubber sections above.

4. New Grain Bins, Conveyors, and Control Devices

Description of the Changes in Operation or Equipment:

POET proposes to modify the existing grain storage capacity at the facility by constructing two new 683,855 bushel grain storage bins and associated grain handling equipment. The facility currently has a grain storage capacity of 1,341,276 bushels. The new grain storage capacity will be 2,708,986 bushels. Two new enclosed belt conveyors with a capacity of 30,000 bushels per hour will be used to feed the new bins. Two new reclaim conveyors rated at 5,000 bushels per hour will discharge to the existing reclaim conveyor. The two existing grain receiving pits will continue to be used with no changes to the grain receiving operations.

The existing receiving, conveying, and grain storage systems will continue to be controlled by the existing baghouse (CE001) which has a control efficiency of 99% for PM and PM_{10}, and 93% for $PM_{2.5}$.

The new conveyors required to fill the new bins will be controlled by three new cartridge filters (CE015, CE016, and CE017). The new filters will have a control efficiency of 99% for PM and PM_{10}, and 93% for $PM_{2.5}$.

Potential to Emit

Neither the hourly receiving rate nor the annual amount of grain being handled by the facility is increasing. POET will be installing three new cartridge filters on the new bins and conveyors. The following table summarizes the current uncontrolled and controlled PTE from the new bins and conveyors.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
PM	67.6	0.68
PM_{10}	67.6	0.68
$PM_{2.5}$	11.5	0.11

PSD Requirements

The PM, PM10, and PM2.5 emissions from the following units shall not exceed the emission limits listed in the table below. The emission units will be controlled by cartridge filters when the units are in operation.

Unit ID	Unit Description	Cartridge Filter ID	PM Emission Limit (lbs/hr)	PM10 Emission Limit (lbs/hr)	PM2.5 Emission Limit (lbs/hr)
SV018	New Corn Transfer and Storage Bins	CE015	0.05	0.05	0.01
SV019	New Corn Transfer and Storage Bins	CE016	0.05	0.05	0.01
SV020	New Corn Transfer and Storage Bins	CE017	0.05	0.05	0.01

NSPS Requirements

The new grain handling equipment will become subject to New Source Performance Standard 40 CFR 60, Subpart DD -Standards of Performance for Grain Elevators.

The new grain storage bins and conveyors will be subject to NSPS 40 CFR 60 Subpart DD because the addition of the grain storage bins will make the total permanent grain storage capacity more than 2.5 million bushels.

POET will need to submit a notification of the date of construction and a separate notification of the date of initial startup. POET will also need to complete a performance test on each cartridge filter for particulate matter and opacity.

NESHAP Requirements

There are no applicable NESHAP rules applicable to grain bins.

State Rules & Requirements

1. 326 IAC 2-7-5(1) and 326 IAC 2-7-6(1) - Visible Emissions – A trained employee of the facility will record the visible emissions from the cartridge filters SV018, SV019, SV020 once per day and maintain the records of the emissions. If abnormal emissions are observed, the facility will take a reasonable response.

   Pressure Drop – The facility will record the pressure drop across the cartridge filter used for the grain receiving once per day when these units are in operation. The normal range of pressure drop is 0.5 to 6.0 inches of water. If pressure drop readings are outside the normal range, the facility will take a reasonable response.

2. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.

3. 326 IAC 2-7-6(1),(6) and 326 IAC 2-1.1-11 Testing Requirements - The facility will conduct PM, PM10, and PM2.5 testing of cartridge filters CE018, CE019 and CE020 as required by the Indiana Department of Environmental Management (IDEM).

4. Broken or Failed Cartridge – A failed unit and the associated process will be shut down immediately until the failed unit has been repaired or replaced. The emission unit (conveyor) will be shut down no later than the time it takes to convey the grain on the conveyor to the bin. Operations may continue only if the event qualifies as an emergency and the Facility satisfies the requirements of the emergency provisions of this permit.

5. 326 IAC 6-3-2 Particulate Emission Limitations – Particulate emissions shall not exceed the pound per hour limits shown in the table below.

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
SV018	New Corn Transfer and Storage Bins	840	75.4
SV019	New Corn Transfer and Storage Bins	840	75.4
SV020	New Corn Transfer and Storage Bins	840	75.4

5. Cooling Tower

Description of the Changes in Operation or Equipment

POET proposes to increase the maximum water flow rate to the cooling tower from 26,000 gallons per minute (gpm) to 30,000 gpm. This change will increase the emission unit potential to emit, but does not affect any permit conditions.

Potential to Emit

The increase in water flow rate to the cooling tower will cause an increase in the particulate matter emissions. The following table summarizes the increase in the PTE from the cooling tower.

	Increase in PTE (ton/yr)
PM	1.1
PM_{10}	1.1
$PM_{2.5}$	1.1

PSD Requirements

The PM, PM10, and PM2.5 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	PM Emission Limit (lbs/hr)	PM10 Emission Limit (lbs/hr)	PM2.5 Emission Limit (lbs/hr)
FS005	Cooling Tower	8.22	8.22	

NSPS and NESHAP Requirements

There are no applicable NSPS or NESHAP rules applicable to the cooling tower.

State Rules & Requirements

The cooling tower is a listed insignificant activity in the permit. There are no state rules applicable to the cooling tower.

6. Kettle Style Vaporizer

Description of the Operation or Equipment

POET is in the process of converting the existing shell and tube heat exchanger used as a vaporizer in distillation to a superheater and adding a kettle style vaporizer (an insignificant activity). The valves and connectors associated with kettle style vaporizer are a source of fugitive VOC emissions and are required to be included in the facilities leak detection and repair (LDAR) program. The control effectiveness of the LDAR program is shown in the table below.

Control Effectiveness for a LDAR Program

Equipment Type	Control effectiveness (%) for Subpart VVa monitoring 500 ppmv leak definition for all components except pumps. Pump leak rate definition = 2000 ppm.
Pump Seals	69%
Valves lt. Liq.	88%
Valves gas	92%
Connectors	93%
Relief Valves	92%

Potential to Emit

The installation of new equipment in VOC service associated with the 6th fermenter and the kettle style vaporizer will cause an increase in the VOC emissions. The following table summarizes the increase in uncontrolled and controlled PTE from the new equipment in VOC service.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	4.0	0.3

PSD Requirements

The equipment in VOC service are a fugitive emission source and is not subject to PSD limits in the permit.

NSPS Requirements

1. 40 CFR Part 60, Subpart VVa and 326 IAC 12 – POET shall comply with the following provisions of 40 CFR Part 60, Subpart VVa, which are incorporated by reference as 326 IAC 12, except as otherwise specified in 40 CFR Part 60, Subpart VVa:

   (1) 40 CFR 60.480a
   (2) 40 CFR 60.481a
   (3) 40 CFR 60.482-1a
   (4) 40 CFR 60.482-2a
   (5) 40 CFR 60.482-3a
   (6) 40 CFR 60.482-4a
   (7) 40 CFR 60.482-5a
   (8) 40 CFR 60.482-6a
   (9) 40 CFR 60.482-7a
   (10) 40 CFR 60.482-8a

(11) 40 CFR 60.482-9a
(12) 40 CFR 60.482-10a
(13) 40 CFR 60.482-11a
(14) 40 CFR 60.483-1a
(15) 40 CFR 60.483-2a
(16) 40 CFR 60.485a
(17) 40 CFR 60.486a
(18) 40 CFR 60.487a
(19) 40 CFR 60.488a
(20) 40 CFR 60.489a

NESHAP Requirements

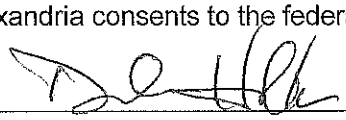
There are no applicable NESHAP rules applicable to the equipment in VOC service.

State Rules & Requirements

326 IAC 12-1 New Source Performance Standards - The federal NSPS regulations which appear in 40 CFR 60 are incorporated by reference.

7. Federal Applicability

POET Biorefining – Alexandria consents to the federal enforceability of this interim petition.

Signature: 

Printed Name: Dave Hudak

Title or Position: General Manager

Phone Number: 765 724-4384

Date: 4/13/16

A25

PROOF OF PUBLICATION

State of Indiana,

Madison County, ss:

Personally appeared before me, Robert Nash of The Elwood Publishing Co., Publishers of the Alexandria Times-Tribune, a weekly newspaper of general circulation, published in Alexandria, Madison County, Indiana, who, being duly sworn upon his oath, says that the notice of which the attached is a true copy, was duly published in said newspaper

for 1 successive weeks.

The first April 13, 2016

The last

Robert Nash

Subscribed and sworn to before me this 13 day of April 2016

Jane E. Miller Notary Public

Jane E. Miller
Madison County, Indiana
My Commission expires 1-21-2024

LEGAL NOTICE

NOTICE OF 14-DAY PERIOD FOR PUBLIC COMMENT
Proposed Approval of Interim Significant Source Modification for **POET Biorefining – Alexandria in Madison County**

Notice is hereby given that the above company located at 13179 North 100 East, Alexandria, Indiana, has made application to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) for an interim permit to construct:

- a new (6th) fermenter,
- construct two (5th and 6th) grain bins and associated grain handling equipment,
- increase beer flow through distillation from 54,000 gallons per hour to 60,000 gallons per hour,
- modify the vaporization system in distillation to include a kettle style vaporizer,
- increase the scrubber air flow rate from 9,000 cubic feet per minute to 12,000 cubic feet per minute,
- increase cooling tower water flow rate from 26,000 gallons per minute to 30,000 gallons per minute, and
- increase the pressure drop range for the scrubber to between 1.0 and 12.0 inches of water.

Based on 8,760 hours per year of operation, the uncontrolled potential emissions are 68.7 tons per year of total particulate matter (PM) and PM10, 12.6 ton per year of PM2.5, 1,784 tons per year of volatile organic compounds (VOC) and 12.8 tons per year for hazardous air pollutants (HAP). The controlled potential emissions are 1.8 tons per year of PM and PM10, 1.2 tons per year of PM2.5, 6.6 tons per year of VOC and 0.2 tons per year of HAP.

The company has submitted an application for a significant source modification. The OAQ shall review the application in accordance with the Permit Review Rules. Operation of the source cannot commence until a valid operating permit is issued. The construction of the proposed project is entirely at the applicant's own risk.

Notice is hereby given that there will be a period of 14 days from the date of publication of this notice during which any interested person may comment on why this interim permit should or should not be issued. Appropriate comments should be related to air quality issues, interpretation of the applicable state and federal rules, calculations made, technical issues, or the effect that the operation of this facility would have on any aggrieved individuals. A copy of the application and staff review is available for examination at the Alexandria-Monroe Public Library, 117 East Church Street, Alexandria, Indiana, 46001. All comments, along with supporting documentation, should be submitted in writing to the IDEM, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251.

Persons not wishing to comment at this time, but wishing to receive notice of future proceedings conducted related to this action, must submit a written request to the Office of Air Quality (OAQ), at the above address. All interested parties of record will receive a notice of the decision on this matter and will then have 15 days after receipt of the Notice of Decision to file a petition for administrative review. Procedures for filing such a petition will be enclosed with the Notice.

Questions should be directed to OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call (800) 451-6027 or (317) 233-0178.

Company Official's printed Name:
David Hudak
POET Biorefining – Alexandria
PUBLISH: April 13, 2016
A25 hspaxlp

NOTICE OF 14-DAY PERIOD
FOR PUBLIC COMMENT

Proposed Approval of Interim Significant Source Modification
for **POET Biorefining - Alexandria**
in **Madison County**

Notice is hereby given that the above company located at 13179 North 100 East, Alexandria, Indiana, has made application to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) for an interim permit to construct:

- a new (6^{th}) fermenter,
- construct two (5^{th} and 6^{th}) grain bins and associated grain handling equipment,
- increase beer flow through distillation from 54,000 gallons per hour to 60,000 gallons per hour,
- increase the scrubber air flow rate from 9,000 acfm to 12,000 acfm,
- increase cooling tower water flow rate from 26,000 gallons per minute to 30,000 gallons per minute, and
- increase the pressure drop range for the scrubber to between 1.0 and 12.0 inches of water.

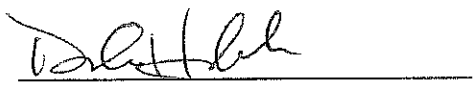
Based on 8,760 hours per year of operation, the uncontrolled potential emissions are 68.7 tons per year of total particulate matter (PM) and PM_{10}, 12.6 ton per year of $PM_{2.5}$, 1,784 tons per year of volatile organic compounds (VOC) and 12.8 tons per year for hazardous air pollutants (HAP). The controlled potential emissions are 1.8 tons per year of PM and PM_{10}, 1.2 tons per year of $PM_{2.5}$, 6.7 tons per year of VOC and 0.2 tons per year of HAP.

The company has submitted an application for a significant source modification. The OAQ shall review the application in accordance with the Permit Review Rules. Operation of the source cannot commence until a valid operating permit is issued. The construction of the proposed project is entirely at the applicant's own risk.

Notice is hereby given that there will be a period of 14 days from the date of publication of this notice during which any interested person may comment on why this interim permit should or should not be issued. Appropriate comments should be related to air quality issues, interpretation of the applicable state and federal rules, calculations made, technical issues, or the effect that the operation of this facility would have on any aggrieved individuals. A copy of the application and staff review is available for examination at the **Alexandria-Monroe Public Library, 117 East Church Street, Alexandria, Indiana, 46001**. All comments, along with supporting documentation, should be submitted in writing to the IDEM, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251.

Persons not wishing to comment at this time, but wishing to receive notice of future proceedings conducted related to this action, must submit a written request to the Office of Air Quality (OAQ), at the above address. All interested parties of record will receive a notice of the decision on this matter and will then have 15 days after receipt of the Notice of Decision to file a petition for administrative review. Procedures for filing such a petition will be enclosed with the Notice.

Questions should be directed to OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call (800) 451-6027 or (317) 233-0178.

Company Official's Signature: 

Company Official's Printed Name: David Hudak

Company Name: POET Biorefining - Alexandria

Indiana Department of Environmental Management
Office of Air Quality

Interim Petition Checklist

Instructions: (a) Please answer yes or no.
(b) Enclosed this checklist with the completed interim petition package.

Company Name: POET Biorefining - Alexandria

Location: Alexandria, Indiana

Yes	1. Is the written interim petition prepared?
Yes	2. Is the written petition signed and dated?
Yes	3. Is the public notice drafted?
Yes	4. Is the filing and review fee enclosed? $625 for TV, FESOP, and SSOA. $500 for MSOP.
Yes	5. Is the account number written on the check or money order?
Yes	6. Is the Affidavit of Construction signed, dated, and notarized?
Yes	7. Is the proposed modification/revision described in detail?
Yes	8. Is the proposed modification/revision a modification or addition to an existing source?
Yes	9. Is the proposed modification/revision located in an attainment area for all the criteria pollutants?
No	10. Is the proposed modification/revision located in a nonattainment area? If yes, answer No. 11.
	11. Is the pollutant, which the nonattainment designation is based on, going to be emitted in this proposed modification/revision?
Yes	12. Are potential emissions calculated?
Yes	13. Is federal enforceability consent specifically indicated?
Yes	14. Are specific conditions, limitations, and/or restrictions included that preclude applicability of PSD?
No	15. Are specific conditions, limitations, and/or restrictions included that preclude applicability of NSPS?
No	16. Are specific conditions, limitations, and/or restrictions included that preclude applicability of NESHAP?
Yes	17. Are specific conditions, limitations, and/or restrictions included that assure compliance with all applicable state air pollution rules?
Yes	18. Has a regular modification/revision permit application been submitted to OAQ?
No	19. Has the proposed modification/revision commenced prior to the submission of the interim permit petition?
Yes	20. The interim petition comment period has been decided to be: 14 calendar days

Additional Comments:

Appendix A: Emission Calculations
PTE Summary

Company Name: POET Biorefining - Alexandria
Address City IN Zip: 13179 North 100 East, Alexandria, IN 46001
Interim SSM No.: 095-36998I-00127
Reviewer: Heath Hartley

PTE Summary	Uncontrolled	Controlled
	ton/year	ton/year
PM	68.67	1.77
PM10	68.67	1.77
PM2.5	12.58	1.21
VOC	1,783.9	6.71
HAP	12.8	0.20

Appendix A: Emission Calculations
New (6th) Fermenter Emissions Calculations

Company Name: **POET Biorefining - Alexandria**
Address City IN Zip: **13179 North 100 East, Alexandria, IN 46001**
Interim SSM No.: **095-36998I-00127**
Reviewer: **Heath Hartley**

Estimate the potential and controlled emissions from the new (6th) fermenter.

Potential Emissions

The potential emissions of VOC and HAP from the new (6th) Fermenter were conservatively estimated by dividing the uncontrolled scrubber inlet (lb/hr) emissions by five (i.e. the number of existing fermenters).

	Scrubber Inlet lb/hr [1]	6th Fermenter lb/hr [2]	6th Fermenter ton/yr [3]
Uncontrolled VOC	1708.89	341.78	1497.0
Acetaldehyde	12.22	2.44	10.7
Propionaldehyde	0.00	0.00	0.0
Methanol	0.03	0.01	0.0
Formaldehyde	0.03	0.01	0.0
Total Uncontrolled HAP	12.28	2.46	10.8

Controlled Emissions

During normal operating conditions, VOC and HAP emissions from the new (6th) Fermenter are controlled by

Scrubber VOC Control Efficiency =	98%
Scrubber HAP Control Efficiency =	50%
RTO VOC Control Efficiency =	98%
RTO HAP Control Efficiency =	97%

	6th Fermenter lb/hr [4]	6th Fermenter ton/yr [5]
Controlled VOC	0.14	0.60
Acetaldehyde	0.04	0.16
Propionaldehyde	0.00	0.00
Methanol	0.00	0.00
Formaldehyde	0.00	0.00
Total Controlled HAP	0.04	0.16

Notes

1) lb/hr scrubber inlet emissions from RTO Bypass worksheet

2) Uncontrolled 6th Fermenter lb/hr = scrubber inlet emissions / 5

3) Uncontrolled 6th Fermenter ton/yr = 6th Fermenter lb/hr * 8760 hr/yr / 2000 lb/ton

4) Controlled 6th Fermenter lb/hr = uncontrolled 6th Fermenter lb/hr * (1- scrubber eff) * (1 - RTO eff)

5) Controlled 6th Fermenter ton/yr = controlled 6th Fermenter lb/hr * 8760 hr/yr / 2000 lb/ton

Appendix A: Emission Calculations
Increase to Distillation System

Company Name: **POET Biorefining - Alexandria**
Address City IN Zip: **13179 North 100 East, Alexandria, IN 46001**
Interim SSM No.: **095-36998I-00127**
Reviewer: **Heath Hartley**

Current Distillation System Capacity =	54000	gallon/hour
Proposed Distillation System Capacity	60000	gallon/hour

Distillation System Emission Factor, Based on Stack Test Data		
Ethanol Production Rate =	79	gal/min
VOC emission rate, max value of 3 runs	0.85	lb/hr
Controlled Distillation System Emission Factor with 20% safety factor	0.000215	lb/gallon
Scrubber Control Efficiency =	98%	
Uncontrolled Distillation System Emission Factor	0.010759	lb/gallon

Increase in Uncontrolled Emissions	**lb/hr**	**ton/year**
VOC	64.56	282.76
Acetaldehyde	0.46	2.02
Propionaldehyde	0.00	0.00
Methanol	0.00	0.01
Formaldehyde	0.00	0.01
Total Uncontrolled HAP	0.46	2.03

Controlled Emissions	**lb/hr**	**ton/year**
VOC	1.29	5.66
Acetaldehyde	0.01	0.04
Propionaldehyde	0.00	0.00
Methanol	0.00	0.00
Formaldehyde	0.00	0.00
Total Uncontrolled HAP	0.01	0.04

Appendix A: Emission Calculations
New Equipment in VOC Service

Company Name: POET Biorefining - Alexandria
Address City IN Zip: 13179 North 100 East, Alexandria, IN 46001
Interim SSM No.: 095-36998I-00127
Reviewer: Heath Hartley

	New				Removed		
LDAR Changes	**Pump Seals**	**Valves**	**Connections**	**PRV**	**Valves**	**Connections**	**PRV**
New fermenter pump seals	1						
New fermenter valves		20					
New fermenter connectors			64				
190 proof liquid to kettle vaporizer		6	17				
190 proof liquid weir side drain			1				
190 proof liquid blowdown to rectifier		7	15				
Kettle vaporizer non-process connections - 190 proof liquid			4				
190 proof liquid to old sieve vaporizer - REMOVED						4	
Kettle vaporizer non-process connections - 190 proof vapor		1	15	1			
190 proof vapor from kettle vaporizer		3	12				

Equipment Type	**Service**	**Emission Factor (lbs/hour/source)**
Pump Seals	light liquid	0.0438
	heavy liquid	0.0180
Valves	light liquid	0.0089
	heavy liquid	0.0005
	gas	0.0131
Compressors	gas	0.5016
Relief Valves	gas	0.2288
Sampling Connections	all	0.0330
Open Ended Lines	all	0.0037
Connectors	all	0.0040

Emission Factors (EPA-453/R-95-017, Table 2-1)

Uncontrolled Emissions

Equipment Type	**Number of sources**	**VOC Emissions lbs/hr**	**TPY**
Pump Seals	1	0.02	0.1
Valves lt. Liq.	13	0.12	0.5
Valves Hvy. Liq.	20	0.01	0.0
Valves gas	4	0.05	0.2
Compressors	0	0.00	0.0
Relief Valves	1	0.23	1.0
Sampling Connections	0	0.00	0.0
Open Ended Lines	0	0.00	0.0
Connectors	124	0.50	2.2
	Total	**0.92**	**4.0**

Control Effectiveness for a LDAR Program

Equipment Type	500 ppmv leak definition for all components except
Pump Seals	69%
Valves lt. Liq.	88%
Valves gas	92%
Connectors	93%
Relief Valves	92%

Controlled Emissions

Equipment Type	**Number of sources**	**VOC Emissions lbs/hr**	**TPY**
Pump Seals	1	0.00	0.0
Valves lt. Liq.	13	0.01	0.1
Valves gas	4	0.00	0.0
Compressors	0	0.00	0.0
Relief Valves	1	0.02	0.1
Sampling Connections	0	0.00	0.0
Open Ended Lines	0	0.00	0.0
Connectors	124	0.03	0.2
	Total	**0.07**	**0.3**

Appendix A: Emission Calculations
Centrifuges

Company Name: **POET Biorefining - Alexandria**
Address City IN Zip: **13179 North 100 East, Alexandria, IN 46001**
Interim SSM No.: **095-36998I-00127**
Reviewer: **Heath Hartley**

The facility utilizes a set of four centrifuges to process whole stillage from the stripper column. During normal operations, VOC emissions from the centrifuges are controlled by the RTO. When the RTO is not operational (RTO Bypass Conditions), emissions from the set of four centrifuges will be exhausted to atmosphere through stack SV017.

The following estimates the emissions from the set of four centrifuges during RTO Bypass Condition which is limited to 500 hours to year.

Given:
Surface evaporation from tank due to mixing.

Ex = B* {Mx * Kx * A * Px * 3600 * H} / {R * T)
Where:
Ex = Emissions of VOC species x (lb/hr)
Mx = Molecular weight of VOC species X (lb/lbmole)
Kx = Gas Phase mass transfer coefficient or VOC species x (ft/sec)
A = Surface area of tank (ft2)
Px = Vapor pressure of VOC x (psia)
3600 = 3600 seconds per hour
H = Batch time (hours)
R = Universal gas constant (10.73 psia ft3/lb mole R)
T = Temperature of the liquid (R)
B = number of batches per year

H =	1.00	hour	
B =	1	batch	
R =	10.73		
T =	180.0	^{o}F	
T =	639.7	^{o}R	
A =	3.14	ft^2	Note: Used 2 ft Diameter for Tank
Batch Size =	234	gallons	

Species	Mx	Px		Emissions	Emissions
	lb/lbmol	psia	Kx	lbs/batch	lbs/gallon
Ethanol	46.1	0.055	0.000531	0.002	9.48E-06
Water	18.0	7.481	0.000727	0.161	6.89E-04
		Total Emissions =		**0.164**	**6.99E-04**

Process Information =

60,000	gallons liquid per hour through centrifuges
525,600,000	gallons liquid per year through centrifuges
500	Limited RTO Bypass Condition hours per year

Process Emission Factor	Centrifuge (lbs/gallon)	Units
VOC		
Ethanol	9.48E-06	
Water	6.89E-04	
VOC Emission Factor	9.48E-06	lbs VOC/gallon

Emissions Calculations

Potential VOC Emission Rate	**0.57**	**lb/hr**
Potential VOC Emission Rate	**0.14**	**ton/year**
Limited VOC Emission Rate	**0.14**	**ton/year**

Appendix A: Emission Calculations
Cooling Tower Increase in Emissions

Company Name: **POET Biorefining - Alexandria**
Address City IN Zip: **13179 North 100 East, Alexandria, IN 46001**
Interim SSM No.: **095-36998I-00127**
Reviewer: **Heath Hartley**

Particulate emissions can be estimated by analyzing the mass of condensed water that is released times the total mass of dissolved solids present in the water. The estimate is based on the assumption that all of the dissolved solids that are present in the water becomes airborne particulate matter upon evaporation of the release condensed water droplets. The released water droplets are referred to as the "drift loss" of the tower. The drift loss of the tower is usually referenced as a percent of the total water circulation rate of the tower.

Current Cooling Tower Condition

Water circulation flow =	26,000	gallons per minute
Water circulation flow =	98,421	liters per minute
Drift loss =	0.005%	
Drift loss =	4.9	liters per minute
Total Dissolved Solids in cooling tower =	2500	mg/l
Total Dissolved Solids in cooling tower =	2.5	g/l
PM-10 = Drift loss (l/min) x TDS (g/l)	12.3	grams/minute
g/min x 60 =	738.2	grams/hr
1 pound =	453.6	grams
Fugitive emissions=	1.6	lbs/hr
Fugitive emissions=	**7.13**	**TPY**

Future Cooling Tower Condition

Water circulation flow =	30,000	gallons per minute
Water circulation flow =	113,562	liters per minute
Drift loss =	0.005%	
Drift loss =	5.7	liters per minute
Total Dissolved Solids in cooling tower =	2500	mg/l
Total Dissolved Solids in cooling tower =	2.5	g/l
PM-10 = Drift loss (l/min) x TDS (g/l)	14.2	grams/minute
g/min x 60 =	851.7	grams/hr
1 pound =	453.6	grams
Fugitive emissions=	1.9	lbs/hr
Fugitive emissions=	**8.22**	**TPY**

Increase in Emissions	**1.10**	**TPY**

Appendix A: Emission Calculations
New Grain Bins and Conveyors

Company Name: **POET Biorefining - Alexandria**
Address City IN Zip: **13179 North 100 East, Alexandria, IN 46001**
Interim SSM No.: **095-36998I-00127**
Reviewer: **Heath Hartley**

PTE Summary	Uncontrolled	Controlled
	ton/year	ton/year
PM	67.6	0.68
PM10	67.6	0.68
PM2.5	11.5	0.11

SV018		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.1	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-42
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

SV019		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.1	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-42
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

SV020		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.1	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-42
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

095-36998I-00127

P / 765 724 4384 13179 N. 100 E., PO BOX 717 ALEXANDRIA, IN 46001 POET.COM/ALEXANDRIA

April 12, 2016

IDEM Air Permits Administration
ATTN: Incoming Application
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, IN 46204-2251

RE: Interim Approval Petition for POET Biorefining – Alexandria
Alexandria, Indiana

Dear Mr. Hartley:

On March 22, 2016, POET Biorefining – Alexandria (POET) submitted our Title V renewal application that included modifications for new emission units and modifications to current conditions. With the same submittal, POET provided an Interim Petition for IDEM's approval so that construction could be initiated prior to final permit issuance.

POET is requesting that the interim Petition submitted on March 22, 2016 be withdrawn from IDEM consideration. POET is submitting an original and one copy of a Petition for Interim Significant Source Modification associated with the requests in the March 22, 2016 application.

We look forward to additional coordination with you on this project. If you have any questions, please contact Chris White of AECOM at 612-376-2454.

Sincerely,

Dave Hudak
General Manager

Enclosure

NOTICE OF 14-DAY PERIOD FOR PUBLIC COMMENT

Proposed Approval of Interim Significant Source Modification
for **POET Biorefining - Alexandria**
in **Madison County**

Notice is hereby given that the above company located at 13179 North 100 East, Alexandria, Indiana, has made application to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) for an interim permit to construct:

- a new (6^{th}) fermenter,
- construct two (5^{th} and 6^{th}) grain bins and associated grain handling equipment,
- increase beer flow through distillation from 54,000 gallons per hour to 60,000 gallons per hour,
- increase the scrubber air flow rate from 9,000 acfm to 12,000 acfm,
- increase cooling tower water flow rate from 26,000 gallons per minute to 30,000 gallons per minute, and
- increase the pressure drop range for the scrubber to between 1.0 and 12.0 inches of water.

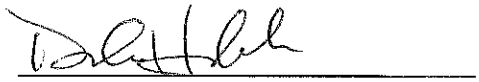
Based on 8,760 hours per year of operation, the uncontrolled potential emissions are 68.7 tons per year of total particulate matter (PM) and PM_{10}, 12.6 ton per year of $PM_{2.5}$, 1,784 tons per year of volatile organic compounds (VOC) and 12.8 tons per year for hazardous air pollutants (HAP). The controlled potential emissions are 1.8 tons per year of PM and PM_{10}, 1.2 tons per year of $PM_{2.5}$, 6.7 tons per year of VOC and 0.2 tons per year of HAP.

The company has submitted an application for a significant source modification. The OAQ shall review the application in accordance with the Permit Review Rules. Operation of the source cannot commence until a valid operating permit is issued. The construction of the proposed project is entirely at the applicant's own risk.

Notice is hereby given that there will be a period of 14 days from the date of publication of this notice during which any interested person may comment on why this interim permit should or should not be issued. Appropriate comments should be related to air quality issues, interpretation of the applicable state and federal rules, calculations made, technical issues, or the effect that the operation of this facility would have on any aggrieved individuals. A copy of the application and staff review is available for examination at the **Alexandria-Monroe Public Library, 117 East Church Street, Alexandria, Indiana, 46001**. All comments, along with supporting documentation, should be submitted in writing to the IDEM, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251.

Persons not wishing to comment at this time, but wishing to receive notice of future proceedings conducted related to this action, must submit a written request to the Office of Air Quality (OAQ), at the above address. All interested parties of record will receive a notice of the decision on this matter and will then have 15 days after receipt of the Notice of Decision to file a petition for administrative review. Procedures for filing such a petition will be enclosed with the Notice.

Questions should be directed to OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call (800) 451-6027 or (317) 233-0178.

Company Official's Signature: 

Company Official's Printed Name: David Hudak

Company Name: POET Biorefining - Alexandria

AIR PERMIT APPLICATION COVER SHEET

State Form 50639 (R4 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this cover sheet is to obtain the core information needed to process the air permit application. This cover sheet is required for all air permit applications submitted to IDEM, OAQ. Place this cover sheet on top of all subsequent forms and attachments that encompass your air permit application packet.
- Submit the completed air permit application packet, including all forms and attachments, to **IDEM Air Permits Administration** using the address in the upper right hand corner of this page.
- IDEM will send a bill to collect the filing fee and any other applicable fees.
- Detailed instructions for this form are available on the Air Permit Application Forms website.

FOR OFFICE USE ONLY

PERMIT NUMBER:

– –

DATE APPLICATION WAS RECEIVED:

RECEIVED
State of Indiana
APR 14 2010
Dept of Environmental Management
Office of Air Quality

1. Tax ID Number: [redacted]

PART A: Purpose of Application

Part A identifies the purpose of this air permit application. For the purposes of this form, the term "source" refers to the plant site as a whole and NOT to individual emissions units.

2. Source / Company Name: POET Biorefining - Alexandria **3. Plant ID:** 095 – 0127

4. Billing Address: P.O. Box 717

City: Alexandria **State:** IN **ZIP Code:** 46001 –

5. Permit Level: ☐ Exemption ☐ Registration ☐ SSOA ☐ MSOP ☐ FESOP ☒ TVOP ☐ PBR

6. Application Summary: *Check all that apply. Multiple permit numbers may be assigned as needed based on the choices selected below.*

☐ Initial Permit	☐ Renewal of Operating Permit	☐ Asphalt General Permit
☐ Review Request	☐ Revocation of Operating Permit	☐ Alternate Emission Factor Request
☒ Interim Approval	☐ Relocation of Portable Source	☐ Acid Deposition (Phase II)
☐ Site Closure	☐ Emission Reduction Credit Registry	

☐ Transition (between permit levels) *From:* *To:*

☐ Administrative Amendment:
- ☐ *Company Name Change*
- ☐ *Change of Responsible Official*
- ☐ *Correction to Non-Technical Information*
- ☐ *Notice Only Change*
- ☐ *Other (specify):*

☒ Modification:
- ☒ *New Emission Unit or Control Device*
- ☒ *Modified Emission Unit or Control Device*
- ☐ *New Applicable Permit Requirement*
- ☐ *Change to Applicability of a Permit Requirement*
- ☐ *Prevention of Significant Deterioration*
- ☐ *Emission Offset*
- ☐ *MACT Preconstruction Review*
- ☐ *Minor Source Modification*
- ☒ *Significant Source Modification*
- ☐ *Minor Permit Modification*
- ☐ *Significant Permit Modification*
- ☐ *Other (specify):*

7. Is this an application for an initial construction and/or operating permit for a **"Greenfield" Source?** ☐ Yes ☒ No

8. Is this an application for construction of a new emissions unit at an **Existing Source?** ☒ Yes ☐ No

Continued on Next Page

PART B: Pre-Application Meeting

Part B specifies whether a meeting was held or is being requested to discuss the permit application.

9. Was a meeting held between the company and IDEM prior to submitting this application to discuss the details of the project?

☒ No ☐ Yes: *Date:*

10. Would you like to schedule a meeting with IDEM management and your permit writer to discuss the details of this project?

☒ No ☐ Yes: *Proposed Date for Meeting:*

PART C: Confidential Business Information

Part C identifies permit applications that require special care to ensure that confidential business information is kept separate from the public file.

Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in the Indiana Administrative Code (IAC). To ensure that your information remains confidential, refer to the IDEM, OAQ information regarding submittal of confidential business information. For more information on confidentiality for certain types of business information, please review IDEM's Nonrule Policy Document Air-031-NPD regarding Emission Data.

11. Is any of the information contained within this application being claimed as **Confidential Business Information**?

☒ No ☐ Yes

PART D: Certification Of Truth, Accuracy, and Completeness

Part D is the official certification that the information contained within the air permit application packet is truthful, accurate, and complete. Any air permit application packet that we receive without a signed certification will be deemed incomplete and may result in denial of the permit.

For a Part 70 Operating Permit (TVOP) or a Source Specific Operating Agreement (SSOA), a "responsible official" as defined in 326 IAC 2-7-1(34) must certify the air permit application. For all other applicants, this person is an "authorized individual" as defined in 326 IAC 2-1.1-1(1).

☒ *I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete.*

David M. Hudak
Name *(typed)*

General Manager
Title

Signature

4/13/16
Date

OAQ GENERAL SOURCE DATA APPLICATION
GSD-01: Basic Source Level Information

State Form 50640 (R5 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of GSD-01 is to provide essential information about the entire source of air pollutant emissions. GSD-01 is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

PART A: Source / Company Location Information

1. **Source / Company Name**: POET Biorefining - Alexandria
2. **Plant ID**: 095 – 00127
3. **Location Address**: 13179 North 100 East
   - **City**: Alexandria
   - **State**: IN
   - **ZIP Code**: 46001 –
4. **County Name**: Madison
5. **Township Name**: Monroe
6. **Geographic Coordinates**:
   - **Latitude**: 40 17.99' N
   - **Longitude**: 85 39.31' W
7. **Universal Transferal Mercadum Coordinates** *(if known)*:
   - **Zone**:
   - **Horizontal**:
   - **Vertical**:
8. **Adjacent States**: Is the source located within 50 miles of an adjacent state?
   ☐ No ☒ Yes – *Indicate Adjacent State(s):* ☐ Illinois (IL) ☐ Michigan (MI) ☒ Ohio (OH) ☐ Kentucky (KY)
9. **Attainment Area Designation**: Is the source located within a non-attainment area for any of the criteria air pollutants?
   ☒ No ☐ Yes – *Indicate Nonattainment Pollutant(s):* ☐ CO ☐ Pb ☐ NO_X ☐ O_3 ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ SO_2
10. **Portable / Stationary**: Is this a portable or stationary source? ☐ Portable ☒ Stationary

PART B: Source Summary

11. **Company Internet Address** *(optional)*:
12. **Company Name History**: Has this source operated under any other name(s)?
    ☐ No ☒ Yes – *Provide information regarding past company names in Part I, Company Name History.*
13. **Portable Source Location History**: Will the location of the portable source be changing in the near future?
    ☒ Not Applicable ☐ No ☐ Yes – *Complete Part J, Portable Source Location History, and Part K, Request to Change Location of Portable Source.*
14. **Existing Approvals**: Have any exemptions, registrations, or permits been issued to this source?
    ☐ No ☒ Yes – *List these permits and their corresponding emissions units in Part M, Existing Approvals.*
15. **Unpermitted Emissions Units**: Does this source have any unpermitted emissions units?
    ☒ No ☐ Yes – *List all unpermitted emissions units in Part N, Unpermitted Emissions Units.*
16. **New Source Review**: Is this source proposing to construct or modify any emissions units?
    ☐ No ☒ Yes – *List all proposed new construction in Part O, New or Modified Emissions Units.*
17. **Risk Management Plan**: Has this source submitted a Risk Management Plan?
    ☐ Not Required ☐ No ☒ Yes → Date submitted: 4/11/2013 EPA Facility Identifier: 1000 – 0020 – 2327

Continued on Next Page

PART C: Source Contact Information

IDEM will send the original, signed permit decision to the person identified in this section. This person MUST be an employee of the permitted source.

18. Name of Source Contact Person: Dan McMahan

19. Title *(optional)*: Plant Manager

20. Mailing Address: P.O. Box 717

City: Alexandria	**State**: IN	**ZIP Code**: 46001 –

21. Electronic Mail Address *(optional)*: Dan.McMahan@poet.com

22. Telephone Number: (765) 724 – 5228	**23. Facsimile Number** *(optional)*: (765) 724 – 7702

PART D: Authorized Individual/Responsible Official Information

IDEM will send a copy of the permit decision to the person indicated in this section, if the Authorized Individual or Responsible Official is different from the Source Contact specified in Part C.

24. Name of Authorized Individual or Responsible Official: David M. Hudak

25. Title: General Manager

26. Mailing Address: P.O. Box 717

City: Alexandria	**State**: IN	**ZIP Code**: 46001 –

27. Telephone Number: (765) 724 – 4384	**28. Facsimile Number** *(optional)*: (765) 724 – 7702

29. Request to Change the Authorized Individual or Responsible Official: Is the source officially requesting to change the person designated as the Authorized Individual or Responsible Official in the official documents issued by IDEM, OAQ? *The permit may list the title of the Authorized Individual or Responsible Official in lieu of a specific name.*

☒ No ☐ Yes – ***Change Responsible Official to***:

PART E: Owner Information

30. Company Name of Owner: POET Biorefining - Alexandria

31. Name of Owner Contact Person: David M. Hudak

32. Mailing Address: P.O. Box 717

City: Alexandria	**State**: IN	**ZIP Code**: 46001 –

33. Telephone Number: (765) 724 – 4384	**34. Facsimile Number** *(optional)*: (765) 724 – 7702

34. Operator: Does the "Owner" company also operate the source to which this application applies?

☐ No – *Proceed to Part F below.*	☒ Yes – *Enter "SAME AS OWNER" on line 35 and proceed to Part G below.*

PART F: Operator Information

35. Company Name of Operator: SAME AS OWNER

36. Name of Operator Contact Person:

37. Mailing Address:

City:	**State**:	**ZIP Code**: –

38. Telephone Number: ( ) –	**39. Facsimile Number** *(optional)*: ( ) –

Continued on Next Page

PART G: Agent Information

40. Company Name of Agent: AECOM

41. Type of Agent: ☒ Environmental Consultant ☐ Attorney ☐ Other (specify):

42. Name of Agent Contact Person: Chris White

43. Mailing Address: 800 LaSalle Avenue, Suite 500

City: Minneapolis	**State**: MN	**ZIP Code**: 55402 –

44. Electronic Mail Address *(optional)*: chris.white@aecom.com

45. Telephone Number: (612) 376 – 2454	**46. Facsimile Number** *(optional)*: (612) 376 – 2271

47. Request for Follow-up: Does the "Agent" wish to receive a copy of the preliminary findings during the public notice period (if applicable) and a copy of the final determination? ☐ No ☒ Yes

PART H: Local Library Information

48. Date application packet was filed with the local library: April 1, 2016

49. Name of Library: Alexandria - Monroe Public Library

50. Name of Librarian *(optional)*:

51. Mailing Address: 117 East Church Street

City: Alexandria	**State**: IN	**ZIP Code**: 46001 – 2005

52. Internet Address *(optional)*: http://www.alexlibrary.net/

53. Electronic Mail Address *(optional)*:

54. Telephone Number: (765) 724 – 2196	**55. Facsimile Number** *(optional)*: ( ) –

PART I: Company Name History *(if applicable)*

Complete this section only if the source has previously operated under a legal name that is different from the name listed above in Section A.

56. Legal Name of Company	**57. Dates of Use**
Ultimate Ethanol, LLC	2007 to 2008
	to
	to
	to
	to
	to
	to
	to
	to
	to

58. Company Name Change Request: Is the source officially requesting to change the legal name that will be printed on all official documents issued by IDEM, OAQ?

☒ No ☐ Yes – ***Change Company Name to:***

Continued on Next Page

PART J: Portable Source Location History *(if applicable)*

Complete this section only if the source is portable and the location has changed since the previous permit was issued. The current location of the source should be listed in Section A.

59. Plant ID	60. Location of the Portable Source	61. Dates at this Location
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to

PART K: Request to Change Location of Portable Source *(if applicable)*

Complete this section to request a change of location for a portable source.

62. Current Location:

Address:

City: | **State:** | **ZIP Code:** –

County Name:

63. New Location:

Address:

City: | **State:** | **ZIP Code:** –

County Name:

Continued on Next Page

PART L: Source Process Description

Complete this section to summarize the main processes at the source.

64. Process Description	65. Products	66. SIC Code	67. NAICS Code
Fuel Ethanol Production	Ethyl Alcohol	2869	325193
Prep feeds/feed ingredients	other animal food manufacturing	2048	311119

PART M: Existing Approvals *(if applicable)*

Complete this section to summarize the approvals issued to the source since issuance of the main operating permit.

68. Permit ID	69. Emissions Unit IDs	70. Expiration Date
35684	Significant Permit Modification	1/6/2017
25333	Total Facility	1/29/2012
27796	Total Facility	1/29/2012
28069	Total Facility	1/29/2012
28790	Total Facility	1/29/2012

PART N: Unpermitted Emissions Units *(if applicable)*

Complete this section only if the source has emission units that are not listed in any permit issued by IDEM, OAQ.

71. Emissions Unit ID	72. Type of Emissions Unit	73. Actual Dates		
		Began Construction	Completed Construction	Began Operation

PART O: New or Modified Emissions Units *(if applicable)*

Complete this section only if the source is proposing to add new emission units or modify existing emission units.

74. Emissions Unit ID	75. NEW	76. MOD	77. Type of Emissions Unit	78. Estimated Dates		
				Begin Construction	Complete Construction	Begin Operation
EU047	X		Install a 6th fermenter	4/1/2016	7/1/2016	7/1/2016
EU002	X		Install 1 new feed conveyor and 1 new reclaim conveyor	4/1/2017	6/1/2017	6/1/2017
EU003			Install 2 new grain bins	4/1/2017	6/1/2017	6/1/2017
EU019		X	Increase beer feed rate to 1000 gpm	4/1/2016	4/1/2016	7/1/2016
FS005		x	Increase water flow rate to 30,000 gpm	4/1/2016	7/1/2016	7/1/2016

Affidavit of Construction

I, David Hudak, being duly sworn upon my oath, depose and say:

1. I live in Madison County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of General Manager for POET Biorefining - Alexandria

3. By virtue of my position with POET Biorefining - Alexandria

   I have personal knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of POET Biorefining - Alexandria

4. I, the undersigned, have submitted an interim (minor permit revision, significant permit revision, minor source modification, significant source modification) petition to the Office of Air Quality for the construction of a new (6th) fermenter .

5. POET Biorefining - Alexandria recognizes the following risks:

   (a) own financial risk,
   (b) that IDEM may require additional or different control technology for the final approval,
   (c) that IDEM may deny issuance of the final approval, and
   (b) any additional air permitting requirements.

Further Affiant said not.
I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature: David Hudak

Printed Name: David M. Hudak

Phone No.: 765 - 724 - 4384

Date: 4/13/16

STATE OF INDIANA

COUNTY OF Madison

Subscribed and sworn to me, a notary public in and for Grant

County and State of Indiana on this 13th day of April, 20 16

My Commission expires: July 26, 2022

Signature: Patricia Tomlin

Printed Name: Patricia Tomlin

PATRICIA TOMLIN
Notary Public, State of Indiana
Grant County
Commission # 655769
My Commission Expires
July 26, 2022

revised 3/23/01 drp

Indiana Department of Environmental Management
Office of Air Quality

Interim Petition Checklist

Instructions: (a) Please answer yes or no.
(b) Enclosed this checklist with the completed interim petition package.

Company Name: POET Biorefining - Alexandria

Location: Alexandria, Indiana

Yes	1. Is the written interim petition prepared?
Yes	2. Is the written petition signed and dated?
Yes	3. Is the public notice drafted?
Yes	4. Is the filing and review fee enclosed? $625 for TV, FESOP, and SSOA. $500 for MSOP.
Yes	5. Is the account number written on the check or money order?
Yes	6. Is the Affidavit of Construction signed, dated, and notarized?
Yes	7. Is the proposed modification/revision described in detail?
Yes	8. Is the proposed modification/revision a modification or addition to an existing source?
Yes	9. Is the proposed modification/revision located in an attainment area for all the criteria pollutants?
No	10. Is the proposed modification/revision located in a nonattainment area? If yes, answer No. 11.
	11. Is the pollutant, which the nonattainment designation is based on, going to be emitted in this proposed modification/revision?
Yes	12. Are potential emissions calculated?
Yes	13. Is federal enforceability consent specifically indicated?
Yes	14. Are specific conditions, limitations, and/or restrictions included that preclude applicability of PSD?
No	15. Are specific conditions, limitations, and/or restrictions included that preclude applicability of NSPS?
No	16. Are specific conditions, limitations, and/or restrictions included that preclude applicability of NESHAP?
Yes	17. Are specific conditions, limitations, and/or restrictions included that assure compliance with all applicable state air pollution rules?
Yes	18. Has a regular modification/revision permit application been submitted to OAQ?
No	19. Has the proposed modification/revision commenced prior to the submission of the interim permit petition?
Yes	20. The interim petition comment period has been decided to be: 14 calendar days

Additional Comments:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

PETITION FOR INTERIM SIGNIFICANT SOURCE MODIFICATION,

Source Name:	POET Biorefining – Alexandria
Source Address:	13179 North 100 East, Alexandria, Indiana
Mailing Address:	P.O. Box 177, Alexandria, Indiana
SIC/NAICS Code:	2769/325193

POET proposes to modify its existing facility by making the changes described in the following paragraphs.

1. Fermentation

Description of the Change in Operation or Equipment

POET proposes to modify the existing fermentation process during spring 2016 by constructing a new (6th) fermenter (EU047). The additional fermenter will allow the facility to increase overall batch fermentation time to increase yield on the available starch contained within the grain received and processed. POET will use the additional fermenter solely to increase the length of the fermentation time for each batch processed at the facility. No increase in the overall amount of grain handled, ethanol produced, or associated emission rates will occur. No changes to existing emission limits are being requested.

The fermenter will have a maximum capacity of 55,400 gallons per hour.

Emissions from the fermenter will be controlled by an existing wet scrubber and an existing regenerative thermal oxidizer (RTO) operating in series. The wet scrubber has a volatile organic compound (VOC) control efficiency of 98% and a hazardous air pollutant (HAP) control efficiency of 50%. The RTO has a VOC control efficiency of 98% and a HAP control efficiency of 97%.

Potential to Emit

The new 6th fermenter will be a source of VOC and HAP emissions. During normal operating conditions, the VOC and HAP emissions from the new fermenter will be controlled by the existing wet scrubber and regenerative thermal oxidizer (RTO). The following table summarizes the uncontrolled and controlled potential to emit (PTE) from the new fermenter.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	1497	0.60
Acetaldehyde (Individual HAP)	10.71	0.16
Propionaldehyde (Individual HAP)	0.00	0.00
Methanol (Individual HAP)	0.03	0.00
Formaldehyde (Individual HAP)	0.03	0.00
Total HAP	10.76	0.16

Prevention of Significant Deterioration (PSD) Requirements

POET is an existing synthetic minor source under PSD rules. The installation of the 6th fermenter will not require an increase in the following permit limits associated with the Facility's synthetic minor permit status.

(a) Unless operating under Alternative operating Scenario No. 1 (AOS1) or No. 2 (AOS2), the scrubber (CE008) and RTO (CE009) shall control emissions from the fermentation and distillation processes. Additionally, the RTO shall control emissions from the DDGS dryers (EU025 and EU026) and, when not producing wetcake, the set of four centrifuges. The emissions from the RTO (CE009) stack exhaust (SV009) shall be limited as follows:

- VOC emissions shall not exceed 30.8 lbs/hr.
- Acetaldehyde emissions shall not exceed 1.25 lbs/hr.
- Total HAP emissions shall not exceed 1.69 lbs/hr.

(b) Alternative Operating Scenario No. 1 (AOS1)

When the Scrubber (CE008) is not operating, the RTO (CE009) shall control emissions from the fermentation and distillation processes, the DDGS dryers (EU025 and EU026), and, when not producing wetcake, the set of four centrifuges. The emissions from the RTO (CE009) stack exhaust (SV009) shall be limited as follows:

- VOC emissions shall not exceed 30.8 lbs/hr.
- Acetaldehyde emissions shall not exceed 1.25 lbs/hr.
- Total HAP emissions shall not exceed 1.69 lbs/hr.

New Source Performance Standard (NSPS) Requirements

The 6th fermenter will be subject to New Source Performance Standard (NSPS) 40 CFR 60 Subpart VVa because it will add valves and connectors that are defined as being "in VOC service". The addition of equipment in VOC service will result in an increase in the VOC emission rate from the facility and the capital cost of the 6th fermenter exceeds the capital expenditure threshold of Subpart VVa. Therefore, the installation of the 6th fermenter will be considered to be a NSPS modification.

The new equipment in VOC service associated with the 6th fermenter will be subject to the leak detection and repair (LDAR) monitoring, recordkeeping and reporting requirements of Subpart VVa. Potential emissions associated with equipment leaks from the 6th ferm are included with equipment leaks calculations provided in the Kettle Vaporizer section below.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements

There are no applicable NESHAP rules applicable to this modification.

State Rules & Requirements

POET has identified the following applicable state rules and requirements for the affected process. The following summarizes the applicable requirements and methods of compliance.

1. 326 IAC 2-2 (PSD)
    a. In order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the facility will continue to comply with the emissions limits specified in the permit, which are stated in the Prevention of Significant Deterioration (PSD) Requirements section above.
    b. In order to ensure compliance with 326 IAC 2-2 (PSD), the control equipment associated with the proposed emission units will be operated at all times that the units are in operation.

2. To comply with 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills):
   a. VOC emissions from the fermentation and distillation process will be controlled by either the scrubber or the RTO, or a combination of both.
   b. The overall VOC removal efficiency for the scrubber and RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.
   c. The overall VOC removal efficiency for the scrubber will be at least 98%, or the VOC outlet concentration will not exceed 20 ppmv.
   d. The overall VOC removal efficiency for the RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.
   e. RTO Temperature – The facility will continuously monitor the RTO operating temperature and maintain records of the 3-hour average temperature. The facility will operate the RTO above the 3-hour average temperature from the most recent valid stack test that demonstrated compliance with the established limits. If the 3-hour average temperature of the RTO falls below the 3-hour average temperature established from the most recent valid stack test that demonstrated compliance, the facility will take a reasonable response.
   f. RTO Parametric Monitoring – The facility will continuously monitor the RTO duct pressure or fan amperage and maintain records of the 3-hour average duct pressure or fan amperage. The facility will operate the RTO within the 3-hour average normal range of duct pressure or fan amperage as determined from the most recent valid stack test that demonstrated compliance with the established limits. If the 3-hour average duct pressure or fan amperage is outside the normal range, the facility will take a reasonable response.
   g. Additional Record keeping requirements –The facility will maintain monthly records of when the RTO is down. The facility will document the dates, including the time, when the system is operating under AOS1 and AOS2.
3. 326 IAC 2-7-5(1) and 326 IAC 2-7-6(1) - Visible Emissions – A trained employee of the facility will record the visible emissions from the RTO stack once per day and maintain the records of the emissions. If abnormal emissions are observed, the facility will take a reasonable response.
4. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.
5. 326 IAC 3-6 - Testing Requirements – The facility will conduct PM, PM10, PM2.5, VOC, NOx, CO and Acetaldehyde testing of the RTO as required by the Indiana Department of Environmental Management (IDEM) and at least once every five years.

2. Scrubber

Description of the Change in Operation or Equipment

Revise the normal pressure drop range for the Fermentation Scrubber (CE008) to reflect "between 1.0 and 12.0 inches of water," to be consistent with manufacturer specifications.

Replace the scrubber (CE008) fan and increase the associated stack/vent (SV008) airflow from 9,000 acfm to 12,000 acfm. The purpose of this modification is reduce high pressure conditions in the scrubber duct work.

Potential to Emit

These modifications will not change the operation of the scrubber and will not affect the emission rate or the efficiency of the scrubber.

PSD Requirements

Alternative Operating Scenario No.2 (AOS2) - When the RTO (CE009) is not operating, the Permittee shall comply with the following:

- The Scrubber shall continue to control the VOC emissions for the fermentation and distillation processes, during the periods when the RTO is down. The RTO downtime shall not exceed 500 hours per year.
- VOC emissions from the scrubber (CE008) shall not exceed 75.95 pounds per hour.
- Acetaldehyde emissions from the scrubber (CE008) shall not exceed 5.5 pounds per hour.
- The DDGS dryers (EU25 and EU26) and, when not producing wetcake, the set of four centrifuges shall not be in operation.

NSPS and NESHAP Requirements

There are no NSPS or NESHAP rules applicable to the wet scrubber modification.

State Rules & Requirements

1. 326 IAC 2-2 (PSD)
    a. In order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the facility will continue to comply with the emissions limits specified in the PSD section above.
    b. In order to ensure compliance with 326 IAC 2-2 (PSD), the control equipment associated with the proposed emission units will be operated at all times that the units are in operation.
2. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.
3. To comply with 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills):
    h. VOC emissions from the fermentation and distillation process will be controlled by either the scrubber or the RTO, or a combination of both.
    i. The overall VOC removal efficiency for the scrubber and RTO will be at least 98%, or the VOC outlet concentration will not exceed 10 ppmv.

j. The overall VOC removal efficiency for the scrubber will be at least 98%, or the VOC outlet concentration will not exceed 20 ppmv.

k. Scrubber Pressure Drop Monitoring– The facility will monitor and record the scrubber pressure drop at least once per day when the fermentation and/or distillation process is in operation. The facility will maintain records of the scrubber pressure drop. The facility shall maintain pressure drop within the normal pressure drop range, which is between 1.0 and 12.0 inches of water unless a different upper-bound or lower-bound value was determined during the latest stack test that demonstrated compliance. If the pressure drop is outside the normal range, the facility will take a reasonable response.

l. Scrubber Water Flow Rate Monitoring – The facility will monitor and record the water flow rate at least once per day when the fermentation and/or distillation process is in operation. The facility will maintain records of the water flow rate. The facility will maintain water flow rate above the minimum water flow rate established during the most recent valid stack test that demonstrated compliance with the established limits. If the water flow rate falls below the minimum flow rate, the facility will take a reasonable response.

4. 326 IAC 3-6 - Testing Requirements – The facility will conduct VOC and Acetaldehyde testing of the scrubber as required by IDEM and at least once every five years. The facility will conduct Acetaldehyde testing of the process fluid from the beer well, the bottom of the scrubber and the bottom of the beer stripper to verify that the concentration is present at less than 0.1 percent.

3. Distillation System

Description of the Change in Operation or Equipment

Increase the throughput rate of the distillation process from 54,000 gallons per hour to 60,000 gallons per hour. The purpose of the distillation throughput increase is to allow the Facility to meet its existing annual production limit of 86,000,000 gallons of denatured ethanol per year. POET is not physically modifying the distillation equipment and is not requesting an increase in the annual ethanol production limit.

Potential to Emit

The modification of distillation system will result in an increase to the lb/hr emission limits for VOC and HAP from the scrubber (CE008) and RTO (CE009) due to an increase in the inlet concentration of VOC and HAP. The following table summarizes the increase in uncontrolled and controlled PTE from the distillation system.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	282.76	5.66
Acetaldehyde (Individual HAP)	2.02	0.04
Propionaldehyde (Individual HAP)	0.00	0.00
Methanol (Individual HAP)	0.01	0.00
Formaldehyde (Individual HAP)	0.01	0.00
Total HAP	2.03	0.04

PSD Requirements

PSD requirements applicable to the distillation system are listed in the Fermentation and Scrubber sections above.

NSPS and NESHAP Requirements

There are no applicable NSPS or NESHAP rules applicable to the distillation system modification.

State Rules & Requirements

State rules & requirements applicable to the distillation system are listed in the Fermentation and Scrubber sections above.

4. New Grain Bins, Conveyors, and Control Devices

Description of the Changes in Operation or Equipment:

POET proposes to modify the existing grain storage capacity at the facility by constructing two new 683,855 bushel grain storage bins and associated grain handling equipment. The facility currently has a grain storage capacity of 1,341,276 bushels. The new grain storage capacity will be 2,708,986 bushels. Two new enclosed belt conveyors with a capacity of 30,000 bushels per hour will be used to feed the new bins. Two new reclaim conveyors rated at 5,000 bushels per hour will discharge to the existing reclaim conveyor. The two existing grain receiving pits will continue to be used with no changes to the grain receiving operations.

The existing receiving, conveying, and grain storage systems will continue to be controlled by the existing baghouse (CE001) which has a control efficiency of 99% for PM and PM_{10}, and 93% for $PM_{2.5}$.

The new conveyors required to fill the new bins will be controlled by three new cartridge filters (CE015, CE016, and CE017). The new filters will have a control efficiency of 99% for PM and PM_{10}, and 93% for $PM_{2.5}$.

Potential to Emit

Neither the hourly receiving rate nor the annual amount of grain being handled by the facility is increasing. POET will be installing three new cartridge filters on the new bins and conveyors. The following table summarizes the current uncontrolled and controlled PTE from the new bins and conveyors.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
PM	67.6	0.68
PM_{10}	67.6	0.68
$PM_{2.5}$	11.5	0.11

PSD Requirements

The PM, PM10, and PM2.5 emissions from the following units shall not exceed the emission limits listed in the table below. The emission units will be controlled by cartridge filters when the units are in operation.

Unit ID	Unit Description	Cartridge Filter ID	PM Emission Limit (lbs/hr)	PM10 Emission Limit (lbs/hr)	PM2.5 Emission Limit (lbs/hr)
SV018	New Corn Transfer and Storage Bins	CE015	0.05	0.05	0.01
SV019	New Corn Transfer and Storage Bins	CE016	0.05	0.05	0.01
SV020	New Corn Transfer and Storage Bins	CE017	0.05	0.05	0.01

NSPS Requirements

The new grain handling equipment will become subject to New Source Performance Standard 40 CFR 60, Subpart DD -Standards of Performance for Grain Elevators.

The new grain storage bins and conveyors will be subject to NSPS 40 CFR 60 Subpart DD because the addition of the grain storage bins will make the total permanent grain storage capacity more than 2.5 million bushels.

POET will need to submit a notification of the date of construction and a separate notification of the date of initial startup. POET will also need to complete a performance test on each cartridge filter for particulate matter and opacity.

NESHAP Requirements

There are no applicable NESHAP rules applicable to grain bins.

State Rules & Requirements

1. 326 IAC 2-7-5(1) and 326 IAC 2-7-6(1) - Visible Emissions – A trained employee of the facility will record the visible emissions from the cartridge filters SV018, SV019, SV020 once per day and maintain the records of the emissions. If abnormal emissions are observed, the facility will take a reasonable response.

   Pressure Drop – The facility will record the pressure drop across the cartridge filter used for the grain receiving once per day when these units are in operation. The normal range of pressure drop is 0.5 to 6.0 inches of water. If pressure drop readings are outside the normal range, the facility will take a reasonable response.

2. 326 IAC 2-7-5(12) and 326 IAC 1-6-3 - Preventative Maintenance Plan – The facility will prepare and maintain a Preventative Maintenance Plan for the emissions units and associated emissions control devices.

3. 326 IAC 2-7-6(1),(6) and 326 IAC 2-1.1-11 Testing Requirements - The facility will conduct PM, PM10, and PM2.5 testing of cartridge filters CE018, CE019 and CE020 as required by the Indiana Department of Environmental Management (IDEM).

4. Broken or Failed Cartridge – A failed unit and the associated process will be shut down immediately until the failed unit has been repaired or replaced. The emission unit (conveyor) will be shut down no later than the time it takes to convey the grain on the conveyor to the bin. Operations may continue only if the event qualifies as an emergency and the Facility satisfies the requirements of the emergency provisions of this permit.

5. 326 IAC 6-3-2 Particulate Emission Limitations – Particulate emissions shall not exceed the pound per hour limits shown in the table below.

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
SV018	New Corn Transfer and Storage Bins	840	75.4
SV019	New Corn Transfer and Storage Bins	840	75.4
SV020	New Corn Transfer and Storage Bins	840	75.4

5. Cooling Tower

Description of the Changes in Operation or Equipment

POET proposes to increase the maximum water flow rate to the cooling tower from 26,000 gallons per minute (gpm) to 30,000 gpm. This change will increase the emission unit potential to emit, but does not affect any permit conditions.

Potential to Emit

The increase in water flow rate to the cooling tower will cause an increase in the particulate matter emissions. The following table summarizes the increase in the PTE from the cooling tower.

	Increase in PTE (ton/yr)
PM	1.1
PM_{10}	1.1
$PM_{2.5}$	1.1

PSD Requirements

The PM, PM10, and PM2.5 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	PM Emission Limit (lbs/hr)	PM10 Emission Limit (lbs/hr)	PM2.5 Emission Limit (lbs/hr)
FS005	Cooling Tower	8.22	8.22	

NSPS and NESHAP Requirements

There are no applicable NSPS or NESHAP rules applicable to the cooling tower.

State Rules & Requirements

The cooling tower is a listed insignificant activity in the permit. There are no state rules applicable to the cooling tower.

6. Kettle Style Vaporizer

Description of the Operation or Equipment

POET is in the process of converting the existing shell and tube heat exchanger used as a vaporizer in distillation to a superheater and adding a kettle style vaporizer (an insignificant activity). The valves and connectors associated with kettle style vaporizer are a source of fugitive VOC emissions and are required to be included in the facilities leak detection and repair (LDAR) program. The control effectiveness of the LDAR program is shown in the table below.

Control Effectiveness for a LDAR Program

Equipment Type	Control effectiveness (%) for Subpart VVa monitoring 500 ppmv leak definition for all components except pumps. Pump leak rate definition = 2000 ppm
Pump Seals	69%
Valves lt. Liq.	88%
Valves gas	92%
Connectors	93%
Relief Valves	92%

Potential to Emit

The installation of new equipment in VOC service associated with the 6th fermenter and the kettle style vaporizer will cause an increase in the VOC emissions. The following table summarizes the increase in uncontrolled and controlled PTE from the new equipment in VOC service.

	Uncontrolled PTE (ton/yr)	Controlled PTE (ton/yr)
VOC	4.0	0.3

PSD Requirements

The equipment in VOC service are a fugitive emission source and is not subject to PSD limits in the permit.

NSPS Requirements

1. 40 CFR Part 60, Subpart VVa and 326 IAC 12 – POET shall comply with the following provisions of 40 CFR Part 60, Subpart VVa, which are incorporated by reference as 326 IAC 12, except as otherwise specified in 40 CFR Part 60, Subpart VVa:

   (1) 40 CFR 60.480a
   (2) 40 CFR 60.481a
   (3) 40 CFR 60.482-1a
   (4) 40 CFR 60.482-2a
   (5) 40 CFR 60.482-3a
   (6) 40 CFR 60.482-4a
   (7) 40 CFR 60.482-5a
   (8) 40 CFR 60.482-6a
   (9) 40 CFR 60.482-7a
   (10) 40 CFR 60.482-8a

(11) 40 CFR 60.482-9a
(12) 40 CFR 60.482-10a
(13) 40 CFR 60.482-11a
(14) 40 CFR 60.483-1a
(15) 40 CFR 60.483-2a
(16) 40 CFR 60.485a
(17) 40 CFR 60.486a
(18) 40 CFR 60.487a
(19) 40 CFR 60.488a
(20) 40 CFR 60.489a

NESHAP Requirements

There are no applicable NESHAP rules applicable to the equipment in VOC service.

State Rules & Requirements

326 IAC 12-1 New Source Performance Standards - The federal NSPS regulations which appear in 40 CFR 60 are incorporated by reference.

7. Federal Applicability

POET Biorefining – Alexandria consents to the federal enforceability of this interim petition.

Signature: 

Printed Name: Dave Hudak

Title or Position: General Manager

Phone Number: 765 724-4384

Date: 4/13/16

POET Biorefining - Alexandria
Alexandria, Indiana
New (6th) Fermenter Emissions Calculations

Estimate the potential and controlled emissions from the new (6th) fermenter.

Potential Emissions

The potential emissions of VOC and HAP from the new (6th) Fermenter were conservatively estimated by

	Scrubber Inlet lb/hr [1]	6th Fermenter lb/hr [2]	6th Fermenter ton/yr [3]
Uncontrolled VOC	1708.89	341.78	1497.0
Acetaldehyde	12.22	2.44	10.7
Propionaldehyde	0.00	0.00	0.0
Methanol	0.03	0.01	0.0
Formaldehyde	0.03	0.01	0.0
Total Uncontrolled HAP	12.28	2.46	10.8

Controlled Emissions

During normal operating conditions, VOC and HAP emissions from the new (6th) Fermenter are controlled by

Scrubber VOC Control Efficiency =	98%
Scrubber HAP Control Efficiency =	50%
RTO VOC Control Efficiency =	98%
RTO HAP Control Efficiency =	97%

	6th Fermenter lb/hr [4]	6th Fermenter ton/yr [5]
Controlled VOC	0.14	0.60
Acetaldehyde	0.04	0.16
Propionaldehyde	0.00	0.00
Methanol	0.00	0.00
Formaldehyde	0.00	0.00
Total Controlled HAP	0.04	0.16

Notes

1) lb/hr scrubber inlet emissions from RTO Bypass worksheet

2) Uncontrolled 6th Fermenter lb/hr = scrubber inlet emissions / 5

3) Uncontrolled 6th Fermenter ton/yr = 6th Fermenter lb/hr * 8760 hr/yr / 2000 lb/ton

4) Controlled 6th Fermenter lb/hr = uncontrolled 6th Fermenter lb/hr * (1- scrubber eff) * (1 - RTO eff)

5) Controlled 6th Fermenter ton/yr = controlled 6th Fermenter lb/hr * 8760 hr/yr / 2000 lb/ton

POET Biorefining - Alexandria
Alexandria, Indiana
Distillation System Potential to Emit

Current Distillation System Capacity =	54000	gallon/hour
Proposed Distillation System Capacity	60000	gallon/hour

Distillation System Emission Factor, Based on Stack Test Data from POET Biorefining Glenville, 2011		
Ethanol Production Rate =	79	gal/min
VOC emission rate, max value of 3 runs	0.85	lb/hr
Controlled Distillation System Emission Factor with 20% safety factor	0.000215	lb/gallon
Scrubber Control Efficiency =	98%	
Uncontrolled Distillation System Emission Factor	0.010759	lb/gallon

Increase in Uncontrolled Emissions	lb/hr	ton/year
VOC	64.56	282.76
Acetaldehyde	0.46	2.02
Propionaldehyde	0.00	0.00
Methanol	0.00	0.01
Formaldehyde	0.00	0.01
Total Uncontrolled HAP	0.46	2.03

Controlled Emissions	lb/hr	ton/year
VOC	1.29	5.66
Acetaldehyde	0.01	0.04
Propionaldehyde	0.00	0.00
Methanol	0.00	0.00
Formaldehyde	0.00	0.00
Total Uncontrolled HAP	0.01	0.04

POET Biorefining - Alexandria
Alexandria, Indiana
New Equipment in VOC Service

	New				Removed
LDAR Changes	Pump Seals	Valves	Connections	PRV	Connections
New fermenter pump seals	1				
New fermenter valves		20			
New fermenter connectors			64		
190 proof liquid to kettle vaporizer		6	17		
190 proof liquid weir side drain			1		
190 proof liquid blowdown to rectifier		7	15		
Kettle vaporizer non-process connections - 190 proof liquid			4		
190 proof liquid to old sieve vaporizer - REMOVED					4
Kettle vaporizer non-process connections - 190 proof vapor		1	15	1	
190 proof vapor from kettle vaporizer		3	12		

Equipment Type	Service	Emission Factor (lbs/hour/source)
Pump Seals	light liquid	0.0438
	heavy liquid	0.0180
Valves	light liquid	0.0089
	heavy liquid	0.0005
	gas	0.0131
Compressors	gas	0.5016
Relief Valves	gas	0.2288
Sampling Connections	all	0.0330
Open Ended Lines	all	0.0037
Connectors	all	0.0040

Emission Factors (EPA-453/R-95-017, Table 2-1)

Uncontrolled Emissions

Equipment Type	Number of sources	VOC Emissions lbs/hr	TPY
Pump Seals	1	0.02	0.1
Valves lt. Liq.	13	0.12	0.5
Valves Hvy. Liq.	20	0.01	0.0
Valves gas	4	0.05	0.2
Compressors	0	0.00	0.0
Relief Valves	1	0.23	1.0
Sampling Connections	0	0.00	0.0
Open Ended Lines	0	0.00	0.0
Connectors	124	0.50	2.2
	Total	**0.92**	**4.0**

Control Effectiveness for a LDAR Program

Equipment Type	monitoring 500 ppmv leak definition for all
Pump Seals	69%
Valves lt. Liq.	88%
Valves gas	92%
Connectors	93%
Relief Valves	92%

Controlled Emissions

Equipment Type	Number of sources	VOC Emissions lbs/hr	TPY
Pump Seals	1	0.00	0.0
Valves lt. Liq.	13	0.01	0.1
Valves gas	4	0.00	0.0
Compressors	0	0.00	0.0
Relief Valves	1	0.02	0.1
Sampling Connections	0	0.00	0.0
Open Ended Lines	0	0.00	0.0
Connectors	124	0.03	0.2
	Total	**0.07**	**0.3**

POET Biorefining - Alexandria
Alexandria, Indiana
Cooling Tower Increase in Emissions

Particulate emissions can be estimated by analyzing the mass of condensed water that is released times the total mass of dissolved solids present in the water. The estimate is based on the assumption that all of the dissolved solids that are present in the water becomes airborne particulate matter upon evaporation of the release condensed water droplets. The released water droplets are referred to as the "drift loss" of the tower. The drift loss of the tower is usually referenced as a percent of the total water circulation rate of the tower.

Current Cooling Tower Condition

Water circulation flow =	26,000	gallons per minute
Water circulation flow =	98,421	liters per minute
Drift loss =	0.005%	
Drift loss =	4.9	liters per minute
Total Dissolved Solids in cooling tower =	2500	mg/l
Total Dissolved Solids in cooling tower =	2.5	g/l
PM-10 = Drift loss (l/min) x TDS (g/l)	12.3	grams/minute
g/min x 60 =	738.2	grams/hr
1 pound =	453.6	grams
Fugitive emissions=	1.6	lbs/hr
Fugitive emissions=	**7.13**	**TPY**

Future Cooling Tower Condition

Water circulation flow =	30,000	gallons per minute
Water circulation flow =	113,562	liters per minute
Drift loss =	0.005%	
Drift loss =	5.7	liters per minute
Total Dissolved Solids in cooling tower =	2500	mg/l
Total Dissolved Solids in cooling tower =	2.5	g/l
PM-10 = Drift loss (l/min) x TDS (g/l)	14.2	grams/minute
g/min x 60 =	851.7	grams/hr
1 pound =	453.6	grams
Fugitive emissions=	1.9	lbs/hr
Fugitive emissions=	**8.22**	**TPY**

Increase in Emissions	**1.10**	**TPY**

POET Biorefining - Alexandria
Alexandria, Indiana
New Grain Bins and Conveyors

Emission Summary

Controlled	lb/hr	ton/year
PM	0.15	0.68
PM10	0.15	0.68
PM2.5	0.03	0.11

SV018		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.05	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

SV019		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.05	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

SV020		
New Corn Transfer and Storage Bins		
Given:		
Capacity =	840 ton/hr	
All point source emissions from these emission units will be controlled by a fabric filter.		
Maximum controlled TSP/PM10 emission rate =	0.005	gr/dscf
Exhaust Flow Rate =	1,200	dscfm
Controlled Hourly Potential to Emit	0.05	lb/hr
Uncontrolled Hourly Potential to Emit	5.14	lb/hr
Uncontrolled Annual Potential to Emit	22.5	ton/year
Controlled Annual Potential to Emit	0.23	ton/year
Allowable Emissions Under 326 IN ADC 6-3-2	75.4	lb/hr
Maximum controlled PM2.5 emission rate =	17.00%	of PM10 emission rate per AP-
Controlled Hourly Potential to Emit	0.01	lb/hr
Controlled Annual Potential to Emit	0.04	ton/year

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

CERTIFIED MAIL™

7011 2000 0002 1435 7302

UNITED STATES POSTAL SERVICE®

1000

46204

U.S. POSTAGE
PAID
ALEXANDRIA, IN
46001
APR 13, 16
AMOUNT

$9.04

R2305K134758-03

FROM: POET
CARR: USPS
TRK#: 70112000000214357302
RCVD: 04/14/2016 12:52

TO: IDEM
PH:
MSC: 0000000547
FCS: 1

RECEIVED
State of Indiana
APR 14 2016
Dept of Environmental Management
Office of Air Quality

MSC: 00000005

FLR:

IDEM

POET biorefining / 13179 N 100 E, PO Box 717, Alexandria, IN 46001

IDEM AIR PERMITS APPLICATION
ATTN: ICOMING APPLICATION
100 NORTH SENATE AVENUE
MC 61-53, IGCN 1003
INDIANAPOLIS, IN 46204-2251

Indiana Department of Environmental Management
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Carol S. Comer
Commissioner

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: Dan McMahan
POET Biorefining - Alexandria
PO Box 717
Alexandria, IN 46001

DATE: May 4, 2016

FROM: Matt Stuckey, Branch Chief
Permits Branch
Office of Air Quality

SUBJECT: Final Decision
Interim Title V Significant Source Modification Petition Approval
095-36998i-00127

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
David Hudak, GM
Chris White, AECOM
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Mail Code 61-53

IDEM Staff	VHAUN 5/4/2016 POET Biorefining- Alexandria 095-36998i-00127 FINAL			AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender	▶	Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: **CERTIFICATE OF MAILING ONLY**	

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee / Remarks
1		Dan McMahan POET Biorefining- Alexandria PO Box 717 Alexandria IN 46001 (Source CAATS) VIA CERTIFIED MAIL USPS									
2		David Hudak GM POET Biorefining- Alexandria PO Box 717 Alexandria IN 46001 *(RO CAATS)*									
3		Ginny King Marathon Petroleum Company 539 S Main St Findley OH 45870 *(Attorney)*									
4		Chris White AECOM 800 LaSalle Avenue, Suite 500 Minneapolis MN 55402 *(Consultant)*									
5		Madison County Commissioners 16 E. 9th Suite 104 Anderson IN 46016 *(Local Official)*									
6		Madison County Health Department 206 E 9th St Anderson IN 46016-1512 *(Health Department)*									
7		Alexandria Town Council 125 N. Wayne St. Alexandria IN 46001 *(Local Official)*									
8		Jon Montgomery 1250 East State Road 28 Alexandria IN 46001 *(Affected Party)*									
9		Mrs. Nancy Beher 2676 E 1450 N Summittville IN 46070-9011 *(Affected Party)*									
10		Mr. Roger Bennett 210 Orchard Lane Alexandria IN 46001 *(Affected Party)*									
11		Mr. Stephen J. Smith 4501 Winter Dr. Anderson IN 46012 *(Affected Party)*									
12											
13											
14											
15											

Total number of pieces Listed by Sender	Total number of Pieces Received at Post Office	Postmaster, Per (Name of Receiving employee)	
10			The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is $50,000 per piece subject to a limit of $50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is $500. The maximum indemnity payable is $25,000 for registered mail, sent with optional postal insurance. See ***Domestic Mail Manual*** **R900, S913**, and **S921** for limitations of coverage on inured and COD mail. See ***International Mail Manual*** for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels.

FACSIMILIE OF PS Form 3877