



Mitchell E. Daniels, Jr.  
Governor

Thomas W. Easterly  
Commissioner

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TO: Interested Parties / Applicant  
DATE: March 13, 2007  
RE: Indiana Bio Energy / 179-23641-00033  
FROM: Nisha Sizemore  
Chief, Permits Branch  
Office of Air Quality

### 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 enclosed matter. 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.

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, Room 1049, 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.

Enclosures  
FNPER.dot 03/23/06



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## NEW CONSTRUCTION AND FEDERALLY ENFORCEABLE STATE OPERATING PERMIT OFFICE OF AIR QUALITY

**Indiana Bio-Energy, LLC  
1469 South Adams Street  
Bluffton, Indiana 46714**

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

**The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.**

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-8 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17. This permit also addresses certain new source review requirements and is intended to fulfill the new source review procedures pursuant to 326 IAC 2-2 and 326 IAC 2-8-11.1, applicable to those conditions.

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a FESOP under 326 IAC 2-8.

Operation Permit No.: 179-23641-00033	
Issued by: Original Signed By:  Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: March 13, 2007  Expiration Date: March 13, 2012

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#### **Effective Date of the Permit**

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#### **Effective Date of the Permit**

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**Effective Date of the Permit**

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## SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 and A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-8-3(b)]

---

The Permittee owns and operates a stationary ethanol production plant.

Authorized Individual:	Chairman of the Board
Source Address:	1469 South Adams Street, Bluffton, Indiana 46714
Mailing Address:	P.O. Box 297, Bluffton, IN 46714
General Source Phone Number:	(260) 846-0011
SIC Code:	2869
County Location:	Wells
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Federally Enforceable State Operating Permit Program Minor Source, under PSD Rules Minor Source, Section 112 of the Clean Air Act 1 of 28 Source Categories

### A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

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This stationary source consists of the following emission units and pollution control devices:

- (a) One (1) grain receiving and handling operation, approved for construction in 2007, controlled by baghouse C20, exhausting through stack S20, and consisting of the following:
  - (1) Three (3) grain receiving pits, identified as EU001, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (2) Two (2) grain legs and conveying system, identified as EU002, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (3) Two (2) grain silos, identified as EU003, approved for construction in 2007, each with a maximum throughput rate of 40,000 bushels of corn per hour.
- (b) Two (2) corn scalper, identified as EU004, approved for construction in 2007, each with a maximum throughput rate of 3,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (c) One (1) day storage/surge bin, identified as EU005, approved for construction in 2007, with a capacity of 6,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (d) Four (4) hammermills, identified as EU006, EU007, EU008, and EU009, approved for construction in 2007, each with a maximum throughput rate of 40 tons of corn per hour, controlled by baghouse C30, and exhausting through stack S30.
- (e) One (1) fermentation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons per hour (as ethanol), controlled by scrubber C40, with emissions exhausted through stack S40. This process consists of the following:
  - (1) Two (2) slurry tanks, identified as EU010 and EU011, approved for construction

in 2007.

- (2) Seven (7) fermenters, identified as EU012 through EU018, approved for construction in 2007.
- (3) Two (2) yeast propagation tanks, identified as EU019 and EU020, approved for construction in 2007.
- (4) One (1) beer well, identified as EU021, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (f) Two (2) recuperative thermal oxidizers, identified as C10, with two (2) Waste Heat Recovery Boilers identified as B10 and B11, approved for construction in 2007, with a maximum heat input capacity of 122 MMBtu/hr each, using natural gas as fuel, with emissions exhausted through stack S10.

Under 40 CFR, Subpart Db, the recuperative thermal oxidizers and associated waste heat boilers are considered be new steam generating units.

- (g) One (1) distillation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons of ethanol per hour, controlled by thermal oxidizer C10, with emissions exhausted through stack S10. This process consists of the following:
  - (1) One (1) beer column, identified as EU022, approved for construction in 2007.
  - (2) One (1) rectifier column, identified as EU023, approved for construction in 2007.
  - (3) One (1) side stripper, identified as EU024, approved for construction in 2007.
  - (4) Two (2) sets of three (3) molecular sieves, identified as EU025, approved for construction in 2007.
  - (5) Two (2) sets of four (4) evaporators, identified as EU026, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (h) Two (2) sets of three (3) centrifuges, identified as EU027 and EU028, approved for construction in 2007.
- (i) Four (4) natural gas fired DDGS dryers, identified as EU029 through EU032, approved for construction in 2007, each with a maximum heat input rate of 45 MMBtu/hr, with a total maximum throughput rate of 42 tons of DDGS per hour, controlled by multicyclones C029 through C032, respectively, with emissions venting to thermal oxidizer C10, and exhausting to stack S10.
- (j) One (1) DDGS cooling drum, identified as EU033, approved for construction in 2007, with a maximum throughput rate of 42 tons/hr of DDGS, controlled by baghouse C70, and exhausting to stack S70.
- (k) One (1) DDGS handling and storage operation, approved for construction in 2007, with a maximum throughput rate of 220 tons/hr of DDGS, and consisting of the following:
  - (1) Two (2) DDGS storage silos, identified as EU034, approved for construction in

2007, controlled by baghouse C90, with emissions exhausted to stack S90.

- (2) One (1) DDGS storage building, identified as EU035, approved for construction in 2007.
- (l) One (1) DDGS loadout operation, identified as EU036, approved for construction in 2007, controlled by baghouse C90, with emissions exhausted to stack S90, with a maximum throughput rate of 550 tons/hr of DDGS, and consisting of the following:
  - (1) One (1) DDGS conveyor, approved for construction in 2007.
  - (2) One (1) DDGS truck/rail loadout spout, approved for construction in 2007.
- (m) One (1) ethanol loading system, identified as EU037, consisting of two (2) rail loading spouts and two (2) truck loading spouts, approved for construction in 2007, with a maximum throughput rate of 36,000 gallons per hour when loading trucks, and 120,000 gallons per hour when loading railcars. This unit is controlled by enclosed flare C50, which is fueled by natural gas and has a pilot gas flare heat input capacity of 12.4 Btu/hr, and exhausts through stack S50.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (n) One (1) diesel fire pump, identified as EU038, approved for construction in 2007, with a maximum power output rate of 300 HP, and exhausting to stack S100.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU038 is considered a new certified National Fire Protection Association (NFPA) fire pump.

### A.3 Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-8-3(c)(3)(l)]

This stationary source also includes the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) Solvent recycling systems with batch capacity less than or equal to 100 gallons.
- (b) Forced and induced draft cooling tower system not regulated under a NESHAP.
- (c) Replacement or repair of bags in baghouses and filters in other air filtration equipment.
- (d) Paved roads and parking lots with limited public access. [326 IAC 6-4]
- (e) Blowdown for any of the following: sight glass; boiler; compressors; pumps; and cooling tower.
- (f) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
  - (1) One (1) off spec tank for 190-proof ethanol, identified as T65, approved for construction in 2007, with a maximum capacity of 200,000 gallons.
  - (2) One (1) tank for 200-proof ethanol, identified as T63, approved for construction in

2007, with a maximum capacity of 200,000 gallons of 200-proof ethanol.

- (3) One (1) denatured ethanol tank, identified as T61, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
- (4) One (1) denatured ethanol tank, identified as T62, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
- (5) One (1) denaturant tank, identified as T64, approved for construction in 2007, with a maximum capacity of 200,000 gallons of natural gasoline. [326 IAC 8-4-3]
- (6) One (1) corrosion inhibitor tank, identified as Tank CI, approved for construction in 2007, with a maximum capacity of 3,000 gallons of corrosion inhibitor.
- (7) One (1) diesel storage tank, identified as C2, approved for construction in 2007, with a maximum storage capacity less than 2,000 gallons of diesel fuel.
- (8) One (1) thin stillage tank, identified as C3, approved for construction in 2007, with a maximum storage capacity of 374,000 gallons of thin stillage.
- (9) One (1) syrup tank, identified as C4, approved for construction in 2007, with a maximum storage capacity of 180,000 gallons of syrup.

Under 40 CFR 60, Subpart Kb, storage tanks T61 through T65 are considered to be new volatile organic liquid storage tanks.

- (g) One (1) biomethanator, identified as EU039, approved for construction in 2007, exhausting to the DDGS dryers as supplement fuel. When dryers EU029 and EU031 are down, methane emissions from the biomethanator are controlled by a 6.4 MMBtu/hr flare CE15, and exhausting to stack EP15. [326 IAC 2-8-4]

#### A.4 FESOP Applicability [326 IAC 2-8-2]

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This stationary source, otherwise required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) for a Federally Enforceable State Operating Permit (FESOP).

## **SECTION B GENERAL CONDITIONS**

### **B.1 Definitions [326 IAC 2-8-1]**

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Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

### **B.2 Revocation of Permits [326 IAC 2-1.1-9(5)]**

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Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

### **B.3 Affidavit of Construction [326 IAC 2-5.1-3(h)] [326 IAC 2-5.1-4][326 IAC 2-8]**

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This document shall also become the approval to operate pursuant to 326 IAC 2-5.1-4 and [326 IAC 2-8] when prior to the start of operation, the following requirements are met:

- (a) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), verifying that the emission units were constructed as proposed in the application or the permit. The emission units covered in this permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM if constructed as proposed.
- (b) If actual construction of the emission units differs from the construction proposed in the application, the source may not begin operation until the permit has been revised pursuant to 326 IAC 2 and an Operation Permit Validation Letter is issued.
- (c) The Permittee shall attach the Operation Permit Validation Letter received from the Office of Air Quality (OAQ) to this permit.

### **B.4 Permit Term [326 IAC 2-8-4(2)][326 IAC 2-1.1-9.5][IC 13-15-3-6(a)]**

- 
- (a) This permit, F179-23641-00033, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.
  - (b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, until the renewal permit has been issued or denied.

### **B.5 Term of Conditions [326 IAC 2-1.1-9.5]**

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Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

- (a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or
- (b) the emission unit to which the condition pertains permanently ceases operation.

### **B.6 Enforceability [326 IAC 2-8-6]**

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Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

### **B.7 Severability [326 IAC 2-8-4(4)]**

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The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

**B.8 Property Rights or Exclusive Privilege [326 IAC 2-8-4(5)(D)]**

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

**B.9 Duty to Provide Information [326 IAC 2-8-4(5)(E)]**

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- (a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit.
- (b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

**B.10 Compliance Order Issuance [326 IAC 2-8-5(b)]**

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IDEM, OAQ may issue a compliance order to this Permittee upon discovery that this permit is in nonconformance with an applicable requirement. The order may require immediate compliance or contain a schedule for expeditious compliance with the applicable requirement.

**B.11 Certification [326 IAC 2-8-3(d)][326 IAC 2-8-4(3)(C)(i)][326 IAC 2-8-5(1)]**

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- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by an "authorized individual" of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.
- (c) An "authorized individual" is defined at 326 IAC 2-1.1-1(1)

**B.12 Annual Compliance Certification [326 IAC 2-8-5(a)(1)]**

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- (a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The initial certification shall cover the time period from the date of final permit issuance through December 31 of the same year. All subsequent certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than July 1 of each year to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

- (b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (c) The annual compliance certification report shall include the following:
  - (1) The appropriate identification of each term or condition of this permit that is the basis of the certification;

- (2) The compliance status;
- (3) Whether compliance was continuous or intermittent;
- (4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-8-4(3); and
- (5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ may require to determine the compliance status of the source.

The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

B.13 Preventive Maintenance Plan [326 IAC 1-6-3][326 IAC 2-8-4(9)][326 IAC 2-8-5(a)(1)]

(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) prior to startup of operations, including the following information on each facility:

- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
- (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
- (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

The PMP extension notification does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.14 Emergency Provisions [326 IAC 2-8-12]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation except as provided in 326 IAC 2-8-12.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly

signed, contemporaneous operating logs or other relevant evidence that describe the following:

- (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
- (2) The permitted facility was at the time being properly operated;
- (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
- (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or  
Telephone Number: 317-233-0178 (ask for Compliance Section)  
Facsimile Number: 317-233-6865

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-8-4(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
  - (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
  - (e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ may

require that the Preventive Maintenance Plans required under 326 IAC 2-8-3(c)(6) be revised in response to an emergency.

- (f) Failure to notify IDEM, OAQ by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-8 and any other applicable rules.
- (g) Operations may continue during an emergency only if the following conditions are met:
  - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.
  - (2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:
    - (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
    - (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw material of substantial economic value.

Any operations shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

- (h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

**B.15 Prior Permits Superseded [326 IAC 2-1.1-9.5]**

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- (a) All terms and conditions of permits established prior to 095-23482-00127 and issued pursuant to permitting programs approved into the state implementation plan have been either:
  - (1) incorporated as originally stated,
  - (2) revised, or
  - (3) Deleted.
- (b) All previous registrations and permits are superseded by this permit.

**B.16 Termination of Right to Operate [326 IAC 2-8-9][326 IAC 2-8-3(h)]**

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The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-8-3(h) and 326 IAC 2-8-9.

**B.17 Deviations from Permit Requirements and Conditions [326 IAC 2-8-4(3)(C)(ii)]**

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- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

**B.18 Permit Modification, Reopening, Revocation and Reissuance, or Termination**  
[326 IAC 2-8-4(5)(C)][326 IAC 2-8-7(a)][326 IAC 2-8-8]

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- (a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Federally Enforceable State Operating Permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-8-4(5)(C)] The notification by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ, determines any of the following:
  - (1) That this permit contains a material mistake.
  - (2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.
  - (3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-8-8(a)]
- (c) Proceedings by IDEM, OAQ, to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-8-8(b)]
- (d) The reopening and revision of this permit, under 326 IAC 2-8-8(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ, at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ, may provide a shorter time period in the case of an emergency. [326 IAC 2-8-8(c)]

**B.19 Permit Renewal [326 IAC 2-8-3(h)]**

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- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ, and shall include the information specified in 326 IAC 2-8-3. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40) The renewal application does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

- (b) A timely renewal application is one that is:

- (1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and
- (2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-8 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.20 Permit Amendment or Revision [326 IAC 2-8-10][326 IAC 2-8-11.1]

- (a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-8-10 or 326 IAC 2-8-11.1 whenever the Permittee seeks to amend or modify this.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:  
  
Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251  
  
Any such application shall be certified by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.21 Operational Flexibility [326 IAC 2-8-15][326 IAC 2-8-11.1]

- (a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-8-15(b) through (d) without a prior permit revision, if each of the following conditions is met:
  - (1) The changes are not modifications under any provision of Title I of the Clean Air Act;
  - (2) Any approval required by 326 IAC 2-8-11.1 has been obtained;
  - (3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);
  - (4) The Permittee notifies the:  
  
Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251  
  
and  
  
United States Environmental Protection Agency, Region V  
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)

77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

- (5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emission trades that are subject to 326 IAC 2-8-15(b) through (d). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ in the notices specified in 326 IAC 2-8-15(b)(2), (c)(1), and (d).

- (b) **Emission Trades [326 IAC 2-8-15(c)]**  
The Permittee may trade emissions increases and decreases at in the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-8-15(c).
- (c) **Alternative Operating Scenarios Federally Enforceable State Operating Permit**  
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-8-4(7). No prior notification of IDEM, OAQ, or U.S. EPA is required.
- (d) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

**B.22 Source Modification Requirement [326 IAC 2-8-11.1]**

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A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-8-11.1

**B.23 Inspection and Entry [326 IAC 2-8-5(a)(2)][IC 13-14-2-2][IC 13-17-3-2][IC13-30-3-1]**

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Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a FESOP source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

**B.24 Transfer of Ownership or Operational Control [326 IAC 2-8-10]**

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- (a) The Permittee must comply with the requirements of 326 IAC 2-8-10 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

The application which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

**B.25 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-8-4(6)] [326 IAC 2-8-16][326 IAC 2-1.1-7]**

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- (a) The Permittee shall pay annual fees to IDEM, OAQ, within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ, the applicable fee is due April 1 of each year.
- (b) Failure to pay may result in administrative enforcement action or revocation of this permit.
- (c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

**B.26 Advanced Source Modification Approval [326 IAC 2-8-4(11)] [326 IAC 2-1.1-9]**

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- (a) The requirements to obtain a permit modification under 326 IAC 2-8-11.1 are satisfied by this permit for the proposed emission units, control equipment or insignificant activities in Sections A.1 and A.2.
- (b) Pursuant to 326 IAC 2-1.1-9 any permit authorizing construction may be revoked if construction of the emission unit has not commenced within eighteen (18) months from the date of issuance of the permit, or if during the construction, work is suspended for a continuous period of one (1) year or more.

**B.27 Credible Evidence [326 IAC 2-8-4(3)][326 IAC 2-8-5][62 FR 8314] [326 IAC 1-1-6]**

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For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

## SECTION C SOURCE OPERATION CONDITIONS

Entire Source

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

C.1 Particulate Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply shall not exceed 0.551 pounds per hour.

C.2 Overall Source Limit [326 IAC 2-8]

The purpose of this permit is to limit this source's potential to emit to less than major source levels for the purpose of Section 502(a) of the Clean Air Act.

(a) Pursuant to 326 IAC 2-8:

- (1) The potential to emit any regulated pollutant, except particulate matter (PM), from the entire source shall be limited to less than one-hundred (100) tons per twelve (12) consecutive month period. This limitation shall also make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) and 326 IAC 2-3 (Emission Offset) not applicable.
- (2) The potential to emit any individual hazardous air pollutant (HAP) from the entire source shall be limited to less than ten (10) tons per twelve (12) consecutive month period; and
- (3) The potential to emit any combination of HAPs from the entire source shall be limited to less than twenty-five (25) tons per twelve (12) consecutive month period.

(b) The potential to emit particulate matter (PM) from the entire source shall be limited to less than one-hundred (100) tons per twelve (12) consecutive month period. This limitation shall make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.

(c) This condition shall include all emission points at this source including those that are insignificant as defined in 326 IAC 2-7-1(21). The source shall be allowed to add insignificant activities not already listed in this permit, provided that the source's potential to emit does not exceed the above specified limits.

(d) Section D of this permit contains independently enforceable provisions to satisfy this requirement.

C.3 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A,

Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.4 Open Burning [326 IAC 4-1] [IC 13-17-9]

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The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.5 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

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The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.6 Fugitive Dust Emissions [326 IAC 6-4]

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The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

C.7 Stack Height [326 IAC 1-7]

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The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

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- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
- (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
  - (2) If there is a change in the following:
    - (A) Asbestos removal or demolition start date;
    - (B) Removal or demolition contractor; or
    - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management  
Asbestos Section, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (e) **Procedures for Asbestos Emission Control**  
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) **Demolition and Renovation**  
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).
- (g) **Indiana Accredited Asbestos Inspector**  
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos.

### **Testing Requirements [326 IAC 2-8-4(3)]**

#### **C.9 Performance Testing [326 IAC 3-6]**

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- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

### **Compliance Requirements [326 IAC 2-1.1-11]**

#### **C.10 Compliance Requirements [326 IAC 2-1.1-11]**

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The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any

monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

### **Compliance Monitoring Requirements [326 IAC 2-8-4][326 IAC 2-8-5(a)(1)]**

#### **C.11 Compliance Monitoring [326 IAC 2-8-4(3)][326 IAC 2-8-5(a)(1)]**

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Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented prior to startup of operations. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, that equipment cannot be installed and operated prior to startup of operations, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a permit revision shall be implemented when operation begins.

#### **C.12 Maintenance of Continuous Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]**

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- (a) The Permittee shall install, calibrate, maintain, and operate all necessary continuous emission monitoring systems (CEMS) and related equipment.
- (b) In the event that a breakdown of a continuous emission monitoring system occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.
- (c) Whenever a continuous emission monitor other than an opacity monitor is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, a calibrated backup CEMS shall be brought online within four (4) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.
- (d) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 40 CFR 60, Subpart Db.

#### **C.13 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]**

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Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60 Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

#### **C.14 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)][326 IAC 2-8-5(1)]**

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- (a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.
- (b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an

alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

**Corrective Actions and Response Steps [326 IAC 2-8-4][326 IAC 2-8-5(a)(1)]**

**C.15 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]**

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If a regulated substance, as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the Permittee must comply with the applicable requirements of 40 CFR 68.

**C.16 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]**

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- (a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:
  - (1) initial inspection and evaluation
  - (2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or
  - (3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.
- (c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:
  - (1) monitoring results;
  - (2) review of operation and maintenance procedures and records;
  - (3) inspection of the control device, associated capture system, and the process.
- (d) Failure to take reasonable response steps shall be considered a deviation from the permit.
- (e) The Permittee shall maintain the following records:
  - (1) monitoring data;
  - (2) monitor performance data, if applicable; and
  - (3) corrective actions taken.

**C.17 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4][326 IAC 2-8-5]**

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- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.

- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

### **Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]**

#### **C.18 General Record Keeping Requirements[326 IAC 2-8-4(3)] [326 IAC 2-8-5]**

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- (a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented prior to startup of operations.

#### **C.19 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]**

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- (a) The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:  
  
Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251
- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (e) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

## **Stratospheric Ozone Protection**

### **C.20 Compliance with 40 CFR 82 and 326 IAC 22-1**

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Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

- (a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.
- (b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- (c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

## SECTION D.1 FACILITY OPERATION CONDITIONS – Grain and DDGS Handling Processes

### Facility Description [326 IAC 2-8-4(10)] :

- (a) One (1) grain receiving and handling operation, approved for construction in 2007, controlled by baghouse C20, exhausting through stack S20, and consisting of the following:
  - (1) Three (3) grain receiving pits, identified as EU001, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (2) Two (2) grain legs and conveying system, identified as EU002, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (3) Two (2) grain silos, identified as EU003, approved for construction in 2007, each with a maximum throughput rate of 40,000 bushels of corn per hour.
- (b) Two (2) corn scalper, identified as EU004, approved for construction in 2007, each with a maximum throughput rate of 3,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (c) One (1) day storage/surge bin, identified as EU005, approved for construction in 2007, with a capacity of 6,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (d) Four (4) hammermills, identified as EU006, EU007, EU008, and EU009, approved for construction in 2007, each with a maximum throughput rate of 40 tons of corn per hour, controlled by baghouse C30, and exhausting through stack S30.
- (k) One (1) DDGS handling and storage operation, approved for construction in 2007, with a maximum throughput rate of 220 tons/hr of DDGS, and consisting of the following:
  - (1) Two (2) DDGS storage silos, identified as EU034, approved for construction in 2007, controlled by baghouse C90, with emissions exhausted to stack S90.
  - (2) One (1) DDGS storage building, identified as EU035, approved for construction in 2007.
- (l) One (1) DDGS loadout operation, identified as EU036, approved for construction in 2007, controlled by baghouse C90, with emissions exhausted to stack S90, with a maximum throughput rate of 550 tons/hr of DDGS, and consisting of the following:
  - (1) One (1) DDGS conveyor, approved for construction in 2007.
  - (2) One (1) DDGS truck/rail loadout spout, approved for construction in 2007.

### Insignificant Activity:

- (d) Paved roads and parking lots with public access. [326 IAC 6-4]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

## Construction Conditions

### General Construction Conditions

#### D.1.1 Permit No Defense

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

### Effective Date of the Permit

#### D.1.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

#### D.1.3 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

## Operation Conditions

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.1.4 PM and PM10 Emissions [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the grain receiving and DDGS handling operations:

- (a) The PM and PM10 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005	Grain Receiving, Conveyors, Storage Bins, Corn Scalper, and Surge Bin	C20	2.06
EU006, EU007, EU008, EU009	Hammermill #1-4	C30	1.20
EU034, EU035, EU036	DDGS storage silo, DDGS storage Building, DDGS Loadout	C90	0.39

- (b) The total grain received shall not exceed 1,100,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (c) The total DDGS produced shall not exceed 356,880 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (d) The Permittee shall use periodic sweeping to control PM and PM10 emissions from the paved roads. The sweeping shall be applied in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-2 and 326 IAC 2-8.
- (e) The Permittee shall use a choked flow system during grain receiving and handling.

Combined with the PM/PM10 emissions from other emission units, the PM/PM10 emissions from the entire source are limited to less than 100 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program) and 326 IAC 2-2 (PSD) are not applicable.

**D.1.5 Particulate Emission Limitations [326 IAC 6-3-2]**

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from each of following operations shall not exceed the pound per hour limits listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU001, EU002, EU003	Grain Receiving, Conveyors, and Storage Bins	560	70.3
EU004, EU005	Corn Scalper, Surge Bin	168	56.6
EU006	Hammermill #1	40	42.5
EU007	Hammermill #2	40	42.5
EU008	Hammermill #3	40	42.5
EU009	Hammermill #4	40	42.5
EU034	DDGS Storage Silo	220	59.5
EU035	DDGS storage building	220	59.5
EU036	DDGS loadout operation	550	70.1

The pounds per hour limitations were calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

Pursuant to 326 IAC 6-3-2(e)(3), when the process weight exceeds 200 tons per hour, the maximum allowable emission may exceed the emission limits shown in the table above, provided the concentration of particulate matter in the gas discharged to the atmosphere is less than 0.10 pounds per 1,000 pounds of gases.

**D.1.6 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and their control devices.

**Compliance Determination Requirements**

**D.1.7 Particulate Control**

- (a) In order to comply with Conditions D.1.4(a) and D.1.5, each of the following emission units shall be controlled by the associated baghouse, as listed in the table below, when these units are in operation:

Unit ID	Unit Description	Baghouse ID
EU001, EU002, EU003, EU004, EU005	Grain Receiving, Conveyors, Storage Bins, Corn Scalper, and Surge Bin	C20
EU006, EU007, EU008, EU009	Hammermill #1-4	C30
EU034, EU036	DDGS storage silo, DDGS Loadout	C90

- (b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**D.1.8 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]**

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In order to demonstrate compliance with Conditions D.1.4(a) and D.1.5, the Permittee shall perform PM and PM10 testing for baghouses C20, C30, and C90 within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensible PM10.

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

**D.1.9 Visible Emissions Notations**

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- (a) Visible emission notations of the baghouse stack exhausts (stacks S20, S30, and S90) shall be performed once per day during normal daylight operations. A trained employee or a trained contractor shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee or contractor is a person who has worked or trained at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

**D.1.10 Parametric Monitoring**

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- (a) The Permittee shall record the pressure drop across the baghouses used in conjunction with the grain receiving and handling operations (EU001 through EU005), the hammermills (EU006 through EU009), and the DDGS handling and loadout operations (EU034 through EU036), at least once per day when these units are in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

**D.1.11 Broken or Failed Bag Detection**

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- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies

as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse-s pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### **D.1.12 Record Keeping Requirements**

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- (a) To document compliance with Condition D.1.4(b), the Permittee shall maintain monthly records of the amount of grain received at this plant.
- (b) To document compliance with Condition D.1.4(c), the Permittee shall maintain monthly records of the amount of DDGS produced.
- (c) To document compliance with Condition D.1.4(d), the Permittee shall maintain records of the dates and times that sweeping is performed on the paved roads.
- (d) To document compliance with Condition D.1.9, the Permittee shall maintain records of daily visible emission notations of the baghouse stack exhausts.
- (e) To document compliance with Condition D.1.10, the Permittee shall maintain daily records of pressure drop for baghouses during normal operation.
- (f) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### **D.1.13 Reporting Requirements**

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A quarterly summary of the information to document compliance with Conditions D.1.4(b) and D.1.4(c) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.2 FACILITY OPERATION CONDITIONS – Fermentation

### Facility Description [326 IAC 2-8-4(10)]:

- (e) One (1) fermentation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons per hour (as ethanol), controlled by scrubber C40, with emissions exhausted through stack S40. This process consists of the following:
- (1) Two (2) slurry tanks, identified as EU010 and EU011, approved for construction in 2007.
  - (2) Seven (7) fermenters, identified as EU012 through EU018, approved for construction in 2007.
  - (3) Two (2) yeast propagation tanks, identified as EU019 and EU020, approved for construction in 2007.
  - (4) One (1) beer well, identified as EU021, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### ***Construction Conditions***

#### **General Construction Conditions**

##### D.2.1 Permit No Defense

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This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

#### **Effective Date of the Permit**

##### D.2.2 Effective Date of the Permit [IC13-15-5-3]

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Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

##### D.2.3 Modification to Construction Conditions [326 IAC 2]

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All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

### ***Operation Conditions***

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### D.2.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]

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Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the scrubber C40, which is used to control the emissions from the fermentation processes:

- (a) PM/PM10 emissions shall not exceed 0.13 lbs/hr.
- (b) VOC emissions shall not exceed 11.4 lbs/hr.

- (c) Acetaldehyde emissions shall not exceed 1.44 lbs/hr.
- (d) Total HAP emissions shall not exceed 1.77 lbs/hr.

Combined with the PM/PM10, VOC, SO<sub>2</sub>, CO, and NO<sub>x</sub> emissions from other units, the PM/PM10, SO<sub>2</sub>, VOC, CO, NO<sub>x</sub> emissions from the entire source are each limited to less than 100 tons/yr. Combined with the HAP emissions from other units, the HAP emissions from the entire source are limited to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), 326 IAC 2-2 (PSD), and 326 IAC 2-4.1 (MACT) are not applicable.

#### D.2.5 VOC Emissions [326 IAC 8-1-6]

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Pursuant to 326 IAC 8-1-6 (BACT), the Permittee shall control the VOC emissions from the fermentation processes using Best Available Control Technology (BACT), which has been determined to be the following:

- (a) The VOC emissions from the fermentation process shall be controlled by scrubber C40.
- (b) The overall efficiency for the scrubber C40 (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 20 ppmv.
- (c) The total VOC emissions from the scrubber C40 stack (S40) shall not exceed 11.4 lbs/hr.

#### D.2.6 Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV] [326 IAC 12]

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Pursuant to 40 CFR 60, Subpart VV, the Permittee shall comply with the requirement of Section E.1 for pumps; compressors; pressure relief devices in gas/vapor service; sampling connection systems; open-ended valves or lines; and valves.

#### D.2.7 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

### Compliance Determination Requirements

#### D.2.8 VOC and HAP Control

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In order to comply with Conditions D.2.4 and D.2.5, scrubber C40 shall be in operation and control emissions from the fermentation processes at all times that these units are in operation.

#### D.2.9 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2]

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In order to demonstrate compliance with Conditions D.2.4 and D.2.5, the Permittee shall perform PM, PM10, VOC (including emission rate, destruction efficiency, and capture efficiency), and Acetaldehyde testing for the scrubber system stack (S40) within 60 days after achieving maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. PM10 includes filterable and condensable PM10. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

### Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

#### D.2.10 Visible Emissions Notations

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- (a) Visible emission notations of the stack exhaust from the scrubber system stack (S40) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### D.2.11 Scrubber Pressure Drop and Flow Rate

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The Permittee shall monitor and record the pressure drop and the flow rate of the scrubber C40 at least once per day when the fermentation and/or the distillation process is in operation. When for any one reading, the pressure drop across the scrubber is outside the normal range of 2.0 and 8.0 inches of water, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. When for any one reading, the flow rate of the scrubber is less than the normal minimum of 35 gallons per minute, or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range or a flow rate that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instruments used for determining the pressure drop and flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

#### D.2.12 Scrubber Detection

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In the event that a scrubber malfunction has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### D.2.13 Record Keeping Requirements

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- (a) To document compliance with Condition D.2.10, the Permittee shall maintain records of once per day visible emission notations of the stack S40.
- (b) To document compliance with Condition D.2.11, the Permittee shall maintain daily records of pressure drop and flow rate for scrubber C40 during normal operation.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

## SECTION D.3 FACILITY OPERATION CONDITIONS –Distillation and DDGS Drying

### Facility Description [326 IAC 2-8-4(10)]:

- (f) Two (2) recuperative thermal oxidizers, identified as C10, with two (2) Waste Heat Recovery Boilers identified as B10 and B11, approved for construction in 2007, with a maximum heat input capacity of 122 MMBtu/hr each, using natural gas as fuel, with emissions exhausted through stack S10.
- Under 40 CFR, Subpart Db, the recuperative thermal oxidizers and associated waste heat boilers are considered be new steam generating units.
- (g) One (1) distillation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons of ethanol per hour, controlled by thermal oxidizer C10, with emissions exhausted through stack S10. This process consists of the following:
- (1) One (1) beer column, identified as EU022, approved for construction in 2007.
  - (2) One (1) rectifier column, identified as EU023, approved for construction in 2007.
  - (3) One (1) side stripper, identified as EU024, approved for construction in 2007.
  - (4) Two (2) sets of three (3) molecular sieves, identified as EU025, approved for construction in 2007.
  - (5) Two (2) sets of four (4) evaporators, identified as EU026, approved for construction in 2007.
- Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.
- (h) Two (2) sets of three (3) centrifuges, identified as EU027 and EU028, approved for construction in 2007.
- (i) Four (4) natural gas fired DDGS dryers, identified as EU029 through EU032, approved for construction in 2007, each with a maximum heat input rate of 45 MMBtu/hr, with a total maximum throughput rate of 42 tons of DDGS per hour, controlled by multicyclones C029 through C032, respectively, with emissions venting to thermal oxidizer C10, and exhausting to stack S10.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### ***Construction Conditions***

#### **General Construction Conditions**

##### **D.3.1 Permit No Defense**

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

## Effective Date of the Permit

### D.3.2 Effective Date of the Permit [IC13-15-5-3]

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Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

### D.3.3 Modification to Construction Conditions [326 IAC 2]

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All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

## Operation Conditions

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.3.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]

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Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the RTO system (C10), which is used to control the emissions from the distillation processes and the DDGS dryers (EU029 through EU032):

- (a) PM/PM10 emissions shall not exceed 5.30 lbs/hr.
- (b) VOC emissions shall not exceed 4.93 lbs/hr.
- (c) CO emissions shall not exceed 19.2 lbs/hr.
- (d) NOx emissions shall not exceed 21.2 lbs/hr.
- (e) SO<sub>2</sub> emissions shall not exceed 18.6 lbs/hr.
- (f) Acetaldehyde emissions shall not exceed 0.34 lbs/hr.
- (g) Formaldehyde emissions shall not exceed 0.38 lbs/hr.
- (h) Total HAP emissions shall not exceed 1.73 lbs/hr.

Combined with the PM/PM10, VOC, CO, SO<sub>2</sub>, and NOx emissions from other units, the PM/PM10, VOC, CO, SO<sub>2</sub>, and NOx emissions from the entire source are each limited to less than 100 tons/yr. Combined with the HAP emissions from other units, the HAP emissions from the entire source are limited to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), 326 IAC 2-2 (PSD), and 326 IAC 2-4.1 (MACT) are not applicable.

#### D.3.5 VOC Emissions [326 IAC 8-1-6]

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Pursuant to 326 IAC 8-1-6 (BACT), the Permittee shall control the VOC emissions from the distillation processes and the DDGS dryers (EU029 through EU032) using Best Available Control Technology (BACT), which has been determined to be the following:

- (a) The VOC emissions from the distillation process and the DDGS dryers (EU029 through EU032) shall be controlled by thermal oxidizer C10.
- (b) The overall efficiency for the thermal oxidizer C10 controlling the distillation process and the DDGS dryers (EU029 through EU032) (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.
- (c) The total VOC emissions from the thermal oxidizer C10 stack (S10) shall not exceed 4.93 lbs/hr.

**D.3.6 Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV] [326 IAC 12]**

Pursuant to 40 CFR 60, Subpart VV, the Permittee shall comply with the requirement of Section E.1 for pumps; compressors; pressure relief devices in gas/vapor service; sampling connection systems; open-ended valves or lines; and valves.

**D.3.7 Particulate Emission Limitations [326 IAC 6-3-2]**

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from each of following operations shall not exceed the pound per hour limit listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU029	DDGS Dryer	42	43.0
EU030	DDGS Dryer	42	43.0
EU031	DDGS Dryer	42	43.0
EU032	DDGS Dryer	42	43.0

The pounds per hour limitations were calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

**D.3.8 Particulate Emissions [326 IAC 6-2-4]**

Pursuant to 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating: Emission Limitations for facilities specified in 326 IAC 6-2-1(d)), the PM emissions from the thermal oxidizers shall not exceed 0.26 pounds per million Btu heat input (lb/MMBtu). This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}} \quad \text{where } Q = \text{total source heat input capacity (MMBtu/hr)} \\ \text{For these units, } Q = 244 \text{ MMBtu/hr.}$$

**D.3.9 Standard of Performance for Boilers [40 CFR Part 60, Subpart Db] [326 IAC 12]**

Pursuant to 40 CFR 60, Subpart Db, the Permittee shall comply with the requirements of Section E.2 for the thermal oxidizers C10.

**D.3.10 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

**Compliance Determination Requirements**

**D.3.11 VOC and HAP Control**

In order to comply with Conditions D.3.4 and D.3.5, thermal oxidizer C10 shall be in operation and control emissions from the distillation processes and the DDGS dryers (EU029 through EU032) at all times that these units are in operation.

**D.3.12 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2]**

In order to demonstrate compliance with Conditions D.3.4, D.3.5, and D.3.7, the Permittee shall perform PM, PM10, VOC (including emission rate, destruction efficiency, and capture efficiency), NOx, CO, SO<sub>2</sub>, Acetaldehyde, and Formaldehyde testing for the thermal oxidizer stack (S10) within 60 days after achieving maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. PM10 includes filterable and condensable PM10. These tests shall be repeated at least once every five (5) years from the date of this valid

compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

### **Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

#### **D.3.13 Visible Emissions Notations**

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- (a) Visible emission notations of the stack exhaust from the thermal oxidizer stack (S10) shall be performed once per day during normal daylight. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### **D.3.14 Thermal Oxidizer Temperature**

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- (a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer system C10 for measuring operating temperature. For the purpose of this condition, continuous means no less than once per minute. The output of this system shall be recorded as 3-hour average. From the date of startup until the approved stack test results are available, the Permittee shall operate the thermal oxidizer at or above the 3-hour average temperature of 1,400°F.
- (b) The Permittee shall determine the 3-hour average temperature from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.4 and D.3.5, as approved by IDEM.
- (c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the hourly average temperature as observed during the compliant stack test.

#### **D.3.15 Parametric Monitoring**

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- (a) The Permittee shall determine the appropriate duct pressure or fan amperage from the most recent valid stack test that demonstrates compliance with limits in Conditions D.3.4 and D.3.5, as approved by IDEM.
- (b) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the approved stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in most recent compliant stack test.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### **D.3.16 Record Keeping Requirements**

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- (a) To document compliance with Condition D.3.12, the Permittee shall maintain records of once per day visible emission notations of the stack S10.

- (b) To document compliance with Condition D.3.13, the Permittee shall maintain continuous temperature records for the thermal oxidizer and the 3-hour average temperature used to demonstrate compliance during the most recent compliant stack test.
- (c) To document compliance with Condition D.3.14, the Permittee shall maintain daily records of the duct pressure or fan amperage for the thermal oxidizer system (C10).
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

## SECTION D.4 FACILITY OPERATION CONDITIONS – DDGS Cooler

### Facility Description [326 IAC 2-8-4(10)] :

- (j) One (1) DDGS cooling drum, identified as EU033, approved for construction in 2007, with a maximum throughput rate of 42 tons/hr of DDGS, controlled by baghouse C70, and exhausting to stack S70.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### ***Construction Conditions***

#### **General Construction Conditions**

##### D.4.1 Permit No Defense

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

#### **Effective Date of the Permit**

##### D.4.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

##### D.4.3 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

### ***Operation Conditions***

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### D.4.4 PM and PM10 Emissions [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the PM/PM10 emissions from the DDGS cooler, which is controlled by baghouse C70 shall not exceed the 0.64 lbs/hr.

Combined with the PM/PM10 emissions from other emission units, the PM/PM10 emissions from the entire source are limited to less than 100 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

##### D.4.5 VOC Emissions [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP), and in order to render the requirements of 326 IAC 2-2 (PSD and 326 IAC 8-1-6 (BACT) not applicable, VOC emissions shall not exceed 2.04 lbs/hr.

Combined with the VOC emissions from other emission units, the VOC emissions from the entire source are limited to less than 100 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), 326 IAC 2-2 (PSD), and 326 IAC 8-1-6 (BACT) are not applicable.

##### D.4.6 Particulate Emission Limitations [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, particulate emissions from the DDGS cooling drum (EU033) shall not exceed 43 pounds per hour when operating at the maximum process throughput rate of 42 tons per hour.

The pounds per hour limitation was calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

**D.4.7 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control device.

**Compliance Determination Requirements**

**D.4.8 Particulate Control**

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- (a) In order to comply with Conditions D.4.4 and D.4.6, Baghouse C70 shall be in operation and control emissions from the DDGS cooling drum (EU033) at all times that this unit is in operation.
- (b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**D.4.9 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]**

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In order to demonstrate compliance with Conditions D.4.4, D.4.5 and D.4.6, the Permittee shall perform PM, PM10, and VOC testing for the DDGS cooling drum (EU033) within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM10.

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

**D.4.10 Visible Emissions Notations**

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- (a) Visible emission notations of the baghouse stack exhaust (stack S70) shall be performed once per day during normal daylight operations. A trained employee or a trained contractor shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee or contractor is a person who has worked or trained at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### D.4.11 Parametric Monitoring

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- (a) The Permittee shall record the pressure drop across the baghouse used in conjunction with the DDGS cooling drum (EU033) at least once per day when this unit is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

#### D.4.12 Broken or Failed Bag Detection

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- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### D.4.13 Record Keeping Requirements

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- (a) To document compliance with Condition D.4.10, the Permittee shall maintain records of daily visible emission notations of the baghouse stack exhaust.
- (b) To document compliance with Condition D.4.11, the Permittee shall maintain daily records of pressure drop for the baghouse during normal operation.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

## SECTION D.5 FACILITY OPERATION CONDITIONS – Ethanol Loading Racks

### Facility Description [326 IAC 2-8-4(10)]:

- (m) One (1) ethanol loading system, identified as EU037, consisting of two (2) rail loading spouts and two (2) truck loading spouts, approved for construction in 2007, with a maximum throughput rate of 36,000 gallons per hour when loading trucks, and 120,000 gallons per hour when loading railcars. This unit is controlled by enclosed flare C50, which is fueled by natural gas and has a pilot gas flare heat input capacity of 12.4 Btu/hr, and exhausts through stack S50.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### ***Construction Conditions***

#### **General Construction Conditions**

##### D.5.1 Permit No Defense

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

#### **Effective Date of the Permit**

##### D.5.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

##### D.5.3 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

### ***Operation Conditions***

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### D.5.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the ethanol loading racks:

- (a) The total denatured ethanol load-out from loading rack EU037 shall not exceed 110,000,000 gallons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (b) The Permittee shall use flare C50 to control the emissions from the ethanol loading rack (EU037).
- (c) The operating hours for the flare C50 shall not exceed 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (d) CO emissions from flare C50 shall not exceed 4.59 lbs/hr.

- (e) NOx emissions from flare C50 shall not exceed 0.84 lbs/hr.
- (f) VOC emissions from flare C50 shall not exceed 0.10 lb/kgal.
- (g) The ethanol loading rack shall utilize submerged loading methods.
- (h) The trucks and railcars shall not use vapor balance services during ethanol loading.

Combined with the VOC, CO, NOx and HAP emissions from other units, the VOC, CO, and NOx emissions from the entire source are each limited to less than 100 tons/yr and the HAP emissions from the entire source are limited to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

#### D.5.5 VOC Emissions [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 (BACT) and the Permittee shall collect and control the VOC emissions from the ethanol loading rack (EU037) with a Best Available Control Technology (BACT). The BACT for this unit has been determined to be the following:

- (a) The VOC emissions from the ethanol loading rack (EU037) shall be collected and controlled by enclosed flare C50.
- (b) The overall control efficiency for the vapor collection system and enclosed flare C50 (including the capture efficiency and destruction efficiency) shall be at least 98%.
- (c) The VOC emissions from enclosed flare C50 shall not exceed 2.76 lbs/hr.

#### D.5.6 Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV] [326 IAC 12]

Pursuant to 40 CFR 60, Subpart VV, the Permittee shall comply with the requirement of - Section E.1 for pumps; compressors; pressure relief devices in gas/vapor service; sampling connection systems; open-ended valves or lines; and valves.

#### D.5.7 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and the control device.

### **Compliance Determination Requirements**

#### D.5.8 VOC Control

In order to comply with Conditions D.5.4 and D.5.5, enclosed flare C50 shall be in operation and control emissions from the ethanol loading rack (EU037) at all times when this unit is in operation.

#### D.5.9 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2]

In order to demonstrate compliance with Conditions D.5.4 and D.5.5, the Permittee shall perform VOC (including emission rate, destruction efficiency, and capture efficiency), CO, and NOx testing for enclosed flare C50, within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

### **Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

#### D.5.10 Flare Pilot Flame

In order to comply with Conditions D.5.4 and D.5.5, the Permittee shall monitor the presence of a flare pilot flame for flare C50 using a thermocouple or any other equivalent device to detect the presence of a flame when ethanol loading rack EU037 is in operation.

## **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

### **D.5.11 Record Keeping Requirements**

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- (a) To document compliance with Condition D.5.4(a), the Permittee shall maintain monthly records of the total amount of denatured ethanol loaded out from loading rack EU037.
- (b) To document compliance with Condition D.5.10, the Permittee shall maintain records of temperature or other parameters sufficient to demonstrate the presence of a pilot flame when loading rack EU037 is in operation.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

### **D.5.12 Reporting Requirements**

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A quarterly summary of the information to document compliance with Condition D.5.4(a) and D.5.4(c) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.6 FACILITY OPERATION CONDITIONS – Diesel Generator

### Facility Description [326 IAC 2-8-4(10)]: Insignificant Activities

- (n) One (1) diesel fire pump, identified as EU038, approved for construction in 2007, with a maximum power output rate of 300 HP, and exhausting to stack S100.
- Under 40 CFR 60, Subpart IIII, the diesel fire pump EU038 is considered a new certified National Fire Protection Association (NFPA) fire pump.
- (g) One (1) biomethanator, identified as EU039, approved for construction in 2007, exhausting to the DDGS dryers as supplement fuel. When dryers EU0129 and EU031 are down, methane emissions from the biomethanator are controlled by a 6.4 MMBtu/hr flare CE15, and exhausting to stack EP15. [326 IAC 2-8-4]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.6.1 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following:

- (a) The operating hours for the diesel fire pump (EU038) shall not exceed 50 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (b) The operating hours for the biomethanator flare (CE15) shall not exceed 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (c) The flare (EU039) shall be designed as a smokeless flare.

Combined with the emission limits from other emission units, the emissions of each regulated pollutant from the entire source are each limited to less than 100 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

#### D.6.2 Standards of Performance for Stationary Compression Ignition Internal Combustion Engines [40 CFR Part 60, Subpart IIII] [326 IAC 12]

Pursuant to 40 CFR 60, Subpart IIII, the Permittee shall comply with the requirements of Section E.4 for emergency generator EU038.

### Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

#### D.6.3 Record Keeping Requirements

- (a) To document compliance with Condition D.6.1(a), the Permittee shall maintain monthly records of the operating hours for the emergency generator EU038.
- (b) To document compliance with Condition D.6.1(b), the Permittee shall maintain monthly records of the operating hours for the biomethanator flare (CE15).
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.6.4 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.6.1(a) and D.6.1(b) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within

thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “authorized individual” as defined by 326 IAC 2-1.1-1(1).

## SECTION D.7 FACILITY OPERATION CONDITIONS – Storage Tanks

### Facility Description [326 IAC 2-8-4(10)]:

#### Insignificant Activities

- (f) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
- (1) One (1) off spec tank for 190-proof ethanol, identified as T65, approved for construction in 2007, with a maximum capacity of 200,000 gallons.
  - (2) One (1) tank for 200-proof ethanol, identified as T63, approved for construction in 2007, with a maximum capacity of 200,000 gallons of 200-proof ethanol.
  - (3) One (1) denatured ethanol tank, identified as T61, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
  - (4) One (1) denatured ethanol tank, identified as T62, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
  - (5) One (1) denaturant tank, identified as T64, approved for construction in 2007, with a maximum capacity of 200,000 gallons of natural gasoline. [326 IAC 8-4-3]

Under 40 CFR 60, Subpart Kb, storage tanks T61 through T65 are considered to be new volatile organic liquid storage tanks.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.7.1 Volatile Organic Compounds (VOC) [326 IAC 8-4-3]

- (a) Pursuant to 326 IAC 8-4-3(b)(1)(B), storage tank T64 shall be maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
- (b) Pursuant to 326 IAC 8-4-3(b)(1)(C), all openings, except stub drains, shall be equipped with covers, lids, or seals such that:
  - (1) The cover, lid or seal shall be in the closed position at all times except when in actual use;
  - (2) Automatic bleeder vents shall be closed at all times except when the roof is floated off or landed on the roof leg supports;
  - (3) Rim vents, if provided, shall be set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- (c) Pursuant to 326 IAC 8-4-3(d) (Petroleum Liquid Storage Facilities), the Permittee shall maintain the following records for a period of two (2) years for tank T64:
  - (1) The types of volatile petroleum liquid stored;

- (2) The maximum true vapor pressure of the liquids as stored; and
- (3) The results of the inspections performed on the storage vessels.

The above records shall be made available to the IDEM, OAQ upon written request.

**D.7.2 Storage Tanks [326 IAC 12][40 CFR 60, Subpart Kb]**

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Pursuant to 40 CFR 60, Subpart Kb, the Permittee shall comply with the requirement of - Section E.3 for Tanks T61 through T65.

**D.7.3 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

**Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

**D.7.4 Record Keeping Requirements**

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- (a) To document compliance with Condition D.7.1, the Permittee shall maintain the following records for tank T64:
  - (1) The types of volatile petroleum liquid stored;
  - (2) The maximum true vapor pressure of the liquids as stored; and
  - (3) The results of the inspections performed on the storage vessels.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

## SECTION E.1 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

(e) One (1) fermentation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons per hour (as ethanol), controlled by scrubber C40, with emissions exhausted through stack S40. This process consists of the following:

- (1) Two (2) slurry tanks, identified as EU010 and EU011, approved for construction in 2007.
- (2) Seven (7) fermenters, identified as EU012 through EU018, approved for construction in 2007.
- (3) Two (2) yeast propagation tanks, identified as EU019 and EU020, approved for construction in 2007.
- (4) One (1) beer well, identified as EU021, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(g) One (1) distillation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons of ethanol per hour, controlled by thermal oxidizer C10, with emissions exhausted through stack S10. This process consists of the following:

- (1) One (1) beer column, identified as EU022, approved for construction in 2007.
- (2) One (1) rectifier column, identified as EU023, approved for construction in 2007.
- (3) One (1) side stripper, identified as EU024, approved for construction in 2007.
- (4) Two (2) sets of three (3) molecular sieves, identified as EU025, approved for construction in 2007.
- (5) Two (2) sets of four (4) evaporators, identified as EU026, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(m) One (1) ethanol loading system, identified as EU037, consisting of two (2) rail loading spouts and two (2) truck loading spouts, approved for construction in 2007, with a maximum throughput rate of 36,000 gallons per hour when loading trucks, and 120,000 gallons per hour when loading railcars. This unit is controlled by enclosed flare C50, which is fueled by natural gas and has a pilot gas flare heat input capacity of 12.4 Btu/hr, and exhausts through stack S50.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

## **New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]**

### **E.1.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]**

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- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1, except as otherwise specified in 40 CFR Part 60, Subpart VV.
- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
Indianapolis, Indiana 46204-2251

### **E.1.2 Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV] [326 IAC 12]**

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Pursuant to 40 CFR Part 60, Subpart VV, the Permittee shall comply with the provisions of Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, which are incorporated by reference as 326 IAC 12, as follows:

## **Subpart VV—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry**

### **§ 60.480 Applicability and designation of affected facility.**

- (a)(1) The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry.
- (2) The group of all equipment (defined in §60.481) within a process unit is an affected facility.
- (b) Any affected facility under paragraph (a) of this section that commences construction or modification after January 5, 1981, shall be subject to the requirements of this subpart.
- (c) Addition or replacement of equipment for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
- (d)(1) If an owner or operator applies for one or more of the exemptions in this paragraph, then the owner or operator shall maintain records as required in §60.486(i).
- (2) Any affected facility that has the design capacity to produce less than 1,000 Mg/yr (1,102 ton/yr) is exempt from §60.482.
- (3) If an affected facility produces heavy liquid chemicals only from heavy liquid feed or raw materials, then it is exempt from §60.482.
- (4) Any affected facility that produces beverage alcohol is exempt from §60.482.
- (5) Any affected facility that has no equipment in VOC service is exempt from §60.482.
- (e) *Alternative means of compliance*—(1) *Option to comply with part 65.* Owners or operators may choose to comply with the provisions of 40 CFR part 65, subpart F, to satisfy the requirements of §§60.482 through 60.487 for an affected facility. When choosing to comply with 40 CFR part 65, subpart F, the requirements of §60.485(d), (e), and (f), and §60.486(i) and (j) still apply. Other provisions applying to an owner or operator who chooses to comply with 40 CFR part 65 are provided in 40 CFR 65.1.
- (2) *Part 60, subpart A.* Owners or operators who choose to comply with 40 CFR part 65, subpart F must also comply with §§60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for that equipment. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (e)(2) do not apply to owners or operators of equipment subject to this subpart complying with 40 CFR part 65, subpart F, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and

operators who choose to comply with 40 CFR part 65, subpart F, must comply with 40 CFR part 65, subpart A.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

**§ 60.481 Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in subpart A of part 60, and the following terms shall have the specific meanings given them.

*Capital expenditure* means, in addition to the definition in 40 CFR 60.2, an expenditure for a physical or operational change to an existing facility that:

(a) Exceeds P, the product of the facility's replacement cost, R, and an adjusted annual asset guideline repair allowance, A, as reflected by the following equation:  $P = R \times A$ , where

(1) The adjusted annual asset guideline repair allowance, A, is the product of the percent of the replacement cost, Y, and the applicable basic annual asset guideline repair allowance, B, divided by 100 as reflected by the following equation:

$$A = Y \times (B \div 100);$$

(2) The percent Y is determined from the following equation:  $Y = 1.0 - 0.575 \log X$ , where X is 1982 minus the year of construction; and

(3) The applicable basic annual asset guideline repair allowance, B, is selected from the following table consistent with the applicable subpart:

Table for Determining Applicable for B

Subpart applicable to facility	Value of B to be used in equation
VV.....	12.5
DDD.....	12.5
GGG.....	7.0
KKK.....	4.5

*Closed vent system* means a system that is not open to the atmosphere and that is composed of hard-piping, ductwork, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device or back to a process.

*Connector* means flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment.

*Control device* means an enclosed combustion device, vapor recovery system, or flare.

*Distance piece* means an open or enclosed casing through which the piston rod travels, separating the compressor cylinder from the crankcase.

*Double block and bleed system* means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

*Duct work* means a conveyance system such as those commonly used for heating and ventilation systems. It is often made of sheet metal and often has sections connected by screws or crimping. Hard-piping is not ductwork.

*Equipment* means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems required by this subpart.

*First attempt at repair* means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.

*Fuel gas* means gases that are combusted to derive useful work or heat.

*Fuel gas system* means the offsite and onsite piping and flow and pressure control system that gathers gaseous stream(s) generated by onsite operations, may blend them with other sources of gas, and transports the gaseous stream for use as fuel gas in combustion devices or in-process combustion equipment, such as furnaces and gas turbines, either singly or in combination.

*Hard-piping* means pipe or tubing that is manufactured and properly installed using good engineering judgement and standards such as ASME B31.3, Process Piping (available from the American Society of Mechanical Engineers, PO Box 2900, Fairfield, NJ 07007–2900).

*In gas/vapor service* means that the piece of equipment contains process fluid that is in the gaseous state at operating conditions.

*In heavy liquid service* means that the piece of equipment is not in gas/vapor service or in light liquid service.

*In light liquid service* means that the piece of equipment contains a liquid that meets the conditions specified in §60.485(e).

*In-situ sampling systems* means nonextractive samplers or in-line samplers.

*In vacuum service* means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa)(0.7 psia) below ambient pressure.

*In VOC service* means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. (The provisions of §60.485(d) specify how to determine that a piece of equipment is not in VOC service.)

*Liquids dripping* means any visible leakage from the seal including spraying, misting, clouding, and ice formation.

*Open-ended valve or line* means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

*Pressure release* means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

*Process improvement* means routine changes made for safety and occupational health requirements, for energy savings, for better utility, for ease of maintenance and operation, for correction of design deficiencies, for bottleneck removal, for changing product requirements, or for environmental control.

*Process unit* means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in §60.489 of this part. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

*Process unit shutdown* means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

*Quarter* means a 3-month period; the first quarter concludes on the last day of the last full month during the 180 days following initial startup.

*Repaired* means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

*Replacement cost* means the capital needed to purchase all the depreciable components in a facility.

*Sampling connection system* means an assembly of equipment within a process unit used during periods of representative operation to take samples of the process fluid. Equipment used to take nonroutine grab samples is not considered a sampling connection system.

*Sensor* means a device that measures a physical quantity or the change in a physical quantity such as temperature, pressure, flow rate, pH, or liquid level.

*Synthetic organic chemicals manufacturing industry* means the industry that produces, as intermediates or final products, one or more of the chemicals listed in §60.489.

*Volatile organic compounds* or VOC means, for the purposes of this subpart, any reactive organic compounds as defined in §60.2 Definitions.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 49 FR 26738, June 29, 1984; 60 FR 43258, Aug. 18, 1995; 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

#### **§ 60.482-1 Standards: General.**

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of §§60.482–1 through 60.482–10 or §60.480(e) for all equipment within 180 days of initial startup.

(b) Compliance with §§60.482–1 to 60.482–10 will be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in §60.485.

(c)(1) An owner or operator may request a determination of equivalence of a means of emission limitation to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, and 60.482–10 as provided in §60.484.

(2) If the Administrator makes a determination that a means of emission limitation is at least equivalent to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, or 60.482–10, an owner or operator shall comply with the requirements of that determination.

(d) Equipment that is in vacuum service is excluded from the requirements of §§60.482–2 to 60.482–10 if it is identified as required in §60.486(e)(5).

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 78276, Dec. 14, 2000]

#### **§ 60.482-2 Standards: Pumps in light liquid service.**

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in §60.485(b), except as provided in §60.482–1(c) and paragraphs (d), (e), and (f) of this section.

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a), *Provided* the following requirements are met:

(1) Each dual mechanical seal system is—

- (i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
  - (ii) Equipment with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or
  - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
- (2) The barrier fluid system is in heavy liquid service or is not in VOC service.
- (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
- (4) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.
- (5)(i) Each sensor as described in paragraph (d)(3) is checked daily or is equipped with an audible alarm, and
- (ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
- (6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii), a leak is detected.
- (ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.
- (iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) Any pump that is designated, as described in §60.486(e)(1) and (2), for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump:
- (1) Has no externally actuated shaft penetrating the pump housing,
  - (2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in §60.485(c), and
  - (3) Is tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.
- (f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of §60.482–10, it is exempt from paragraphs (a) through (e) of this section.
- (g) Any pump that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of paragraphs (a) and (d)(4) through (6) of this section if:
- (1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section; and
  - (2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in paragraph (c) of this section if a leak is detected.
- (h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

**§ 60.482-3 Standards: Compressors.**

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in §60.482–1(c) and paragraph (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.

(d) Each barrier fluid system as described in paragraph (a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) shall be checked daily or shall be equipped with an audible alarm.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under paragraph (e)(2), a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of §60.482–10, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in §60.486(e) (1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a)–(h) if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in §60.485(c); and

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

(j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of §60.14 or §60.15 is exempt from §60.482(a), (b), (c), (d), (e), and (h), provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of paragraphs (a) through (e) and (h) of this section.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-4 Standards: Pressure relief devices in gas/vapor service.**

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in §60.485(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in §60.482–9.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in §60.485(c).

(c) Any pressure relief device that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in §60.482–10 is exempted from the requirements of paragraphs (a) and (b) of this section.

(d)(1) Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of paragraphs (a) and (b) of this section, provided the owner or operator complies with the requirements in paragraph (d)(2) of this section.

(2) After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in §60.482–9.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

#### **§ 60.482-5 Standards: Sampling connection systems.**

(a) Each sampling connection system shall be equipped with a closed-purged, closed-loop, or closed-vent system, except as provided in §60.482–1(c). Gases displaced during filling of the sample container are not required to be collected or captured.

(b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this section shall comply with the requirements specified in paragraphs (b)(1) through (4) of this section:

(1) Return the purged process fluid directly to the process line; or

(2) Collect and recycle the purged process fluid to a process; or

(3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of §60.482–10; or

(4) Collect, store, and transport the purged process fluid to any of the following systems or facilities:

(i) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is subject to, and operated in compliance with the provisions of 40 CFR part 63, subpart G, applicable to Group 1 wastewater streams;

(ii) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266; or

(iii) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261.

(c) In situ sampling systems and sampling systems without purges are exempt from the requirements of paragraphs (a) and (b) of this section.

[60 FR 43258, Aug. 18, 1995, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

#### **§ 60.482-6 Standards: Open-ended valves or lines.**

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in §60.482–1(c).

- (2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.
- (b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
- (c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) at all other times.
- (d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of paragraphs (a), (b) and (c) of this section.
- (e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in paragraphs (a) through (c) of this section are exempt from the requirements of paragraphs (a) through (c) of this section.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-7 Standards: Valves in gas/vapor service and in light liquid service.**

- (a) Each valve shall be monitored monthly to detect leaks by the methods specified in §60.485(b) and shall comply with paragraphs (b) through (e), except as provided in paragraphs (f), (g), and (h), §60.483–1, 2, and §60.482–1(c).
- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (c)(1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
- (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- (d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in §60.482–9.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) First attempts at repair include, but are not limited to, the following best practices where practicable:
- (1) Tightening of bonnet bolts;
  - (2) Replacement of bonnet bolts;
  - (3) Tightening of packing gland nuts;
  - (4) Injection of lubricant into lubricated packing.
- (f) Any valve that is designated, as described in §60.486(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) if the valve:
- (1) Has no external actuating mechanism in contact with the process fluid,
  - (2) Is operated with emissions less than 500 ppm above background as determined by the method specified in §60.485(c), and
  - (3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.
- (g) Any valve that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a), and

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in §60.486(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(2) The process unit within which the valve is located either becomes an affected facility through §60.14 or §60.15 or the owner or operator designates less than 3.0 percent of the total number of valves as difficult-to-monitor, and

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 61762, Oct. 17, 2000]

**§ 60.482-8 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors.**

(a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors, the owner or operator shall follow either one of the following procedures:

(1) The owner or operator shall monitor the equipment within 5 days by the method specified in §60.485(b) and shall comply with the requirements of paragraphs (b) through (d) of this section.

(2) The owner or operator shall eliminate the visual, audible, olfactory, or other indication of a potential leak.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482-9.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under §60.482-7(e).

[48 CFR 48335, Oct. 18, 1983, as amended at 65 FR 78277, Dec. 14, 2000]

**§ 60.482-9 Standards: Delay of repair.**

(a) Delay of repair of equipment for which leaks have been detected will be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in VOC service.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with §60.482-10.

(d) Delay of repair for pumps will be allowed if:

- (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
  - (2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
- (e) Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 78277, Dec. 14, 2000]

**§ 60.482-10 Standards: Closed vent systems and control devices.**

- (a) Owners or operators of closed vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section.
- (b) Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, whichever is less stringent.
- (c) Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C.
- (d) Flares used to comply with this subpart shall comply with the requirements of §60.18.
- (e) Owners or operators of control devices used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.
- (f) Except as provided in paragraphs (i) through (k) of this section, each closed vent system shall be inspected according to the procedures and schedule specified in paragraphs (f)(1) and (f)(2) of this section.
- (1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall comply with the requirements specified in paragraphs (f)(1)(i) and (f)(1)(ii) of this section:
- (i) Conduct an initial inspection according to the procedures in §60.485(b); and
  - (ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.
- (2) If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall:
- (i) Conduct an initial inspection according to the procedures in §60.485(b); and
  - (ii) Conduct annual inspections according to the procedures in §60.485(b).
- (g) Leaks, as indicated by an instrument reading greater than 500 parts per million by volume above background or by visual inspections, shall be repaired as soon as practicable except as provided in paragraph (h) of this section.
- (1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
  - (2) Repair shall be completed no later than 15 calendar days after the leak is detected.
- (h) Delay of repair of a closed vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next process unit shutdown.
- (i) If a vapor collection system or closed vent system is operated under a vacuum, it is exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section.

(j) Any parts of the closed vent system that are designated, as described in paragraph (l)(1) of this section, as unsafe to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (j)(1) and (j)(2) of this section:

(1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with paragraphs (f)(1)(i) or (f)(2) of this section; and

(2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.

(k) Any parts of the closed vent system that are designated, as described in paragraph (l)(2) of this section, as difficult to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (k)(1) through (k)(3) of this section:

(1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and

(2) The process unit within which the closed vent system is located becomes an affected facility through §§60.14 or 60.15, or the owner or operator designates less than 3.0 percent of the total number of closed vent system equipment as difficult to inspect; and

(3) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years. A closed vent system is exempt from inspection if it is operated under a vacuum.

(l) The owner or operator shall record the information specified in paragraphs (l) (1) through (l) (5) of this section.

(1) Identification of all parts of the closed vent system that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.

(2) Identification of all parts of the closed vent system that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.

(3) For each inspection during which a leak is detected, a record of the information specified in §60.486(c).

(4) For each inspection conducted in accordance with §60.485(b) during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

(5) For each visual inspection conducted in accordance with paragraph (f)(1)(ii) of this section during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

(m) Closed vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

[48 FR 48335, Oct. 18, 1983, as amended at 51 FR 2702, Jan. 21, 1986; 60 FR 43258, Aug. 18, 1995; 61 FR 29878, June 12, 1996; 65 FR 78277, Dec. 14, 2000]

**§ 60.483-1 Alternative standards for valves—allowable percentage of valves leaking.**

(a) An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator wishes to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in §60.487(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with §60.482–7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in gas/vapor and light liquid service within the affected facility shall be monitored within 1 week by the methods specified in §60.485(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves for which leaks are detected by the number of valves in gas/vapor and light liquid service within the affected facility.

(d) Owners and operators who elect to comply with this alternative standard shall not have an affected facility with a leak percentage greater than 2.0 percent.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

**§ 60.483-2 Alternative standards for valves—skip period leak detection and repair.**

(a)(1) An owner or operator may elect to comply with one of the alternative work practices specified in paragraphs (b)(2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in §60.487(d).

(b)(1) An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in §60.482–7.

(2) After 2 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

(3) After 5 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

(4) If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in §60.482–7 but can again elect to use this section.

(5) The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of this section.

(6) An owner or operator must keep a record of the percent of valves found leaking during each leak detection period.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

**§ 60.485 Test methods and procedures.**

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

(b) The owner or operator shall determine compliance with the standards in §§60.482, 60.483, and 60.484 as follows:

(1) Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21. The following calibration gases shall be used:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.

(c) The owner or operator shall determine compliance with the no detectable emission standards in §§60.482–2(e), 60.482–3(i), 60.482–4, 60.482–7(f), and 60.482–10(e) as follows:

(1) The requirements of paragraph (b) shall apply.

(2) Method 21 shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d) The owner or operator shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:

(1) Procedures that conform to the general methods in ASTM E260–73, 91, or 96, E168–67, 77, or 92, E169–63, 77, or 93 (incorporated by reference—see §60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

(2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

(3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, paragraphs (d) (1) and (2) of this section shall be used to resolve the disagreement.

(e) The owner or operator shall demonstrate that an equipment is in light liquid service by showing that all the following conditions apply:

(1) The vapor pressure of one or more of the components is greater than 0.3 kPa at 20 °C (1.2 in. H<sub>2</sub>O at 68 °F). Standard reference texts or ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17) shall be used to determine the vapor pressures.

(2) The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H<sub>2</sub>O at 68 °F) is equal to or greater than 20 percent by weight.

(3) The fluid is a liquid at operating conditions.

(f) Samples used in conjunction with paragraphs (d), (e), and (g) of this section shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(g) The owner or operator shall determine compliance with the standards of flares as follows:

(1) Method 22 shall be used to determine visible emissions.

(2) A thermocouple or any other equivalent device shall be used to monitor the presence of a pilot flame in the flare.

(3) The maximum permitted velocity for air assisted flares shall be computed using the following equation:

$$V_{\max} = K_1 + K_2 H_T$$

Where:

$V_{\max}$  = Maximum permitted velocity, m/sec (ft/sec)

$H_T$  = Net heating value of the gas being combusted, MJ/scm (Btu/scf).

$K_1$  = 8.706 m/sec (metric units)

= 28.56 ft/sec (English units)

$$K_2 = 0.7084 \text{ m}^4 / (\text{MJ}\cdot\text{sec}) \text{ (metric units)}$$
$$= 0.087 \text{ ft}^4 / (\text{Btu}\cdot\text{sec}) \text{ (English units)}$$

(4) The net heating value (HT) of the gas being combusted in a flare shall be computed using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

K = Conversion constant,  $1.740 \times 10^7$  (g-mole)(MJ)/ (ppm-scm-kcal) (metric units)  
=  $4.674 \times 10^8$  [(g-mole)(Btu)/(ppm-scf-kcal)] (English units)

C<sub>i</sub> = Concentration of sample component "i," ppm

H<sub>i</sub> = net heat of combustion of sample component "i" at 25 °C and 760 mm Hg (77 °F and 14.7 psi), kcal/g-mole

(5) Method 18 and ASTM D2504–67, 77, or 88 (Reapproved 1993) (incorporated by reference—see §60.17) shall be used to determine the concentration of sample component "i."

(6) ASTM D2382–76 or 88 or D4809–95 (incorporated by reference—see §60.17) shall be used to determine the net heat of combustion of component "i" if published values are not available or cannot be calculated.

(7) Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the actual exit velocity of a flare. If needed, the unobstructed (free) cross-sectional area of the flare tip shall be used.

[54 FR 6678, Feb. 14, 1989, as amended at 54 FR 27016, June 27, 1989; 65 FR 61763, Oct. 17, 2000]

#### **§ 60.486 Recordkeeping requirements.**

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one affected facility subject to the provisions of this subpart may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

(b) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in §60.482–7(c) and no leak has been detected during those 2 months.

(3) The identification on equipment except on a valve, may be removed after it has been repaired.

(c) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) "Above 10,000" if the maximum instrument reading measured by the methods specified in §60.485(a) after each repair attempt is equal to or greater than 10,000 ppm.

(5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.

(8) Dates of process unit shutdowns that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed vent systems and control devices described in §60.482-10 shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3) A description of the parameter or parameters monitored, as required in §60.482-10(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

(4) Periods when the closed vent systems and control devices required in §§60.482-2, 60.482-3, 60.482-4, and 60.482-5 are not operated as designed, including periods when a flare pilot light does not have a flame.

(5) Dates of startups and shutdowns of the closed vent systems and control devices required in §§60.482-2, 60.482-3, 60.482-4, and 60.482-5.

(e) The following information pertaining to all equipment subject to the requirements in §§60.482-1 to 60.482-10 shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of §§60.482-2(e), 60.482-3(i) and 60.482-7(f).

(ii) The designation of equipment as subject to the requirements of §60.482-2(e), §60.482-3(i), or §60.482-7(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with §60.482-4.

(4)(i) The dates of each compliance test as required in §§60.482-2(e), 60.482-3(i), 60.482-4, and 60.482-7(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of §60.482-7(g) and (h) and to all pumps subject to the requirements of §60.482-2(g) shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for valves and pumps that are designated as unsafe-to-monitor, an explanation for each valve or pump stating why the valve or pump is unsafe-to-monitor, and the plan for monitoring each valve or pump.

(2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.

(g) The following information shall be recorded for valves complying with §60.483-2:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(h) The following information shall be recorded in a log that is kept in a readily accessible location:

(1) Design criterion required in §§60.482–2(d)(5) and 60.482–3(e)(2) and explanation of the design criterion; and

(2) Any changes to this criterion and the reasons for the changes.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in §60.480(d):

(1) An analysis demonstrating the design capacity of the affected facility,

(2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and

(3) An analysis demonstrating that equipment is not in VOC service.

(j) Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.

(k) The provisions of §60.7 (b) and (d) do not apply to affected facilities subject to this subpart.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61763, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

#### **§ 60.487 Reporting requirements.**

(a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning six months after the initial startup date.

(b) The initial semiannual report to the Administrator shall include the following information:

(1) Process unit identification.

(2) Number of valves subject to the requirements of §60.482–7, excluding those valves designated for no detectable emissions under the provisions of §60.482–7(f).

(3) Number of pumps subject to the requirements of §60.482–2, excluding those pumps designated for no detectable emissions under the provisions of §60.482–2(e) and those pumps complying with §60.482–2(f).

(4) Number of compressors subject to the requirements of §60.482–3, excluding those compressors designated for no detectable emissions under the provisions of §60.482–3(i) and those compressors complying with §60.482–3(h).

(c) All semiannual reports to the Administrator shall include the following information, summarized from the information in §60.486:

(1) Process unit identification.

(2) For each month during the semiannual reporting period,

(i) Number of valves for which leaks were detected as described in §60.482(7)(b) or §60.483–2,

(ii) Number of valves for which leaks were not repaired as required in §60.482–7(d)(1),

(iii) Number of pumps for which leaks were detected as described in §60.482–2(b) and (d)(6)(i),

(iv) Number of pumps for which leaks were not repaired as required in §60.482–2(c)(1) and (d)(6)(ii),

(v) Number of compressors for which leaks were detected as described in §60.482–3(f),

(vi) Number of compressors for which leaks were not repaired as required in §60.482–3(g)(1), and

(vii) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.

- (3) Dates of process unit shutdowns which occurred within the semiannual reporting period.
- (4) Revisions to items reported according to paragraph (b) if changes have occurred since the initial report or subsequent revisions to the initial report.
- (d) An owner or operator electing to comply with the provisions of §§60.483–1 or 60.483–2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.
- (e) An owner or operator shall report the results of all performance tests in accordance with §60.8 of the General Provisions. The provisions of §60.8(d) do not apply to affected facilities subject to the provisions of this subpart except that an owner or operator must notify the Administrator of the schedule for the initial performance tests at least 30 days before the initial performance tests.
- (f) The requirements of paragraphs (a) through (c) of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with the requirements of paragraphs (a) through (c) of this section, provided that they comply with the requirements established by the State.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 61763, Oct. 17, 2000]

## SECTION E.2 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

- (f) Two (2) recuperative thermal oxidizers, identified as C10, with two (2) Waste Heat Recovery Boilers identified as B10 and B11, approved for construction in 2007, with a maximum heat input capacity of 122 MMBtu/hr each, using natural gas as fuel, with emissions exhausted through stack S10.

Under 40 CFR, Subpart Db, the recuperative thermal oxidizers and associated waste heat boilers are considered be new steam generating units.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.2.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for boilers EU027 and EU028, except as otherwise specified in 40 CFR Part 60, Subpart Db.
- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
Indianapolis, Indiana 46204-2251

#### E.2.2 Standard of Performance for Industrial-Commercial-Institutional Steam Generating Units Requirements [40 CFR Part 60, Subpart Db] [326 IAC 12]

Pursuant to 40 CFR Part 60, Subpart Db, the Permittee shall comply with the provisions of Standard of Performance for Industrial-Commercial-Institutional Steam Generating Units, which are incorporated by reference as 326 IAC 12, for boilers EU027 and EU028 as follows:

### Subpart Db—Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

#### § 60.40b Applicability and delegation of authority.

(a) The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour).

(b) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1984, but on or before June 19, 1986, is subject to the following standards:

(1) Coal-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 million Btu/hour), inclusive, are subject to the particulate matter and nitrogen oxides standards under this subpart.

(2) Coal-fired affected facilities having a heat input capacity greater than 73 MW (250 million Btu/hour) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are subject to the particulate matter and nitrogen oxides standards under this subpart and to the sulfur dioxide standards under subpart D (§60.43).

- (3) Oil-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 million Btu/hour), inclusive, are subject to the nitrogen oxides standards under this subpart.
- (4) Oil-fired affected facilities having a heat input capacity greater than 73 MW (250 million Btu/hour) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are also subject to the nitrogen oxides standards under this subpart and the particulate matter and sulfur dioxide standards under subpart D (§60.42 and §60.43).
- (c) Affected facilities which also meet the applicability requirements under subpart J (Standards of performance for petroleum refineries; §60.104) are subject to the particulate matter and nitrogen oxides standards under this subpart and the sulfur dioxide standards under subpart J (§60.104).
- (d) Affected facilities which also meet the applicability requirements under subpart E (Standards of performance for incinerators; §60.50) are subject to the nitrogen oxides and particulate matter standards under this subpart.
- (e) Steam generating units meeting the applicability requirements under subpart Da (Standards of performance for electric utility steam generating units; §60.40Da) are not subject to this subpart.
- (f) Any change to an existing steam generating unit for the sole purpose of combusting gases containing TRS as defined under §60.281 is not considered a modification under §60.14 and the steam generating unit is not subject to this subpart.
- (g) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the following authorities shall be retained by the Administrator and not transferred to a State.
- (1) Section 60.44b(f).
  - (2) Section 60.44b(g).
  - (3) Section 60.49b(a)(4).
- (h) Affected facilities which meet the applicability requirements under subpart Eb (Standards of performance for municipal waste combustors; §60.50b) are not subject to this subpart.
- (i) Heat recovery steam generators that are associated with combined cycle gas turbines and that meet the applicability requirements of subpart KKKK of this part are not subject to this subpart. This subpart will continue to apply to all other heat recovery steam generators that are capable of combusting more than 29 MW (100 MMBtu/h) heat input of fossil fuel. If the heat recovery steam generator is subject to this subpart, only emissions resulting from combustion of fuels in the steam generating unit are subject to this subpart. (The gas turbine emissions are subject to subpart GG or KKKK, as applicable, of this part.)
- (j) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to Subpart D (Standards of Performance for Fossil-Fuel-Fired Steam Generators, §60.40).
- (k) Any facility covered by subpart Eb or subpart AAAA of this part is not covered by this subpart.
- (l) Any facility covered by an EPA approved State or Federal section 111(d)/129 plan implementing subpart Cb or subpart BBBB of this part is not covered by this subpart.

[52 FR 47842, Dec. 16, 1987, as amended at 63 FR 49454, Sept. 16, 1998; 65 FR 61752, Oct. 17, 2000; 71 FR 9881, Feb. 27, 2006; 71 FR 33400, June 9, 2006]

#### **§ 60.41b Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

*Annual capacity factor* means the ratio between the actual heat input to a steam generating unit from the fuels listed in §60.42b(a), §60.43b(a), or §60.44b(a), as applicable, during a calendar year and the potential heat input to the steam generating unit had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity. In the case of steam generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year.

*Byproduct/waste* means any liquid or gaseous substance produced at chemical manufacturing plants, petroleum refineries, or pulp and paper mills (except natural gas, distillate oil, or residual oil) and combusted in a steam generating unit for heat recovery or for disposal. Gaseous substances with carbon dioxide levels greater than 50 percent or carbon monoxide levels greater than 10 percent are not byproduct/waste for the purpose of this subpart.

*Chemical manufacturing plants* means industrial plants which are classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 28.

*Coal* means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388–77, 90, 91, 95, or 98a, Standard Specification for Classification of Coals by Rank (IBR—see §60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels, including but not limited to solvent refined coal, gasified coal, coal-oil mixtures, and coal-water mixtures, are also included in this definition for the purposes of this subpart.

*Coal refuse* means any byproduct of coal mining or coal cleaning operations with an ash content greater than 50 percent, by weight, and a heating value less than 13,900 kJ/kg (6,000 Btu/lb) on a dry basis.

*Cogeneration*, also known as combined heat and power, means a facility that simultaneously produces both electric (or mechanical) and useful thermal energy from the same primary energy source.

*Combined cycle system* means a system in which a separate source, such as a gas turbine, internal combustion engine, kiln, etc., provides exhaust gas to a heat recovery steam generating unit.

*Conventional technology* means wet flue gas desulfurization (FGD) technology, dry FGD technology, atmospheric fluidized bed combustion technology, and oil hydrodesulfurization technology.

*Distillate oil* means fuel oils that contain 0.05 weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396–78, 89, 90, 92, 96, or 98, Standard Specifications for Fuel Oils (incorporated by reference—see §60.17).

*Dry flue gas desulfurization technology* means a sulfur dioxide control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline slurry or solution and forming a dry powder material. This definition includes devices where the dry powder material is subsequently converted to another form. Alkaline slurries or solutions used in dry flue gas desulfurization technology include but are not limited to lime and sodium.

*Duct burner* means a device that combusts fuel and that is placed in the exhaust duct from another source, such as a stationary gas turbine, internal combustion engine, kiln, etc., to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a heat recovery steam generating unit.

*Emerging technology* means any sulfur dioxide control system that is not defined as a conventional technology under this section, and for which the owner or operator of the facility has applied to the Administrator and received approval to operate as an emerging technology under §60.49b(a)(4).

*Federally enforceable* means all limitations and conditions that are enforceable by the Administrator, including the requirements of 40 CFR parts 60 and 61, requirements within any applicable State Implementation Plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24.

*Fluidized bed combustion technology* means combustion of fuel in a bed or series of beds (including but not limited to bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion.

*Fuel pretreatment* means a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

*Full capacity* means operation of the steam generating unit at 90 percent or more of the maximum steady-state design heat input capacity.

*Heat input* means heat derived from combustion of fuel in a steam generating unit and does not include the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.

*Heat release rate* means the steam generating unit design heat input capacity (in MW or Btu/hour) divided by the furnace volume (in cubic meters or cubic feet); the furnace volume is that volume bounded by the front furnace wall where the burner is located, the furnace side waterwall, and extending to the level just below or in front of the first row of convection pass tubes.

*Heat transfer medium* means any material that is used to transfer heat from one point to another point.

*High heat release rate* means a heat release rate greater than  $730,000 \text{ J/sec-m}^3$  ( $70,000 \text{ Btu/hour-ft}^3$ ).

*Lignite* means a type of coal classified as lignite A or lignite B by the American Society of Testing and Materials in ASTM D388–77, 90, 91, 95, or 98a, Standard Specification for Classification of Coals by Rank (IBR—see §60.17).

*Low heat release rate* means a heat release rate of  $730,000 \text{ J/sec-m}^3$  ( $70,000 \text{ Btu/hour-ft}^3$ ) or less.

*Mass-feed stoker steam generating unit* means a steam generating unit where solid fuel is introduced directly into a retort or is fed directly onto a grate where it is combusted.

*Maximum heat input capacity* means the ability of a steam generating unit to combust a stated maximum amount of fuel on a steady state basis, as determined by the physical design and characteristics of the steam generating unit.

*Municipal-type solid waste* means refuse, more than 50 percent of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock.

*Natural gas* means (1) a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or (2) liquid petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835–82, 86, 87, 91, or 97, "Standard Specification for Liquid Petroleum Gases" (IBR—see §60.17).

*Noncontinental area* means the State of Hawaii, the Virgin Islands, Guam, American Samoa, the Commonwealth of Puerto Rico, or the Northern Mariana Islands.

*Oil* means crude oil or petroleum or a liquid fuel derived from crude oil or petroleum, including distillate and residual oil.

*Petroleum refinery* means industrial plants as classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 29.

*Potential sulfur dioxide emission rate* means the theoretical sulfur dioxide emissions (ng/J, lb/million Btu heat input) that would result from combusting fuel in an uncleaned state and without using emission control systems.

*Process heater* means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

*Pulp and paper mills* means industrial plants which are classified by the Department of Commerce under North American Industry Classification System (NAICS) Code 322 or Standard Industrial Classification (SIC) Code 26.

*Pulverized coal-fired steam generating unit* means a steam generating unit in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the steam generating unit where it is fired in suspension. This includes both conventional pulverized coal-fired and micropulverized coal-fired steam generating units.

*Residual oil* means crude oil, fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 weight percent, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396–78, Standard Specifications for Fuel Oils (IBR—see §60.17).

*Spreader stoker steam generating unit* means a steam generating unit in which solid fuel is introduced to the combustion zone by a mechanism that throws the fuel onto a grate from above. Combustion takes place both in suspension and on the grate.

*Steam generating unit* means a device that combusts any fuel or byproduct/waste to produce steam or to heat water or any other heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.

*Steam generating unit operating day* means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the steam generating unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

*Very low sulfur oil* for units constructed, reconstructed, or modified on or before February 28, 2005, means an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 215 ng/J (0.5 lb/MMBtu) heat input. For units constructed, reconstructed, or modified after February 28, 2005, *very low sulfur oil* means an oil that contains no more than 0.3 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 140 ng/J (0.32 lb/MMBtu) heat input.

*Wet flue gas desulfurization technology* means a sulfur dioxide control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gas with an alkaline slurry or solution and forming a liquid material. This definition applies to devices where the aqueous liquid material product of this contact is subsequently converted to other forms. Alkaline reagents used in wet flue gas desulfurization technology include, but are not limited to, lime, limestone, and sodium.

*Wet scrubber system* means any emission control device that mixes an aqueous stream or slurry with the exhaust gases from a steam generating unit to control emissions of particulate matter or sulfur dioxide.

*Wood* means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51819, Dec. 18, 1989; 65 FR 61752, Oct. 17, 2000; 66 FR 49834, Oct. 1, 2001; 71 FR 9881, Feb. 27, 2006]

**§ 60.44b Standard for nitrogen oxides.**

(a) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides (expressed as NO<sub>2</sub>) in excess of the following emission limits:

Fuel/Steam generating unit type	Nitrogen oxide emission limits ng/J (lb/million Btu) (expressed as NO <sub>2</sub> ) heat input
-----	
(1) Natural gas and distillate oil, except (4):	
(i) Low heat release rate.....	43 (0.10)
(ii) High heat release rate.....	86 (0.20)
(2) Residual oil:	
(i) Low heat release rate.....	130 (0.30)
(ii) High heat release rate.....	170 (0.40)

Fuel/Steam generating unit type	Nitrogen oxide emission limits ng/J (lb/million Btu) (expressed as NO <sub>2</sub> ) heat input
<hr/>	
(3) Coal:	
(i) Mass-feed stoker.....	210 (0.50)
(ii) Spreader stoker and fluidized bed combustion.....	260 (0.60)
(iii) Pulverized coal.....	300 (0.70)
(iv) Lignite, except (v).....	260 (0.60)
(v) Lignite mined in North Dakota, South Dakota, or Montana and combusted in a slag tap furnace.....	340 (0.80)
(vi) Coal-derived synthetic fuels.....	210 (0.50)
(4) Duct burner used in a combined cycle system:	
(i) Natural gas and distillate oil.....	86 (0.20)
(ii) Residual oil.....	170 (0.40)

(e) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal, oil, or natural gas with byproduct/waste shall cause to be discharged into the atmosphere any gases that contain nitrogen oxides in excess of the emission limit determined by the following formula unless the affected facility has an annual capacity factor for coal, oil, and natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less:

$$E_n = [(EL_{go} H_{go}) + (EL_{ro} H_{ro}) + (EL_c H_c)] / (H_{go} + H_{ro} + H_c)$$

where:

$E_n$  is the nitrogen oxides emission limit (expressed as NO<sub>2</sub>), ng/J (lb/million Btu)

$EL_{go}$  is the appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb/million Btu).

$H_{go}$  is the heat input from combustion of natural gas, distillate oil and gaseous byproduct/waste, ng/J (lb/million Btu).

$EL_{ro}$  is the appropriate emission limit from paragraph (a)(2) for combustion of residual oil, ng/J (lb/million Btu)

$H_{ro}$  is the heat input from combustion of residual oil and/or liquid byproduct/waste.

$EL_c$  is the appropriate emission limit from paragraph (a)(3) for combustion of coal, and

$H_c$  is the heat input from combustion of coal.

(h) For purposes of paragraph (i) of this section, the nitrogen oxide standards under this section apply at all times including periods of startup, shutdown, or malfunction.

(i) Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis.

**§ 60.46b Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.**

(a) The particulate matter emission standards and opacity limits under §60.43b apply at all times except during periods of startup, shutdown, or malfunction, and as specified in paragraphs (i) and (j) of this section. The nitrogen oxides emission standards under §60.44b apply at all times.

(c) Compliance with the nitrogen oxides emission standards under §60.44b shall be determined through performance testing under paragraph (e) or (f), or under paragraphs (g) and (h) of this section, as applicable.

(e) To determine compliance with the emission limits for nitrogen oxides required under §60.44b, the owner or operator of an affected facility shall conduct the performance test as required under §60.8 using the continuous system for monitoring nitrogen oxides under §60.48(b).

(1) For the initial compliance test, nitrogen oxides from the steam generating unit are monitored for 30 successive steam generating unit operating days and the 30-day average emission rate is used to determine compliance with the nitrogen oxides emission standards under §60.44b. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period.

**§ 60.48b Emission monitoring for particulate matter and nitrogen oxides.**

(b) Except as provided under paragraphs (g), (h), and (i) of this section, the owner or operator of an affected facility subject to a nitrogen oxides standard under §60.44b shall comply with either paragraphs (b)(1) or (b)(2) of this section.

(1) Install, calibrate, maintain, and operate a continuous monitoring system, and record the output of the system, for measuring nitrogen oxides emissions discharged to the atmosphere; or

(c) The continuous monitoring systems required under paragraph (b) of this section shall be operated and data recorded during all periods of operation of the affected facility except for continuous monitoring system breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.

(d) The 1-hour average nitrogen oxides emission rates measured by the continuous nitrogen oxides monitor required by paragraph (b) of this section and required under §60.13(h) shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under §60.44b. The 1-hour averages shall be calculated using the data points required under §60.13(h)(2).

(e) The procedures under §60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems.

(2) For affected facilities combusting coal, oil, or natural gas, the span value for nitrogen oxides is determined as follows:

Fuel	Span values for nitrogen oxides (PPM)
Natural gas.....	500
Oil.....	500
Coal.....	1,000
Mixtures.....	$500(x+y) + 1,000z$

where:

x is the fraction of total heat input derived from natural gas,

y is the fraction of total heat input derived from oil, and

z is the fraction of total heat input derived from coal.

(f) When nitrogen oxides emission data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.

(g) The owner or operator of an affected facility that has a heat input capacity of 73 MW (250 million Btu/hour) or less, and which has an annual capacity factor for residual oil having a nitrogen content of

0.30 weight percent or less, natural gas, distillate oil, or any mixture of these fuels, greater than 10 percent (0.10) shall:

- (1) Comply with the provisions of paragraphs (b), (c), (d), (e)(2), (e)(3), and (f) of this section, or
- (2) Monitor steam generating unit operating conditions and predict nitrogen oxides emission rates as specified in a plan submitted pursuant to §60.49b(c).

[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51825, Dec. 18, 1989; 63 FR 49455, Sept. 16, 1998; 66 FR 18553, Apr. 10, 2001; 71 FR 9884, Feb. 27, 2006]

**§ 60.49b Reporting and recordkeeping requirements.**

(a) The owner or operator of each affected facility shall submit notification of the date of initial startup, as provided by §60.7. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility,

(3) The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired, and,

(b) The owner or operator of each affected facility subject to the sulfur dioxide, particulate matter, and/or nitrogen oxides emission limits under §§60.42b, 60.43b, and 60.44b shall submit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B. The owner or operator of each affected facility described in §60.44b(j) or §60.44b(k) shall submit to the Administrator the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.

(c) The owner or operator of each affected facility subject to the nitrogen oxides standard of §60.44b who seeks to demonstrate compliance with those standards through the monitoring of steam generating unit operating conditions under the provisions of §60.48b(g)(2) shall submit to the Administrator for approval a plan that identifies the operating conditions to be monitored under §60.48b(g)(2) and the records to be maintained under §60.49b(j). This plan shall be submitted to the Administrator for approval within 360 days of the initial startup of the affected facility. The plan shall:

(1) Identify the specific operating conditions to be monitored and the relationship between these operating conditions and nitrogen oxides emission rates (i.e., ng/J or lbs/million Btu heat input). Steam generating unit operating conditions include, but are not limited to, the degree of staged combustion (i.e., the ratio of primary air to secondary and/or tertiary air) and the level of excess air (i.e., flue gas oxygen level);

(2) Include the data and information that the owner or operator used to identify the relationship between nitrogen oxides emission rates and these operating conditions;

(3) Identify how these operating conditions, including steam generating unit load, will be monitored under §60.48b(g) on an hourly basis by the owner or operator during the period of operation of the affected facility; the quality assurance procedures or practices that will be employed to ensure that the data generated by monitoring these operating conditions will be representative and accurate; and the type and format of the records of these operating conditions, including steam generating unit load, that will be maintained by the owner or operator under §60.49b(j).

If the plan is approved, the owner or operator shall maintain records of predicted nitrogen oxide emission rates and the monitored operating conditions, including steam generating unit load, identified in the plan.

(d) The owner or operator of an affected facility shall record and maintain records of the amounts of each fuel combusted during each day and calculate the annual capacity factor individually for coal, distillate oil, residual oil, natural gas, wood, and municipal-type solid waste for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month.

(g) Except as provided under paragraph (p) of this section, the owner or operator of an affected facility subject to the nitrogen oxides standards under §60.44b shall maintain records of the following information for each steam generating unit operating day:

- (1) Calendar date.
- (2) The average hourly nitrogen oxides emission rates (expressed as NO<sub>2</sub>) (ng/J or lb/million Btu heat input) measured or predicted.
- (3) The 30-day average nitrogen oxides emission rates (ng/J or lb/million Btu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days.
- (4) Identification of the steam generating unit operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emissions standards under §60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken.
- (5) Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.
- (6) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
- (7) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
- (8) Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system.
- (9) Description of any modifications to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3.
- (10) Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1.
  - (i) The owner or operator of any affected facility subject to the continuous monitoring requirements for nitrogen oxides under §60.48(b) shall submit reports containing the information recorded under paragraph (g) of this section.
  - (v) The owner or operator of an affected facility may submit electronic quarterly reports for SO<sub>2</sub> and/or NO<sub>x</sub> and/or opacity in lieu of submitting the written reports required under paragraphs (h), (i), (j), (k) or (l) of this section. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the owner or operator, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the owner or operator shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format.
  - (w) The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51820, 51825, Dec. 18, 1989; 60 FR 28062, May 30, 1995; 61 FR 14031, Mar. 29, 1996; 62 FR 52641, Oct. 8, 1997; 63 FR 49455, Sept. 16, 1998; 64 FR 7464, Feb. 12, 1999; 65 FR 13243, Mar. 13, 2000; 69 FR 40773, July 7, 2004]

## SECTION E.3 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

(f) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:

- (1) One (1) off spec tank for 190-proof ethanol, identified as T65, approved for construction in 2007, with a maximum capacity of 200,000 gallons.
- (2) One (1) tank for 200-proof ethanol, identified as T63, approved for construction in 2007, with a maximum capacity of 200,000 gallons of 200-proof ethanol.
- (3) One (1) denatured ethanol tank, identified as T61, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
- (4) One (1) denatured ethanol tank, identified as T62, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
- (5) One (1) denaturant tank, identified as T64, approved for construction in 2007, with a maximum capacity of 200,000 gallons of natural gasoline. [326 IAC 8-4-3]

Under 40 CFR 60, Subpart Kb, storage tanks T61 through T65 are considered to be new volatile organic liquid storage tanks.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.3.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

(a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for tanks T001, T002, T003, T004, and T005, except as otherwise specified in 40 CFR Part 60, Subpart Kb.

(b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
Indianapolis, Indiana 46204-2251

#### E.3.2 Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) [40 CFR Part 60, Subpart Kb] [326 IAC 12]

Pursuant to 40 CFR Part 60, Subpart Kb, the Permittee shall comply with the provisions of Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels), which are incorporated by reference as 326 IAC 12, for tanks T001, T002, T003, T004, and T005 as follows:

## Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels)

### § 60.110b Applicability and designation of affected facility.

(a) Except as provided in paragraph (b) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters ( $m^3$ ) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.

(b) This subpart does not apply to storage vessels with a capacity greater than or equal to 151  $m^3$  storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75  $m^3$  but less than 151  $m^3$  storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

(c) [Reserved]

(d) This subpart does not apply to the following:

(1) Vessels at coke oven by-product plants.

(2) Pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere.

(3) Vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships.

(4) Vessels with a design capacity less than or equal to 1,589.874  $m^3$  used for petroleum or condensate stored, processed, or treated prior to custody transfer.

(5) Vessels located at bulk gasoline plants.

(6) Storage vessels located at gasoline service stations.

(7) Vessels used to store beverage alcohol.

(8) Vessels subject to subpart GGGG of 40 CFR part 63.

(e) *Alternative means of compliance*—(1) *Option to comply with part 65*. Owners or operators may choose to comply with 40 CFR part 65, subpart C, to satisfy the requirements of §§60.112b through 60.117b for storage vessels that are subject to this subpart that meet the specifications in paragraphs (e)(1)(i) and (ii) of this section. When choosing to comply with 40 CFR part 65, subpart C, the monitoring requirements of §60.116b(c), (e), (f)(1), and (g) still apply. Other provisions applying to owners or operators who choose to comply with 40 CFR part 65 are provided in 40 CFR 65.1.

(i) A storage vessel with a design capacity greater than or equal to 151  $m^3$  containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa; or

(ii) A storage vessel with a design capacity greater than 75  $m^3$  but less than 151  $m^3$  containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa.

(2) *Part 60, subpart A*. Owners or operators who choose to comply with 40 CFR part 65, subpart C, must also comply with §§60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for those storage vessels. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (e)(2) do not apply to owners or operators of storage vessels complying with 40 CFR part 65, subpart C, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and operators who choose to comply with 40 CFR part 65, subpart C, must comply with 40 CFR part 65, subpart A.

(3) *Internal floating roof report*. If an owner or operator installs an internal floating roof and, at initial startup, chooses to comply with 40 CFR part 65, subpart C, a report shall be furnished to the Administrator stating that the control equipment meets the specifications of 40 CFR 65.43. This report shall be an attachment to the notification required by 40 CFR 65.5(b).

(4) *External floating roof report*. If an owner or operator installs an external floating roof and, at initial startup, chooses to comply with 40 CFR part 65, subpart C, a report shall be furnished to the

Administrator stating that the control equipment meets the specifications of 40 CFR 65.44. This report shall be an attachment to the notification required by 40 CFR 65.5(b).

[52 FR 11429, Apr. 8, 1987, as amended at 54 FR 32973, Aug. 11, 1989; 65 FR 78275, Dec. 14, 2000; 68 FR 59332, Oct. 15, 2003]

### **§ 60.111b Definitions.**

Terms used in this subpart are defined in the Act, in subpart A of this part, or in this subpart as follows:

*Bulk gasoline plant* means any gasoline distribution facility that has a gasoline throughput less than or equal to 75,700 liters per day. Gasoline throughput shall be the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal requirement or Federal, State or local law, and discoverable by the Administrator and any other person.

*Condensate* means hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature or pressure, or both, and remains liquid at standard conditions.

*Custody transfer* means the transfer of produced petroleum and/or condensate, after processing and/or treatment in the producing operations, from storage vessels or automatic transfer facilities to pipelines or any other forms of transportation.

*Fill* means the introduction of VOL into a storage vessel but not necessarily to complete capacity.

*Gasoline service station* means any site where gasoline is dispensed to motor vehicle fuel tanks from stationary storage tanks.

*Maximum true vapor pressure* means the equilibrium partial pressure exerted by the volatile organic compounds (as defined in 40 CFR 51.100) in the stored VOL at the temperature equal to the highest calendar-month average of the VOL storage temperature for VOL's stored above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for VOL's stored at the ambient temperature, as determined:

- (1) In accordance with methods described in American Petroleum institute Bulletin 2517, Evaporation Loss From External Floating Roof Tanks, (incorporated by reference—see §60.17); or
- (2) As obtained from standard reference texts; or
- (3) As determined by ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17);
- (4) Any other method approved by the Administrator.

*Petroleum* means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

*Petroleum liquids* means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery.

*Process tank* means a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw material. In many process tanks, unit operations such as reactions and blending are conducted. Other process tanks, such as surge control vessels and bottoms receivers, however, may not involve unit operations.

*Reid vapor pressure* means the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquified petroleum gases, as determined by ASTM D323–82 or 94 (incorporated by reference—see §60.17).

*Storage vessel* means each tank, reservoir, or container used for the storage of volatile organic liquids but does not include:

- (1) Frames, housing, auxiliary supports, or other components that are not directly involved in the containment of liquids or vapors;

- (2) Subsurface caverns or porous rock reservoirs; or
- (3) Process tanks.

*Volatile organic liquid (VOL)* means any organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere.

*Waste* means any liquid resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, or biologically treated prior to being discarded or recycled.

[52 FR 11429, Apr. 8, 1987, as amended at 54 FR 32973, Aug. 11, 1989; 65 FR 61756, Oct. 17, 2000; 68 FR 59333, Oct. 15, 2003]

**§ 60.112b Standard for volatile organic compounds (VOC).**

(a) The owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m<sup>3</sup> containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m<sup>3</sup> but less than 151 m<sup>3</sup> containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa, shall equip each storage vessel with one of the following:

(1) A fixed roof in combination with an internal floating roof meeting the following specifications:

(i) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.

(ii) Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:

(A) A foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means a foam- or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.

(B) Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.

(C) A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

(iii) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.

(iv) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.

(v) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

(vi) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.

(vii) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.

(viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(ix) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

#### **§ 60.113b Testing and procedures.**

The owner or operator of each storage vessel as specified in §60.112b(a) shall meet the requirements of paragraph (a), (b), or (c) of this section. The applicable paragraph for a particular storage vessel depends on the control equipment installed to meet the requirements of §60.112b.

(a) After installing the control equipment required to meet §60.112b(a)(1) (permanently affixed roof and internal floating roof), each owner or operator shall:

(1) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

(2) For Vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in §60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

(3) For vessels equipped with a double-seal system as specified in §60.112b(a)(1)(ii)(B):

(i) Visually inspect the vessel as specified in paragraph (a)(4) of this section at least every 5 years; or

(ii) Visually inspect the vessel as specified in paragraph (a)(2) of this section.

(4) Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraphs (a)(2) and (a)(3)(ii) of this section and at intervals no greater than 5 years in the case of vessels specified in paragraph (a)(3)(i) of this section.

(5) Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present. If the inspection required by paragraph (a)(4) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.

### **§ 60.115b Reporting and recordkeeping requirements.**

The owner or operator of each storage vessel as specified in §60.112b(a) shall keep records and furnish reports as required by paragraphs (a), (b), or (c) of this section depending upon the control equipment installed to meet the requirements of §60.112b. The owner or operator shall keep copies of all reports and records required by this section, except for the record required by (c)(1), for at least 2 years. The record required by (c)(1) will be kept for the life of the control equipment.

(a) After installing control equipment in accordance with §60.112b(a)(1) (fixed roof and internal floating roof), the owner or operator shall meet the following requirements.

(1) Furnish the Administrator with a report that describes the control equipment and certifies that the control equipment meets the specifications of §60.112b(a)(1) and §60.113b(a)(1). This report shall be an attachment to the notification required by §60.7(a)(3).

(2) Keep a record of each inspection performed as required by §60.113b (a)(1), (a)(2), (a)(3), and (a)(4). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

(3) If any of the conditions described in §60.113b(a)(2) are detected during the annual visual inspection required by §60.113b(a)(2), a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.

(4) After each inspection required by §60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in §60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of §60.112b(a)(1) or §60.113b(a)(3) and list each repair made.

### **§ 60.116b Monitoring of operations.**

(a) The owner or operator shall keep copies of all records required by this section, except for the record required by paragraph (b) of this section, for at least 2 years. The record required by paragraph (b) of this section will be kept for the life of the source.

(b) The owner or operator of each storage vessel as specified in §60.110b(a) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

(c) Except as provided in paragraphs (f) and (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m<sup>3</sup> storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa or with a design capacity greater than or equal to 75 m<sup>3</sup> but less than 151 m<sup>3</sup> storing a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa shall maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

(d) Except as provided in paragraph (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m<sup>3</sup> storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa or with a design capacity greater than or equal to 75 m<sup>3</sup> but less than 151 m<sup>3</sup> storing a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range.

(e) Available data on the storage temperature may be used to determine the maximum true vapor pressure as determined below.

(1) For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

(2) For crude oil or refined petroleum products the vapor pressure may be obtained by the following:

(i) Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum true vapor pressure from nomographs contained in API Bulletin 2517 (incorporated by reference—see §60.17), unless the Administrator specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s).

(ii) The true vapor pressure of each type of crude oil with a Reid vapor pressure less than 13.8 kPa or with physical properties that preclude determination by the recommended method is to be determined from available data and recorded if the estimated maximum true vapor pressure is greater than 3.5 kPa.

(3) For other liquids, the vapor pressure:

(i) May be obtained from standard reference texts, or

(ii) Determined by ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17); or

(iii) Measured by an appropriate method approved by the Administrator; or

(iv) Calculated by an appropriate method approved by the Administrator.

[52 FR 11429, Apr. 8, 1987, as amended at 65 FR 61756, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000; 68 FR 59333, Oct. 15, 2003]

**§ 60.117b Delegation of authority.**

(a) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: §§60.111b(f)(4), 60.114b, 60.116b(e)(3)(iii), 60.116b(e)(3)(iv), and 60.116b(f)(2)(iii).

[52 FR 11429, Apr. 8, 1987, as amended at 52 FR 22780, June 16, 1987]

## SECTION E.4 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

- (n) One (1) diesel fire pump, identified as EU038, approved for construction in 2007, with a maximum power output rate of 300 HP, and exhausting to stack S100.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU038 is considered a new certified National Fire Protection Association (NFPA) fire pump.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.4.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for diesel fire pump EU038, except as otherwise specified in 40 CFR Part 60, Subpart IIII.

- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
Indianapolis, Indiana 46204-2251

#### E.4.2 Standards of Performance for Stationary Compression Ignition Internal Combustion Engines [40 CFR Part 60, Subpart IIII] [326 IAC 12]

Pursuant to 40 CFR Part 60, Subpart IIII, the Permittee shall comply with the provisions of Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which are incorporated by reference as 326 IAC 12, for diesel fire pump EU038 as follows:

#### Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

**Source:** 71 FR 39172, July 11, 2006, unless otherwise noted.

#### § 60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

## **Emission Standards for Owners and Operators**

### **§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?**

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.

### **§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?**

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

## **Fuel Requirements for Owners and Operators**

### **§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?**

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(c) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

## **Other Requirements for Owners and Operators**

### **§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in the previous model year?**

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.

(h) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

**§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?**

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine.

**Compliance Requirements**

**§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?**

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(e) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. For owners and operators of emergency engines meeting standards under §60.4205 but not §60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

**Testing Requirements for Owners and Operators**

**§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a**

**stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?**

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section.

(a) The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F.

(b) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

(c) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \quad (\text{Eq. 1})$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in §60.4213 of this subpart, as appropriate.

(d) Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in §60.4204(a), §60.4205(a), or §60.4205(c), determined from the equation in paragraph (c) of this section.

Where:

STD = The standard specified for that pollutant in §60.4204(a), §60.4205(a), or §60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) may follow the testing procedures specified in §60.4213, as appropriate.

**Notification, Reports, and Records for Owners and Operators**

**§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?**

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

**General Provisions**

**§ 60.4218 What parts of the General Provisions apply to me?**

Table 8 to this subpart shows which parts of the General Provisions in §§60.1 through 60.19 apply to you.

## Definitions

### § 60.4219 What definitions apply to this subpart?

As used in this subpart, all terms not defined herein shall have the meaning given them in the CAA and in subpart A of this part.

*Combustion turbine* means all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), and any ancillary components and sub-components comprising any simple cycle combustion turbine, any regenerative/recuperative cycle combustion turbine, the combustion turbine portion of any cogeneration cycle combustion system, or the combustion turbine portion of any combined cycle steam/electric generating system.

*Compression ignition* means relating to a type of stationary internal combustion engine that is not a spark ignition engine.

*Diesel fuel* means any liquid obtained from the distillation of petroleum with a boiling point of approximately 150 to 360 degrees Celsius. One commonly used form is number 2 distillate oil.

*Diesel particulate filter* means an emission control technology that reduces PM emissions by trapping the particles in a flow filter substrate and periodically removes the collected particles by either physical action or by oxidizing (burning off) the particles in a process called regeneration.

*Emergency stationary internal combustion engine* means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

*Engine manufacturer* means the manufacturer of the engine. See the definition of “manufacturer” in this section.

*Fire pump engine* means an emergency stationary internal combustion engine certified to NFPA requirements that is used to provide power to pump water for fire suppression or protection.

*Manufacturer* has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures a stationary engine for sale in the United States or otherwise introduces a new stationary engine into commerce in the United States. This includes importers who import stationary engines for sale or resale.

*Maximum engine power* means maximum engine power as defined in 40 CFR 1039.801.

*Model year* means either:

- (1) The calendar year in which the engine was originally produced, or
- (2) The annual new model production period of the engine manufacturer if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For an engine that is converted to a stationary engine after being placed into service as a nonroad or other non-stationary engine, model year means the calendar year or new model production period in which the engine was originally produced.

*Other internal combustion engine* means any internal combustion engine, except combustion turbines, which is not a reciprocating internal combustion engine or rotary internal combustion engine.

*Reciprocating internal combustion engine* means any internal combustion engine which uses

reciprocating motion to convert heat energy into mechanical work.

*Rotary internal combustion engine* means any internal combustion engine which uses rotary motion to convert heat energy into mechanical work.

*Spark ignition* means relating to a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation. Dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for CI and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines.

*Stationary internal combustion engine* means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines.

*Subpart* means 40 CFR part 60, subpart IIII.

*Useful life* means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. The values for useful life for stationary CI ICE with a displacement of less than 10 liters per cylinder are given in 40 CFR 1039.101(g). The values for useful life for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder are given in 40 CFR 94.9(a).

**Tables to Subpart IIII of Part 60**

**Table 1 to Subpart IIII of Part 60. Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007-2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder [As stated in §§ 60.4201(b), 60.4202(b), 60.4204(a), and 60.4205(a), you must comply with the following emission standards]**

Maximum engine power	Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder and 2007-2010 model year engines >2,237 KW (3,000 HP) and with a displacement of <10 liters per cylinder in g/KW-hr (g/HP-hr)				
	NMHC + NOX	HC	NOX	CO	PM
KW<8 (HP<11).....	10.5 (7.8)		8.0 (6.0)	1.0 (0.75)	
8[le]KW<19 (11[le]HP<25).....	9.5 (7.1)		6.6 (4.9)	0.80 (0.60)	
19[le]KW<37 (25[le]HP<50).....	9.5 (7.1)		5.5 (4.1)	0.80 (0.60)	
37[le]KW<56 (50[le]HP<75).....		9.2 (6.9)			
56[le]KW<75 (75[le]HP<100).....		9.2 (6.9)			
75[le]KW<130 (100[le]HP<175).....		9.2 (6.9)			
130[le]KW<225 (175[le]HP<300).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	
225[le]KW<450 (300[le]HP<600).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	
450[le]KW[le]560 (600[le]HP[le]750).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	0.54 (0.40)
KW>560 (HP>750).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	

**Table 5 to Subpart IIII of Part 60. Labeling and Recordkeeping Requirements for New Stationary Emergency Engines [You must comply with the labeling requirements in § 60.4210(f) and the recordkeeping requirements in § 60.4214(b) for new emergency stationary CI ICE beginning in the following model years:]**

Engine power	Starting model year
19[le]KW<56 (25[le]HP<75).....	2013
56[le]KW<130 (75[le]HP<175).....	2012

KW>=130 (HP>=175).....

2011

**Table 8 to Subpart IIII of Part 60. Applicability of General Provisions to Subpart IIII  
 [As stated in § 60.4218, you must comply with the following applicable General Provisions:]**

General Provisions	citation	Subject of citation	Applies to subpart	Explanation
§ 60.1		General applicability of the General Provisions.	Yes	
§ 60.2		Definitions	Yes	Additional terms defined in § 60.4219.
§ 60.3		Units and abbreviations	Yes	
§ 60.4		Address	Yes	
§ 60.5		Determination of construction or modification.	Yes	
§ 60.6		Review of plans	Yes	
§ 60.7		Notification and Recordkeeping.	Yes	Except that § 60.7 only applies as specified in § 60.4214(a).
§ 60.8		Performance tests	Yes	Except that § 60.8 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder and engines that are not certified.
§ 60.9		Availability of information.	Yes	
§ 60.10		State Authority	Yes	
§ 60.11		Compliance with standards and maintenance requirements.	No	Requirements are specified in subpart IIII.
§ 60.12		Circumvention	Yes	
§ 60.13		Monitoring requirements	Yes	Except that § 60.13 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder.
§ 60.14		Modification	Yes	
§ 60.15		Reconstruction	Yes	
§ 60.16		Priority list	Yes	
§ 60.17		Incorporations by reference.	Yes	
§ 60.18		General control device requirements.	No	
§ 60.19		General notification and reporting requirements.	Yes	

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
CERTIFICATION**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033

**This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.**

Please check what document is being certified:

- Annual Compliance Certification Letter
- Test Result (specify)\_\_\_\_\_
- Report (specify)\_\_\_\_\_
- Notification (specify)\_\_\_\_\_
- Affidavit (specify)\_\_\_\_\_
- Other (specify)\_\_\_\_\_

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE BRANCH  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251  
Phone: 317-233-0178  
Fax: 317-233-6865**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
EMERGENCY OCCURRENCE REPORT**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033

**This form consists of 2 pages**

**Page 1 of 2**

- This is an emergency as defined in 326 IAC 2-7-1(12)
- The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and
  - The Permittee must submit notice in writing or by facsimile within two (2) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-7-16

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

**Page 2 of 2**

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency?    Y    N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO <sub>2</sub> , VOC, NO <sub>x</sub> , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed By: \_\_\_\_\_

Title/Position: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

A certification is not required for this report.

## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF AIR QUALITY COMPLIANCE DATA SECTION

### FESOP Quarterly Report

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: Grain Receiving and Handling  
Parameter: The amount of corn received  
Limit: Less than 1,100,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: DDGS Dryers EU029-EU032  
Parameter: The amount of DDGS Produced  
Limit: Less than 356,880 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: Ethanol Loading Rack EU037  
Parameter: Denatured Ethanol Loadout  
Limit: Less than 110 MMgal per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: Diesel Generator EU038  
Parameter: Operating Hours  
Limit: Less than 50 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: Ethanol Loadout Flare C50  
Parameter: Operating Hours  
Limit: Less than 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033  
Facility: Biomethanator Flare CE15  
Parameter: Operating Hours  
Limit: Less than 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Indiana Bio-Energy  
Source Address: 1469 South Adams Street, Bluffton, IN 46714  
Mailing Address: P.O. Box 297, Bluffton, IN 46714  
FESOP Permit No.: 179-23641-00033

Months: \_\_\_\_\_ to \_\_\_\_\_ Year: \_\_\_\_\_

Page 1 of 2

<p>This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked <b>NO deviations occurred this reporting period</b>.</p>	
<input type="checkbox"/> NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
<input type="checkbox"/> THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

Form Completed By: \_\_\_\_\_

Title/Position: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

Mail to: Permit Administration & Development Section  
Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251

Indiana Bio-Energy, LLC  
P.O. Box 297  
Bluffton, IN 46714

Affidavit of Construction

I, \_\_\_\_\_, being duly sworn upon my oath, depose and say:  
(Name of the Authorized Representative)

1. I live in \_\_\_\_\_ 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 \_\_\_\_\_ for \_\_\_\_\_.  
(Title) (Company Name)
3. By virtue of my position with \_\_\_\_\_, I have personal  
(Company Name)  
knowledge of the representations contained in this affidavit and am authorized to make  
these representations on behalf of \_\_\_\_\_.  
(Company Name)
4. I hereby certify that Indiana Bio-Energy, LLC, located at 1469 South Adams Street, Bluffton, Indiana 46714, completed construction of the an ethanol production plant on \_\_\_\_\_ in conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on September 13, 2006 and as permitted pursuant to New Source Construction Permit and Federally Enforceable Operating Permit No. F179-23641-00033, Plant ID No. 179-00033 issued on \_\_\_\_\_.

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 \_\_\_\_\_

Date \_\_\_\_\_

STATE OF INDIANA)  
)SS

COUNTY OF \_\_\_\_\_ )

Subscribed and sworn to me, a notary public in and for \_\_\_\_\_ County and State of  
Indiana on this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

My Commission expires:

Signature \_\_\_\_\_

\_\_\_\_\_  
Name (typed or printed)

# Indiana Department of Environmental Management Office of Air Quality

## Addendum to the Technical Support Document For a New Construction Federally Enforceable State Operating Permit (FESOP)

### Source Background and Description

Source Name: Indiana Bio-Energy, LLC  
Source Location: 1469 South Adams Street, Bluffton, Indiana 46714  
County: Wells  
SIC Code: 2869  
Operation Permit No.: F179-23641-00033  
Permit Reviewer: ERG/MP

On December 15, 2006, the Office of Air Quality (OAQ) had a notice published in the Bluffton News Banner of Bluffton, Indiana, and on January 31, 2007, due to administrative problems, OAQ had a second notice published in the Bluffton News Banner of Bluffton, Indiana. Both notices stated that Indiana Bio-Energy, LLC (Indiana Bio-Energy) had applied for a Federally Enforceable State Operating Permit (FESOP) to operate an ethanol manufacturing facility with control. The notices also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notices informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Comments on the draft permit were submitted by the U.S. EPA and Charles L. Berger of Berger & Berger LLP (attorneys and counselors at law on behalf of Travis Andrews and Kevin Caccamo). Changes made as a result of these comments are shown throughout this addendum. New language is in **bold** while deleted language is in ~~strikeout~~. The Table of Contents has been updated as necessary.

### U.S. EPA Comments

On January 12, 2007, Ethan Chatfield of the U.S. EPA submitted comments on the proposed permit. The summary of the comments is as follows:

#### **Comment 1:**

Mr. Chatfield noted that a recently permitted facility (Premier Ethanol in Portland, Indiana) obtained a state BACT determination in September 2006 that included controlling both the fermentation and distillation processes using both a scrubber and a thermal oxidizer, and required a capture and control efficiency of 99%. Mr. Chatfield also requested an explanation as to why this BACT limitation/control determination was not considered BACT for Indiana Bio-Energy. In addition, he noted that BACT for the fermentation/distillation process combined for Indiana Bio-Energy was 16.33 lbs/hr, compared to Premier Ethanol's permitted VOC limit for these units of 10.5 lbs/hr.

### **Response to Comment 1:**

BACT limitations do not necessarily reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level. There are several reasons why the permitting authority might choose to do this. One reason is that the control efficiency achievable through the use of the technology may fluctuate, so that it would not always achieve its optimal control efficiency. In that case, setting the emission limitation to reflect the highest control efficiency would make violations of the permit unavoidable. To account for this possibility, a permitting authority must be allowed a certain degree of discretion to set the emission limitation at a level that does not necessarily reflect the highest possible control efficiency, but will allow the Permittee to achieve compliance consistently. While we recognize that 99% may be achievable as an average during testing, IDEM allows for sources to include a safety factor, or margin of error, to allow for minor variations in the operation of the emission units and the control device. This practice has been upheld by the EPA Environmental Appeals Board. See *In re Pennsauken County, New Jersey Resource Recovery Facility*, PSD Appeal No. 88-8, at 5 (Adm'r, Apr. 20, 1989) (Order Denying Review). Also see *In re Masonite Corporation*, PSD Appeal No. 94-1, at 560 (Adm'r, Nov. 1, 1994) (Order Denying Review in Part and Remanding in Part).

The difference in the lbs/hr limit is due to differences in plant design, most notably that the Indiana Bio-Energy facility is much larger, designed to produce 110,000,000 gallons per year of denatured ethanol compared to 69,000,000 gallons per year of denatured ethanol for the Premier facility. Also, the Premier facility is controlling their fermentation and distillation operations by a scrubber followed by a thermal oxidizer, and the thermal oxidizer also controls the DDGS dryers. The fermentation operations at Indiana Bio-Energy are controlled by a dedicated scrubber, whereas the distillation operations and DDGS dryers are controlled by the thermal oxidizer.

### **Berger & Berger LLP Comments**

On January 12, 2007 and on March 1, 2007, Charles L. Berger of Berger and Berger, LLP (referred to as the "Commenter" in this section) submitted comments on the proposed FESOP. The summary of the comments is as follows:

#### **Comment 1:**

The commenter stated that particulate matter emissions exceed the major source threshold for the following reasons regarding fugitive dust from roads:

- (a) Paved roads within the facility are a source of PM and PM10 emissions. The permit does not limit emissions from these roads. Thus, the permit does not limit the potential to emit PM and PM10 from paved haul roads. The permit must contain emission limits based on the PTE used in the TSD.

The draft Permit and TSD do not appropriately estimate and limit PM and PM10 emissions from paved haul roads. The TSD summary chart estimated that 22.9 tpy of PM and 4.46 tpy of PM10 will be emitted from truck travel over paved roads within the Bio-Energy plant. The draft permit does not contain any emission limits for these sources or other conditions to assure that emissions remain below those assumed in the potential to emit calculation. The draft permit violates 326 IAC 2-8-4 because it fails to include these emission limits.

- (b) The detailed calculations show the PTE for fugitive emissions from the paved roads as 37.1 tpy for PM and 7.2 tpy for PM10. However, in the summation of the PTE, the PTE for fugitive emissions from paved roads as 22.9 tpy for PM and 4.46 tpy for PM10. No explanation is given for this discrepancy leading to the conclusion that the wrong number was transcribed from the detailed calculation to the summary chart. If the correct PM PTE figure is used for the fugitive emissions from the paved roads, the major source

threshold is exceeded, subjecting this facility to Title V and PSD requirements for all criteria pollutants.

- (c) The TSD claims that it based the number of trips per year and round trip distance used in calculating the fugitive emissions from paved roads from the source, *i.e.* the applicant. The applicant provided a roundtrip distance of 1 mile based on 0.5 miles in and 0.5 miles out. Unfortunately, the application does not provide page numbers on this page. However, on that same page, the application states that the load size for wet DGS is 25 tons and the amount per year is 914,350. This comes to 36,574 round trips per year. The TSD, however, only assumed 18,287 trips per year for the wet DGS loadout. If the correct number of trips provided by the applicant is used, this would increase the PM PTE for the fugitives from the wet DGS loadout to 17.37 tpy for PM and 3.47 tpy for PM10. This would increase, considering the correction discussed above, the PTE to 111.44 tpy, which is again above the major source threshold for PSD and Title V. This would also increase the PM10 PTE by another 1.77 tpy.
- (d) The silt loading value used in the emission calculations for paved roads was not appropriate and results in an underestimate of the fugitive PM10 emissions. The commenter provided the following arguments:
- (1) Particulate emissions from paved roads vary with the amount of silt on the road surface, referred to as "silt loading." The silt content value used in the TSD (0.6 g/m<sup>2</sup>) is the default silt loading for typical urban roadways. However, the paved roads of interest here are within the boundary of an industrial site and thus are industrial roadways. Silt loading values of industrial roads are much higher and are reported elsewhere in the same chapter of AP-42. These higher silt loading values for industrial roadways, which range from 7.4 to 292 g/m<sup>2</sup>, would result in much higher PM and PM10 emissions from haul roads than assumed in the TSD (see AP-42 Sec. 13.2.1, Table 13.2.1-4 (11/06)).
- (2) Indiana Regulations prohibit the use of the 0.6 g/m<sup>2</sup> value. 326 IAC 6-5-1(d)(1) mandates that "Emission factor equations listed in supplements 11.2.1, 11.2.3, and 11.2.6 of the May 1983 edition and no later amendments of "Compilation of Air Pollutant Factors" (AP-42) shall be used to determine potential emissions for unpaved roads, aggregate handling and storage piles, and paved roads, respectively." The Indiana Regulations go on to provide that: "Where a range of values is available for a source or process as referenced in subdivisions (1) and (2), the mid-value of the range shall be used." According to Section 11.2.6 of the May 1983 version of AP-42,  $E = 0.86 (0.090)^{1(4/2)} (5.9/10) (2,700/1,000) (27.5/3)^{0.7} = 1.16 \text{ lb/vmt}$ . This is based on the conservative assumption that the traffic entering the facility is not entering from an unpaved area and that there is not an unpaved shoulder. If either of these was true, the emission factor would be much higher. The calculation is also based on the conservative assumption that there are only two travel lanes. At 1.16 lb/vmt, and using the VMT in the TSD (which as explained above is substantially incorrect), that would yield 45.06 tpy from the paved roads. Using this PTE, the total for the facility is over 110 tpy, which is over the major source threshold for PSD and Title V. Even if 326 IAC 6-5 did not mandate that IDEM cannot use the methodology it did, which it does, the TSD's use of the 0.6 g/m<sup>2</sup> silt loading would still be incorrect. To begin with, the TSD explains that it is using the 12/03 version of AP-42. However, the current version of AP-42 relative to fugitive emissions from paved roads is the November 2006 version.<sup>1</sup> There is no rational reason for IDEM to use the outdated version.
- (3) The current version explains that even for paved roads, the silt loading in the winter has to have a multiplier of 4 so that it becomes 2.4 g/m<sup>2</sup>. In addition, there is a temporary adjustment factor for each application of antiskid abrasive. The

<sup>1</sup> See <http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf>.

TSD calculations did not use the winter multiplier for winter emissions nor the adjustment factor for application of antiskid abrasive.

- (4) Minnesota, which has a long history with ethanol plants, has investigated silt loading. Measurements made at the ADM-Marshall ethanol facility in the summer of 2001 found silt loadings ranging from 0.76 to 2.93 g/m<sup>2</sup> with no road cleaning. Measurements made at the same facility in the summer of 2003 with road cleaning found silt loadings of 0.70 to 0.72 g/m<sup>2</sup>. The cleaning methods used at this ADM facility include daily road sweeping, vacuuming and washing, and truck speeds limited to 5 miles per hour, none of which are required in the draft permit.<sup>2</sup>

In spite of these measurements, the Minnesota Pollution Control Agency (MPCA) requires the use of 10.0 g/m<sup>2</sup> as the default silt loading for Title V permits. MPCA also requires "good documentation for proposed silt loading values" and expects companies to do "extensive" on-site testing/cleaning or to use the silt loadings for industrial facilities in AP-42, Table 13.2.1-4, as noted above. Minnesota permits require sweeping, vacuuming or washing and testing for silt loading.

- (5) Similarly, Nebraska, another state with a long history of permitting ethanol plants, requires the use of a silt loading of 3 g/m<sup>2</sup>, unless site-specific test data are provided.<sup>3</sup> Using the Nebraska default silt content of 3 g/m<sup>2</sup>, the PM and PM10 PTE from Bio-Energy haul roads, coupled with the other PM and PM10 PTE, would make Bio-Energy a major source. The increases would be even greater if Bio-Energy used the MPCA Title V default of 10 g/m<sup>2</sup>. We believe this higher default is appropriate as Bio-Energy has failed to supply any documented site-specific silt loadings.

#### Response to Comment 1:

IDEM agrees with the commenter that the calculation worksheet for paved roads does not match the summary sheet presenting facility-wide emissions. Based on other comments received on the draft permit, the fugitive emissions calculations for paved roads have been updated and are included in Appendix A of the TSD Addendum. In addition, emissions estimates for unpaved roads have also been addressed and are included in Appendix A of the TSD Addendum.

IDEM agrees with the commenter that the calculations for paved road fugitives included with the draft permit did not reflect the correct number of trips for WDGS loadout. Therefore, the fugitive emissions calculations for paved roads have been updated to reflect 36,574 round trips per year for WDGS loadout and are included in Appendix A of the TSD Addendum.

326 IAC 6-5-1(d) applies to sources subject to 326 IAC 6-5. As noted in the TSD, Indiana Bio-Energy is not subject to this rule. Pursuant to 326 IAC 6-5-1(d)(4), sources may petition the commissioner to use emission factors other than those referenced in to 326 IAC 6-5-1(d)(1). IDEM feels that granting such a petition in this case is warranted as the applicable AP-42 Section was updated in November of 2006.

IDEM agrees with the commenter that the emission factor from paved roads should reflect the "Winter Baseline Multiplier" found in Table 13.2.1-3 of Section 13.2. Updated emissions estimates reflecting the winter multiplier for paved roads are included in Appendix A of the TSD Addendum. No adjustment was made to the emission factor to account for the application of antiskid abrasive. As AP-42 indicates, this factor is only to be considered a "temporary" adjustment for each application of such material. Therefore, IDEM considers any increase in PM and PM10 emissions from such activities to be negligible.

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<sup>2</sup> Air Modeling - Training, Minnesota Air, Water, and Waste Environmental Conference, February 14, 2006.

<sup>3</sup> ADM Corn Processing, Columbus, Nebraska, Truck Traffic Fugitive Control Strategy and Monitoring Plan, ADM Haul Roads, January 10, 2006.

IDEM, OAQ has evaluated the silt loading value used in the emission calculations and investigated the claims made by the commenter with regard to the calculations included in the permit. IDEM, OAQ agrees with the commenter that there is a range of silt loading values presented in Chapter 13 of AP-42. Public paved road silt loadings are dependent upon: traffic characteristics (speed, ADT, and fraction of heavy vehicles); road characteristics (curbs, number of lanes, parking lanes); local land use (agriculture, new residential construction) and regional/seasonal factors (snow/ice controls, wind blown dust). However, based on IDEM's evaluation, the default silt loading number of 0.6 grams per square meter value is consistent with the ranges prescribed in AP-42 for paved roads at this type of industrial facility. According to AP-42, Table 13.2.1-3, the default silt loading number is 0.6 g/m<sup>2</sup> for sites that have average daily traffic less than 500 vehicles per day. The averaged traffic at the proposed ethanol production plant will be about 302 vehicles per day. Furthermore, the types of trucks traveling onto Indiana Bio-Energy property are not expected to be carrying in mud and dirt from unpaved roads because these trucks are traveling onto Indiana Bio-Energy's site location from paved roads. Nevertheless, IDEM, OAQ reserves the right to collect site-specific silt loading data if IDEM determines that there is a problem with heavy silt.

Based on the revised calculations, the total PM/PM10 emissions from this facility remain less than 100 tons/yr as shown in Appendix A of the TSD Addendum.

Concerning the comment regarding limiting the number of trucks, the weight of trucks, the distance trucks travel, and silt content, IDEM, OAQ believes it is unnecessary to limit all emission units where sourcewide emissions are already below major source thresholds due to limitations imposed on other emission units at the source.

No changes were made to the permit as the result of this comment.

#### **Comment 2:**

The commenter stated that particulate matter emissions may exceed the major source threshold for the following reasons regarding grain receiving emissions:

- (a) The commenter stated that particulate matter emissions exceed the major source threshold as the draft permit is based upon an incorrect calculation of grain receiving fugitive emissions. The commenter believes that the PM and PM10 grain receiving fugitive emissions were calculated incorrectly because IDEM assumes in the draft permit that the grain receiving fugitive PM and PM10 will be reduced by 95% but provides no means for this control.
- (b) The TSD claims that the 95% control reflects that PM and PM10 emissions will be captured and controlled through the Grain Unloading baghouse C20. However, this sentence does not tell us what is doing the capture and neither the draft permit, TSD and application provide any information about any device that performs this capture. Other recent applicants, such as Ultimate Ethanol, have claimed there was a dump shed that captured some of these fugitive emissions. However, Bio-Energy does not claim that there is a dump shed and more importantly the draft permit does not require it. In addition, even if there was a dump shed, there is no basis to believe that it would capture 95% of the fugitives. In fact, Ultimate Ethanol only claimed that their dump shed only captured 80% of the fugitive emissions.
- (c) The PM10 and PM PTE emission calculations from the grain receiving and handling baghouses must include a safety factor and cannot be solely based on emission rates determined for properly functioning baghouses because they frequently malfunction and/or the bags become torn, which allows excess emissions from the control device outlet. The commenter provides references<sup>4</sup> of industry personnel, environmental control

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<sup>4</sup> D. Wallace and V. Ramanathan, Review of Compliance Monitoring Programs with Respect to Grain Elevators, U.S. Environmental Protection Agency Contract No. 68-01-4139, WA 14, US. Environmental

officials, and equipment vendors that indicate there is evidence that operating problems may result in significant periods during which the control equipment is shut down or operating inefficiently. Absent a demonstration that the 99% control from the grain receiving and handling baghouses is achievable and enforceable at all times, the potential to emit calculations should be based on the maximum potential emissions or the permit should be appropriately restricted.

### Response to Comment 2:

The facility has proposed to use a choked flow system during grain unloading to capture fugitive emissions. Therefore, IDEM, OAQ has revised the permit to require the use of a choked flow system during grain unloading. Furthermore, the capture efficiency is based on manufacturer design specifications of the baghouse system. With regard to the expected emission reductions for the grain receiving fugitive PM and PM10, IDEM, OAQ believes that the permit does effectively limit fugitive PM and PM10 emissions from the grain receiving area by means of a grain throughput limit. The fugitive emissions are directly correlated to the throughput which is limited in the permit, and the Permittee is required to keep monthly records of this throughput. Provided the source complies with the throughput limit and uses the choked flow system, it is expected that the grain receiving baghouse (C20) will capture 95% of the PM and PM10 emissions from the grain receiving process; therefore only 5% of the PM and PM10 emissions from the grain receiving operations are considered fugitive emissions. The limited potential to emit fugitive PM and PM10 emissions from the grain handling processes is calculated based on the capture efficiency of the choked flow process.

In regards to the commenter's concern that the grain receiving and handling emission calculations must include a safety factor, the baghouse monitoring requirements included in the permit ensures that baghouse malfunctions are minimized. These monitoring requirements include pressure drop readings and visible emission observations. The Permittee is required to take reasonable response steps when a compliance monitoring parameter is determined to be out of range or abnormal under Condition C.15 - Response to Excursions or Exceedances. This condition ensures that the control equipment is returned to proper operation as soon as practicable, while still allowing the Permittee the flexibility to respond to situations that were not anticipated. The Permittee is also required to prepare and implement Preventative Maintenance plans for the baghouse. These requirements ensure continuous compliance with the emission limitations.

The following changes were made to the permit as the result of this comment:

#### D.1.4 PM and PM10 Emissions [326 IAC 2-2] [326 IAC 2-8-4]

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Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the grain receiving and DDGS handling operations:

...

**(e) The Permittee shall use a choked flow system during grain receiving and handling.**

### Comment 3:

The commenter contended that VOC emissions exceed the major source threshold, the permit does not include sufficient short term, specific emission limits for VOC emission sources, and that, therefore, the source must apply for and receive an Emission Offset and Title V operating permit prior to construction. The commenter provided the following support for their conclusions:

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Protection Agency, Research Triangle Park, NC, 1980, pp. 15-16; in: A. Buonicore and W. Davis (eds.), Air Pollution Control Manual, Grain Handling and Processing, Van Nostrand Reynold, New York, NY, 1992, pp. 517-528.

- (a) The draft permit and TSD inappropriately calculate loading losses from ethanol loading. To show that VOC emissions from loading losses will remain under major source thresholds, the draft permit depends upon the TSD calculations for trucks and railcars which are based on AP-42, Chapter 5.2. In AP-42, EPA clearly states that the formula used in the TSD, App. A, p. 9, has a probable error rate of +/- 30% (AP-42, 5.2-4). Potential to emit must be based on the maximum emissions. Thus, the TSD should account for the 30% error rate by assuming that the emission factor is 30% higher than the factor resulting from the AP-42 equation. Using an emission factor of 4.98 lbs/kgal,<sup>5</sup> potential to emit VOC after the given throughput limit of 110,000 kgal/yr and 98% control is 5.48 tpy.<sup>6</sup> This correction of 1.26 tpy (5.48 – 4.22) would make the facility a major source of VOC because its PTE was already calculated as 99.4 tpy.

This revised calculation in the preceding paragraph reduces VOC loading losses by a 98% control efficiency, consistent with the TSD calculation. AP-42, however, clearly states that this control efficiency is too high.

Control efficiencies for the recovery units range from 90 to over 99 percent, depending on both the nature of the vapors and the type of control equipment used. However, only 70 to 90 percent of the displaced vapors reach the control device, because of leakage from both the tank truck and collection system. The collection efficiency should be assumed to be 90 percent for tanker trucks required to pass an annual leak test. Otherwise, 70 percent should be assumed.

The draft permit does not require the trucks that will be used at the Bio-Energy facility to pass an annual leak test so a 70% control efficiency should be used. In other words, the flare itself may be able to reduce by 98% the VOCs that reach it, but 100% of VOC emissions from loading losses will not reach the flare. Even using the maximum control efficiency in AP-42 of 90% increases controlled VOC emissions from truck loading to 25.74 tpy. This single change increases PTE for VOCs, consistent with all limits in the draft permit, to 119.54 tpy, which is above major source thresholds. Note that even if the emission factor is 3.83 lb/kgal as stated in the TSD, the PTE would still exceed the major source threshold. This change also results in increased HAP PTE because the PTE calculation for HAPs is linked to the HAP fraction of estimated VOC emissions.

- (b) The application and TSD also completely ignore VOC emissions from evaporation of disconnection spillages from the ethanol loading rack. Other agency engineering analyses comparable to IDEM's TSD for ethanol facilities include VOC emissions during disconnection spillages in their PTE calculations.<sup>7</sup> IDEM and the applicant have provided no justification for ignoring this source of VOCs for this facility, especially in light of the fact that the TSD calculates a PTE that is 0.6 tpy below the major source threshold.
- (c) The facility will receive 5,500,000 gallons of denaturant, which is gasoline, per year. However, the PTE does not consider VOC emissions from unloading loss and evaporation of disconnection spills from this gasoline. The unloading loss from this gasoline is uncontrolled. Even if the unloading loss from this gasoline is at a rate that is an order of magnitude less than the loading loss from the ethanol incorrectly assumed in the TSD, the facility would still be over the major source threshold.
- (d) The draft permit and TSD also incorrectly calculate VOCs from equipment leaks. The permit limits VOC emissions from these components using the New Source Performance Standards leak detection and repair provisions in 40 CFR § 60, Subpart VV. Compliance with 40 CFR § 60, Subpart VV relies in part on measuring VOC leaks using EPA Method

<sup>5</sup> The reported emission factor is 3.83 lbs/kgal, TSD, App. A, p. 8. Increasing this rate by 30% yields a factor of lbs/kgal (3.83 x 1.3 = 4.979).

<sup>6</sup> PTE of VOC = 4.68 lbs/kgal x 110,000 kgal/yr \* 1ton/2000 lbs x 1-.98 = 5.478 tpy

21 using a portable hydrocarbon detection instrument. The most commonly used instruments, a flame ionization detector ("FID") or a photoionization detector ("PID") significantly underestimate the types of oxygenated organics that are present in VOC emissions from ethanol plants.<sup>8</sup> Thus the permit does not effectively limit VOC emissions from equipment leaks.

### Response to Comment 3:

The trucks receiving ethanol from Indiana Bio-Energy are managed and owned by different companies. In estimating emissions from ethanol loadout, these trucks are conservatively assumed to have carried gasoline prior to filling with denatured ethanol. Therefore, pursuant to 326 IAC 8-4-9, the owners/operators of the trucks being loaded with ethanol are required to perform an annual pressure decay or leak test. Additionally, the loadout flares are required to operate when the loading racks are in operation and there is a requirement in the permit that prohibits the use of vapor balancing services. Furthermore, according to manufacturing specifications, the flares are expected to achieve 100% destruction efficiency.

As shown in the summary of Appendix A of the TSD Addendum, IDEM, OAQ provides for a safety factor of 1 ton per year of VOC emissions (listed under "other insignificant activities"). IDEM, OAQ feels it is reasonable to consider VOC emissions from evaporation of disconnection spillages from the ethanol loading rack as part of these "other insignificant activities"; therefore, these emissions are accounted for in the sourcewide potential to emit.

Emissions for loading denaturant into the denaturant tank are accounted for in the calculations provided by the applicant using EPA TANKS 4.0.9d software. The potential to emit VOC from the denaturant storage tank is estimated to be 1.20 tons VOC per year.

IDEM, OAQ disagrees with the commenter that the VOCs from equipment leaks were calculated incorrectly. EPA has established a Leak, Detection and Repair program (LDAR) pursuant to 40 CFR 60, Subpart VV to control VOC emissions and IDEM, OAQ believes the rule provides a reasonable approach to estimate VOC emissions from leaks.

No changes were made to the permit as the result of this comment.

### Comment 4:

An ethanol facility has many sources of fugitive VOC emissions. These include the wet cake storage pile, the DDGS storage pile, the mash screen vent, the process building exhaust fan, treating cooling tower recirculating water, and wastewater treatment. The VOC emissions from some of these sources are high. Other facilities require these emissions to be vented to the thermal oxidizer. The draft permit should be modified to require VOC testing of all potential fugitive sources, any significant VOC sources should be controlled by venting to the thermal oxidizer, and fugitive VOC emissions should be included in the source-wide inventory to demonstrate that emission remain below major source thresholds.

### Response to Comment 4:

IDEM, OAQ agrees that wet cake storage is a source of VOC emissions. Indiana Bio-Energy is capable of producing both DDGS and WDGS; however, the emissions from the DDGS production are considered to be the worst case scenario given that most of the VOCs in the WDGS are driven off in the drying process. Therefore, the PTE of the wet cake storage is not included in the PTE for the entire source. This is consistent with other similar permitted facilities that have

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<sup>7</sup> See e.g. San Joaquin Valley Air Pollution Control District, Authority to Construct – Application Review, 60,000,000 Gallon/Year Ethanol Production Facility, Pacific Ethanol Stockton, LLC, Application Nos. N-7365-1-0 through N-7365-28-0, Project No. 1054197, October 10, 2006.

<sup>8</sup> U.S. Environmental Protection Agency, Response Factors of VOC Calibrated with Methane for Selected Organic Chemicals, Report P881-13619, January .1981.

provided emission estimates for wet cake storage. Emissions from the DDGS storage pile are also expected to be minimal given that VOCs in the WDGS will be driven off in the dryers.

IDEM, OAQ agrees that there may be other sources of minimal VOC emissions, and has included a one (1) ton per year emission estimate for "Insignificant Activities" in the facility-wide emission estimate in order to be conservative with respect to these types of activities.

No changes were made to the permit as the result of this comment.

**Comment 5:**

The commenter argued that the draft permit does not limit NOx emissions to below the major source threshold for the following reasons:

- (a) The TSD assumes NOx emissions from combustion of natural gas in the thermal oxidizer (TO) at a rate of 0.05 lb/MMBtu. The TSD states that the emission rate came from AP-42, Table 1.4-1 and 1.4-2 (AP-42, 03/98). However, AP-42 Table 1.4-1 does not contain emission rates in lb/MMBtu but rather in pounds per million standard cubic feet (lb/MMscf). Table 1.4-1 contains emission factors for a variety of sources, but none of them are TOs. The fact that the TSD did not identify which emission factor in Table 1.4-1 it used is enough to require that the IDEM hold a new public comment period as the public should not be required to guess the basis of IDEM's calculations. It would appear that the TSD is using the emission factor in Table 1.4-1 for small boilers (<100 MMBtu) with Low NOx burners. This emission factor is given as 50 (lb/MMscf). Table 1.4-1, footnote "a" provides that to convert (lb/MMscf) to lb/MMBtu, one divides by 1020. 50/1020 is 0.05 so it appears that this is where the emission factor came from.

There are multiple problems with use of this emission factor. To begin with, this is a thermal oxidizer, not a boiler. Furthermore, each of the TO units is 122 MMBtu/hr. Obviously 122 is larger than 100 so if IDEM was to use AP-42, it would have to use the emission factor for large wall-fired boilers which even when controlled with low NOx burners is 140 (lb/MMscf) which converts to 0.14 lb/MMBtu. At an emission rate of 0.14 lb/MMBtu, the emissions from the 2 TOs would be 149.6 tpy, which is well over the major source threshold. In addition, the draft permit does not describe, much less require, that the TO have low NOx burners. Finally, the emission factor that the TSD apparently uses is rated D, meaning it is unreliable. EPA has explained, repeatedly, that use of AP-42 emission factors to develop source specific emission limits or to determine compliance is not recommended.<sup>9</sup>

- (b) In its application, Bio-Energy did provide actual emissions data from actual TOs at other ethanol facilities. The page is unnumbered but it contains a heading of Emission Test Results at Glacial Lakes Energy in Watertown, S.D. (GLE), Badger State, in WI (BS) and MGP in Lakota, IA. This document shows the emission rate for BS at 0.097 lb/MMBtu and the emission rate for MGP at 0.086 lb/MMBtu. Even using the lower actual emission rate of the MGP facility, this would still put the PTE for Bio-Energy over the major source threshold of 100 tpy.  $(0.086 \text{ lb/MMBtu} * 244 \text{ MMBtu/hr} * 8760 \text{ hr} / 2000 \text{ lb per ton} = 91.90992 \text{ tpy} + 39.4 \text{ tpy (from the dryers)} = 131.3 \text{ tpy}$ .
- (c) The TSD calculates the NOx emissions as 95.7 tpy. However, this calculation does not include any NOx from "insignificant activities." Insignificant activities are defined in the permit application as having emissions of less than 25 lb/day. 25 lb/day translates into 4.6 tpy. The addition of the 4.56 tpy to the total PTE of 95.7 tpy exceeds the major source threshold. The Application indicates that the facility will have at least one space heater, process heater or boiler that is natural gas fired with a heat input of less than 10 MMBtu per hour and at least one fuel oil-fired combustion source with a heat input of less than 2 MMBtu per hour and firing fuel containing less than 0.5 percent sulfur by weight.

<sup>9</sup> See e.g. In the Matter of Cargill, Inc. Petition IV-2003-7 (Amended Order) at 7 n.3 (Oct. 19, 2004).

### Response to Comment 5:

IDEM, OAQ agrees with the commenter that there are no emission factors for thermal oxidizers in AP-42. If these units were boilers, IDEM agrees that it would be more appropriate to use AP-42 emission factors for boilers rated greater than 100 MMBtu/hr. However, these units are not boilers, and it is the responsibility of the applicant to provide IDEM, OAQ with emissions estimates for their facility using the best available information. Indiana Bio-Energy has indicated that NO<sub>x</sub> emission estimates for their thermal oxidizers are based on an emission factor of 0.05 lb/MMBtu. Combined with emissions from the dryers, NO<sub>x</sub> emissions from the thermal oxidizer stack are estimated to be 21.2 lbs/hr. Indiana Bio-Energy is required to perform stack testing on the thermal oxidizer stack to verify compliance with this emission limit. In addition, the facility will be using a continuous monitoring system for NO<sub>x</sub> pursuant to 40 CFR Part 60, Subpart Db.

IDEM, OAQ agrees with the commenter that there will be NO<sub>x</sub> emissions from “insignificant activities” and has included emissions estimates for these units in the revised emissions calculations found in Appendix A of the TSD Addendum.

No changes were made to the permit as the result of this comment.

### Comment 6:

The commenter stated that HAP emissions may exceed the major source threshold for the following reasons:

- (a) The calculations exclude HAP estimates for the cooling tower and fire pump.
- (b) The HAP control efficiencies assumed for the thermal oxidizer serving the DDGS dryers (97%) is very high. The Nebraska Department of Environmental Quality, which has permitted 24 ethanol plants, has reservations about these high control efficiencies based on their experience. None of the two dozen ethanol plants in Nebraska was able to meet even a 96% removal efficiency or 20 ppmvd for acetaldehyde.<sup>10</sup>
- (c) In response to a similar comment on Premier Ethanol, IDEM argued that HAP emissions in that case were based on lower control efficiencies, only 50% for the dryers and cooling. If only 50% control was assumed for the DDGS dryers and proposed for Bio-Energy (TSD, App. A, p. 4), the acetaldehyde emissions would be 25 tpy, exceeding the major source threshold.
- (d) HAP emissions from ethanol loading losses are underestimated. Because the HAP PTE is factored from the VOC emissions from those processes, which are significantly underestimated, HAP emissions are much higher as well.

### Response to Comment 6:

IDEM, OAQ believes that HAP estimates for the cooling tower and fire pump are minimal. Negligible HAP emissions are expected from the cooling tower. The fire pump is limited to 50 hours of operation per year; and therefore HAP emissions from the fire pump will be negligible.

The Indiana Bio-Energy facility is designed differently from the Premier Ethanol facility, and therefore it is not unexpected for their design control efficiencies to be different. In addition, the HAP control efficiency for the thermal oxidizer controlling dryer emissions at the Premier facility is 90%, not 50% as indicated by the commenter. The HAP emissions for the DDGS dryers are based on specific HAPs identified by the applicant; these estimates are consistent with other

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<sup>10</sup> Letter from Shelley Kaderly, Air Quality Division Administrator, Nebraska Department of Environmental Quality, to U.S. EPA, May 8, 2006, Docket EPA-HQ-OAR-2006-0089.

similarly designed ethanol plants. Acetaldehyde, the primary HAP emitted at ethanol plants, is primarily emitted from the fermentation and distillation process, and from the DDGS drying process. The source is required to test the RTO stack to demonstrate compliance with the Acetaldehyde limits.

Please see the response to comment 3 regarding VOC and HAP emissions from loadout operations.

No changes were made to the permit as the result of this comment.

**Comment 7:**

The TSD calculates the Carbon Monoxide (CO) emissions as 99.3 tpy. However, this calculation does not include any CO from “insignificant activities.” Insignificant activities are defined in the permit application as having emissions of less than 25 lb/day. 25 lb/day translates into 4.6 tpy. The addition of the 4.6 tpy to the total PTE of 99.3 tpy exceeds the major source threshold. The application indicates that the facility will have at least one space heater, process heater or boiler that is natural gas fired with a heat input of less than 10 MMBtu per hour and at least one fuel oil-fired combustion source with a heat input of less than 2 MMBtu per hour and firing fuel containing less than 0.5 percent sulfur by weight. Even a 2 MMBtu per hour small boiler would have a PTE of 0.72 tpy of CO using the AP-42 emission factor for small natural gas fired boilers.

**Response to Comment 7:**

IDEM, OAQ agrees with the commenter that there will be CO emissions from “insignificant activities” and has included emissions estimates for these units in the revised emissions calculations found in Appendix A of the TSD Addendum.

No changes were made to the permit as the result of this comment.

**Comment 8:**

The emissions from the dryers were calculated using an emission factor based on natural gas combustion. However, the facility will sometimes use gas from the biomethanator to fuel two of the dryers. The gas stream from the biomethanator has very high H<sub>2</sub>S levels, so there will be some additional SO<sub>2</sub> emissions. The PTE calculations do not consider these extra SO<sub>2</sub> emissions.

**Response to Comment 8:**

In their application, Indiana Bio-Energy indicates that emissions of SO<sub>2</sub> from combustion of biomethanator off-gasses are “...negligible based on minimal H<sub>2</sub>S levels.” However, as the Permittee has estimated SO<sub>2</sub> emissions from the thermal oxidizer (which controls the dryers) of 81.4 (tons/yr), IDEM, OAQ has determined that it is reasonable to require testing of the thermal oxidizer stack for SO<sub>2</sub>.

The following changes were made to the permit as the result of this comment:

**D.3.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]**

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Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the RTO system (C10), which is used to control the emissions from the distillation processes and the DDGS dryers (EU029 through EU032):

...

- (e) SO<sub>2</sub> emissions shall not exceed 18.6 lbs/hr.**
- (ef) Acetaldehyde emissions shall not exceed 0.34 lbs/hr.**
- (fg) Formaldehyde emissions shall not exceed 0.38 lbs/hr.**

(gh) Total HAP emissions shall not exceed 1.73 lbs/hr.

Combined with the PM/PM10, VOC, CO, **SO<sub>2</sub>**, and NOx emissions from other units, the PM/PM10, VOC, CO, **SO<sub>2</sub>**, and NOx emissions from the entire source are each limited to less than 100 tons/yr.

D.3.12 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2]

In order to demonstrate compliance with Conditions D.3.4, D.3.5, and D.3.7, the Permittee shall perform PM, PM10, VOC (including emission rate, destruction efficiency, and capture efficiency), NOx, CO, **SO<sub>2</sub>**, Acetaldehyde, and Formaldehyde testing for the thermal oxidizer stack (S10) within 60 days after achieving maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner.

**Comment 9:**

The commenter contended that the permit does not contain practically enforceable emission restrictions; production and operating conditions; monitoring; and recordkeeping to assure that emissions remain below the major source thresholds for the following reasons:

- (a) The draft permit does not contain all required emission limits and compliance provisions to qualify as a FESOP.
- (b) The draft permit does not properly limit the emissions from the diesel fire pump. The draft permit limits operation to 50 hours per year and then contains emission limits in the form of 40 CFR 60, Subpart IIII. However, Subpart IIII limits the PM emissions to 8.8E-04 lb/hp-hr. However, the TSD was based on emissions of 2.00E-04 lb/hp-hr. Thus, the permit must contain an emission limit for the diesel fire pump of 2.00E-04 lb/hp-hr. Subpart IIII does not have an emission limit for SO<sub>2</sub>. However, the TSD was based on an emission rate of 1.30E-03 lb/hp-hr. Therefore, the permit must have a SO<sub>2</sub> limit of 1.30E-03 lb/hp-hr. Subpart IIII does impose an appropriate NOx emission limit. However, Subpart IIII imposes a VOC limit of 2.0E-03. However, the TSD is based on a VOC limit of 3.00E-04. Therefore, the permit must have a VOC limit of 3.00E-04. Subpart IIII imposes a CO limit of 1.8E-02 lb/hp-hr. However, the TSD is based on a CO limit of 6.00E-04. Therefore, the permit must impose a CO emission limit of 6.00E-04.
- (c) Combustion of ethanol vapors in the flares will generate VOC, NOx, CO, PM and PM10 emissions. The draft permit restricts NOx and CO emissions and purports to limit VOC but fails to limit HAPs, PM or PM10 emissions at all. The PM and PM10 emissions are combustion byproducts. The magnitude of these emissions depends upon the design of the flares. The PTE calculations did not include PM and PM10 emissions from the flares. These emissions should be calculated, included in the potential to emit, and limited in the permit. The permit must also limit HAPs to 0.77 lb/hr. Finally, the permit contains the wrong VOC emission limit. The emission limit is 2.76 lb/hr. However, the limit should be 2.56 lb/hr.

**Response to Comment 9:**

An emission source which qualifies as a major source under Part 70 rules may voluntarily accept federally enforceable limits on air pollutant emissions to obtain a FESOP rather than a Title V permit. The federally enforceable limits in a FESOP are derived from sourcewide emissions calculations that account for the maximum potential emissions from each emission unit at the source. Certain operations have minimal PTE; therefore, it is sometimes unnecessary to limit these operations. However, any emissions from an unlimited emission unit are still counted in their entirety towards the sourcewide emissions when determining the permitting level. Therefore, IDEM, OAQ believes it is unnecessary to limit all emission units where sourcewide emissions are already below major source thresholds due to limitations imposed on other emission units at the source. When a PTE is limited, the Permittee is subject to record keeping and reporting requirements in order to demonstrate compliance with those limits. Collectively, the

limited PTE of certain activities along with the unlimited PTE of the remaining activities located at the source must be below major source thresholds to be considered a FESOP.

As the commenter notes, emissions from the diesel fire pump are estimated using AP-42 emission factors that are well below the emissions limitations set forth in 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). However, IDEM, OAQ does not feel emission limits are needed for the diesel fire pump given that it is only permitted to run 50 hours per year.

IDEM, OAQ has determined that it is appropriate to require the flares to have smokeless designs where the applicant indicates there are no particulate emissions from the flares, as these types of flares will emit negligible PM/PM10 emissions.

IDEM, OAQ agrees that the short-term VOC limit in Condition D.5.4 should be revised. In order to provide a short-term limit for FESOP purposes, a limit of 0.10 (lb/kgal) has been added to the permit (5.6 (ton/yr) x (2,000 lb/ton) x (yr/110,000 kgal)). The 2.76 lb/hr limit for VOC emissions in Condition D.5.5 is a BACT limit based on the short-term, maximum capacity of the loading rack and is retained in Condition D.5.5(c).

The following changes have been made as a result of this comment:

D.5.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the ethanol loading racks:

- ...
- (f) VOC emissions from flare C50 shall not exceed **0.10 lb/kgal** ~~2.76 lbs/hr~~.
  - (g) The ethanol loading rack shall utilize submerged loading methods.
  - (h) The trucks and railcars shall not use vapor balance services **during ethanol loading**.

D.6.1 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following:

- ...
- (c) **The flare (EU039) shall be designed as a smokeless flare.**

**Comment 10:**

Several operational limits are expressed in terms of units of input or output measured "per twelve (12) consecutive month period with compliance determined at the end of each month," including grain receipt, DDGS loadout, DDGS cooling drum, ethanol loadout, and hours of operation of the diesel generator. The supporting compliance calculation sheets indicate that the intent of this language is to add the current month's input or output to that of the previous 11 months. This does not properly limit emissions during the first 11 months of operation. A separate limit, based on a monthly average, should be set for the first 12 months of operation.

**Response to Comment 10:**

Since FESOP limits are based on annual limits, if the source emitted its entire allowed amount of emissions in the first six months, then the source would not be able to operate for the following six months because the source would exceed the allowable emissions based on a rolling twelve month total. Therefore, no separate limits are needed for the first year of operation.

No changes have been made to the permit as a result of this comment.

**Comment 11:**

The 13.7 tpy PM/PM10 PTE for the Cooling Tower is based on a 50,000 gal/min water circulation rate, a drift loss of 0.005%, and a total dissolved solids (TDS) level of 2500 ppm. However, the draft permit does not have any requirements for the cooling tower. In order for the 13.7 tpy PTE for the cooling tower to be enforceable as a practical matter, the permit must limit the water circulation rate to 50,000 gallons per minute, the drift loss to 0.005%, and the TDS to 2,500 ppm. The permit must also include monitoring and reporting for these parameters or direct testing and monitoring of the PM and PM10 emissions from the cooling tower.

**Response to Comment 11:**

As noted above, IDEM, OAQ believes it is unnecessary to limit all emission units where sourcewide emissions are already below major source thresholds due to limitations imposed on other emission units at the source. See response to comment 9 for further elaboration on this point.

No changes were made to the permit as the result of this comment.

**Comment 12:**

The draft permit does not recognize startup, shutdown and malfunction. The TSD does not disclose any analysis or design to minimize the frequency of such events and to minimize such excess emissions. The potential to emit calculations do not appear to have included startup and shutdown emissions, which by themselves could be high enough to exceed the major source threshold. For example, the TSD indicates CO emissions of 98.9 tpy, and VOC emissions of 84.9 (TSD, p. 6). Nothing in the permit or supporting material indicates that the potential to emit calculation or permit limits account for excess emissions that occur during periods of startup, shutdown or malfunction, nor explains how those periods affect emissions at the plant.

For example, as with many large pieces of equipment, the Indiana Bio-Energy facility contains equipment that will produce more of certain pollutants when they are starting up or shutting down than when they are operating at a steady state. The combustion equipment, including the DDGS dryers, the diesel fire pump, and thermal oxidizers with heat recovery steam generator systems will generate more CO and VOC emissions during startup and shutdown because CO will not be fully oxidized and the VOCs will not be completely combusted until the equipment reaches steady state of operation. This equipment operates intermittently and may frequently operate at low loads that generate more CO and VOC emissions than at other times.

The permit fails to place any limits on the increased CO and VOC emission levels that may result during periods of startup and shutdown and does not appear to consider those excess emissions in calculating the potential to emit. Without limits on increased emissions during startup and shutdown, the Bio-Energy facility may emit pollutants in an amount over the major source threshold.

Thus, the permit should be revised to address the startup and shutdown emissions. Without such revision, it is likely that CO and VOC emissions will exceed both the individual unit permit limits and major source thresholds.

**Response to Comment 12:**

IDEM, OAQ does not feel that it is necessary to limit emissions from startup, shutdown, and malfunction. The combustion equipment for Indiana Bio-Energy is much smaller than a typical large utility boiler, and the duration of startup and shutdown are expected to be minimal. Furthermore, emission calculations for the boilers are based on continuous operation (8,760 hours per year); therefore, the calculations do not account for periods when the boilers are not operating, and may overestimate the actual annual emissions. Nevertheless, the sourcewide emissions are still calculated to be below FESOP thresholds even with these conservative assumptions.

No changes were made as a result of this comment.

**Comment 13:**

The commenter stated that the proposed testing is not adequate because of the following reasons:

- (a) The permit does not require the demonstration of any relationship between the various parametric indicators and the subject emission limits, nor does it state that a violation of the indicator constitutes a violation of the pollutant of interest.
- (b) The permit should be modified to require more frequent direct emission testing, instead of repeating a test only once every 5 years. Additionally, no testing at all is required for some emission sources, including grain receiving fugitives, DDGS loadout fugitives, cooling tower, and paved roads. This missing, or minimal and infrequent testing does not satisfy the obligation for testing sufficient to "evaluate continuous compliance" nor does it allow IDEM, U.S.EPA or the public to ensure compliance with the permit limits. It is feasible to directly and continuously monitor emissions from the thermal oxidizers and wet scrubber. The draft permit does not require any continuous emission monitors. It is also feasible to conduct more frequent stack tests. Annual or more frequent testing is feasible, is commonly required for similar facilities, and should be required here. Annual fugitive emission inventories for PM/PM10 and VOCs are required elsewhere and should be required here.
- (c) The draft permit limits and tests only two HAPs, from only two emission units. Acetaldehyde and Formaldehyde are not necessarily the major HAPs. Further, the facility will emit other HAPs, including methanol, acrolein, and propionaldehyde.<sup>11</sup> Also, other emission units will emit HAPs, including the ethanol loading rack and biomethanator flares, equipment leaks, and other fugitive sources. Control and testing of only two HAP at only two emission points renders the total HAP cap of 25 tpy unenforceable as a practical matter and in violation of 326 IAC 2-8-4(3). The draft must include testing for all HAP emissions from all sources that emit HAP including the fermentation process, the RTO stack; the DDGS cooler; the ethanol loadout and biomethanator flares; and equipment that leaks.
- (d) The permit does not identify any of the test methods that will be used to determine compliance with emission limits. Instead, such identification is deferred to a future protocol that will not be subject to public review. All test methods must be disclosed in the permit to qualify for a FESOP.
- (e) The method that will be used to measure VOCs and HAPs is critical to disclose during public comments to assure that the compliance test method is consistent with the test method used to develop the VOC and HAP emission limits in the first place and to assure that the method is properly applied. Compliance, for example, would not be demonstrated if the VOC limits were developed based on testing using Method 25a reported as carbon, and compliance was determined using Method 18. The method used to compare stack test measurements to the permit limit basis is critical in determining compliance and should be disclosed.<sup>12</sup>

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<sup>11</sup> D. Brady and G.C. Pratt, Volatile Organic Compound Emissions from Dry Mill Ethanol Production, Minnesota Pollution Control Agency, Environmental Bulletin, no. 8, August 2006. <http://www.pca.state.mn.us/publications/environmentalbulletin/tdr-eb0608.pdf#search=%22midwest%20scaling%20protocol%22>.

<sup>12</sup> E-mail Erik Hardin, U.S. EPA, to Richard Edgehill, San Joaquin Valley Air Pollution Control District, Re: Testing oxygenated organics, January 14, 2004.

### Response to Comment 13:

As stated in the permit, a parameter reading that is outside the determined range is not a deviation from the permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances would be considered a deviation from the permit. The parameter reading does not indicate a violation; however, monitoring the parameter ensures the equipment is operating normally. Please see response to comment number 2 for further details regarding parametric monitoring.

IDEM, OAQ requires testing for the major emission points located at the source. The testing conditions in the permit specify that the Permittee will use test methods approved by the Commissioner. The specific test methods and testing environment will be specified in the test protocol submitted by the Permittee as required in Condition C.10 (Performance Testing) and will be evaluated by IDEM, OAQ prior to the stack test. The most up to date U.S. EPA approved test method will be required to be used; therefore, the test method is not specified in the permit. Under the requirements of the NSPS, Subpart Db, the source has elected to install a continuous emissions monitor system on the thermal oxidizer to monitor NOx emissions.

Furthermore, IDEM believes that testing every five (5) years is sufficient for this source considering the stability of the operation and control devices. There are other types of operations that are not associated with an ethanol production plant that do require more frequent testing such as municipal waste combustors, sulfuric acid plants, and secondary lead smelters. However for the types of operations this source is proposing to construct, five (5) year testing along with frequent monitoring of the control equipment (to ensure the controls are operating correctly) is sufficient. IDEM also has the authority to require additional testing at any time if monitoring or other information indicates that a change may have occurred in the operation of the process and/or control device.

The source has provided emissions estimates consistent with other ethanol plants that show Acetaldehyde as the major HAP emitted, and IDEM, OAQ believes that Acetaldehyde is the HAP that is emitted at the highest rate at dry-mill ethanol plants. Additionally, IDEM, OAQ believes that the current required HAP testing for this source is adequate because the vast majority of Acetaldehyde is emitted from the fermentation and distillation processes and the dryer and cooling systems. Stack testing is required for both the fermentation scrubber and thermal oxidizer stacks, and the source is also required to test for formaldehyde emissions from the thermal oxidizer stack. IDEM, OAQ acknowledges that certain operations will emit other types of HAPs. However, it is unnecessary to limit these operations because HAP emissions from an unlimited emission unit are counted in their entirety towards the sourcewide emissions when determining the permitting level. Therefore, IDEM, OAQ believes it is unnecessary to limit or test other HAPs, including methanol, acrolein, and propionaldehyde at this source.

No changes were made as a result of this comment.

### Comment 14:

Numerous factors indicate that a continuous direct measurement, in the form of a continuous emissions monitoring system (CEMS) is necessary for at least NOx, SOx, and CO emissions from stack S-10, which is sometimes referred to as the RTO stack but also includes emissions from the dryers as well as the RTO. To begin with, the PTE calculated in the TSD, even if it were correct, which it is not, is very close to the major source threshold. The CO PTE is 0.7 percent below the major source threshold, the NOx PTE is 4.3 percent below the major source threshold and SO<sub>2</sub> is 19.6 percent. With this limited margin between the calculated amount and the Part 70 major source thresholds, the most reliable and stringent monitoring possible is called for. There can be no doubt that a CEMS for NOx, SOx, and CO is possible for stack S-10. The CEMS would cost no more than \$100,000. In a plant estimated in the media to cost \$178 million, the cost of the CEMS is not a relevant factor. A CEMS is also important because, as explained above, combustion sources can have highly variable emissions during different levels of operation. Only a CEMS will accurately reflect these actual emissions. Finally, as explained above, some of the PTE calculations, such as NOx from the TO, were based on emission factors

that were for the wrong type of unit and contradicted actual emission data from similar sources. Thus, it seems impossible for the source to comply with some of its emission limits. However, only with a CEMS will IDEM, U.S. EPA and the public be able to know the actual emissions from this source.

**Response to Comment 14:**

The facility will be using a CEMS for monitoring NO<sub>x</sub> emissions from the thermal oxidizer stack S-10 pursuant to 40 CFR Part 60, Subpart Db. There are no other State or Federal rules that would require CEMS for SO<sub>x</sub> or CO. However, the source is required to perform visible emissions notations, continuously monitor the operating temperature of the thermal oxidizer, and to perform once per day notations of the duct pressure or fan amperage on the thermal oxidizer system. IDEM, OAQ feels that these three monitoring techniques, the CEMS for NO<sub>x</sub>, and the required testing for SO<sub>2</sub> and CO will ensure that the thermal oxidizer is operating correctly at all times.

**Comment 15:**

The commenter stated that the permit requires vague visible emission readings, parametric monitoring, and broken or failed bag detection. These methods also fail to assure compliance with the PM and PM<sub>10</sub> emission limits, however, rendering the limits unenforceable for the following reasons:

- (a) The opacity readings are taken only once a day, during daylight, and are only classified as to "normal" or "abnormal." "Abnormal" is defined with reference to prevailing conditions 80% of the time the process is in operation. If an exceedance of this subjective standard is observed, Bio-Energy must undertake the vague abatement procedures in permit Condition C. This standard does not assure compliance with the mass emission limits in the permits.
- (b) The proposed differential pressure monitoring of individual baghouses has been shown not to be an adequate indicator of bag leaks. The proposed method would not detect individual bag leaks, which could cause exceedances of the hourly emission limit. Further, the draft permit does not specify where pressure would be measured, but appears to only require differential pressure measurements across the entire baghouse, rather than individual baghouse compartments. This would not help isolate bag leaks.

**Response to Comment 15:**

The visible emission notations are used as a surrogate to ensure compliance with 326 IAC 5-1 and 326 IAC 6, without the requirement to have a person on site trained in opacity measurement. This requirement is designed as a trigger that the source performs some corrective action on the facility if visible emissions are abnormal, which helps ensure continuous compliance with emission limitations. As the visible emissions condition states, a trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. This training does not need to include the training to become a certified opacity reader, nor does the training need to be done by a certified opacity reader. The purpose of specifying that a trained employee perform the visible emissions notations is to make sure that the employee would know the difference between "normal" and "abnormal" visible emissions from the particular process.

As stated in Response to Berger and Berger's Comment 2, the Permittee is required to take reasonable response steps when a compliance monitoring parameter is determined to be out of range or abnormal under Condition C.15 - Response to Excursions or Exceedances. This condition ensures that the control equipment is returned to proper operation as soon as practicable, while still allowing the Permittee the flexibility to respond to situations that were not anticipated.

No changes were made to the permit as the result of this comment.

### Comment 16:

The commenter argued that the proposed limits in the permit should not be considered BACT for the fermentation process, the distillation process, the DDGS drying system, and ethanol loading for the following reasons:

- (a) The applicant and IDEM did not consider the use of a cellulosic ethanol production process, rather than the current production process, in the BACT analysis.
- (b) The TSD concludes that BACT for the fermentation and distillation process is 98% control, but 98% is not BACT for this process. Premier Ethanol, LLC was issued a permit in September, 2006 requiring 99% control for this process. Therefore, 99% control is BACT for this process.
- (c) The language on page 34 of the draft permit gives the source the option of achieving either 98% VOC control "or" a VOC outlet concentration of 20 ppmv. This effectively guts the 98% requirement because wet scrubbers can achieve VOC concentrations less than 20 ppmv.<sup>13</sup> The phrase "or the VOC outlet concentration shall not exceed 20 ppmv" should be removed or changed to read "or the lowest emission rate in ppmv based on the maximum degree of reduction that is achievable" to comply with BACT, which is an emission limit based on the maximum degree of reduction that is achievable.
- (d) The TSD does not explain why the proposed wet scrubber and thermal oxidizer cannot be designed to achieve 99% (or greater) control when VOC inlet concentrations are low. IDEM has claimed in other ethanol plant cases that a control efficiency of 99% may not be achievable in practice at extremely low VOC concentrations. However, no support has ever been offered for this claim. Further, the stack tests that we have reviewed indicate that outlet VOC concentrations are routinely less than 10 ppmv when achieving 99% VOC control. The TSD does not explain how the 20 ppmv value was determined and whether 20 ppmv represents the lowest VOC concentration that is achievable using any wet scrubber or whether this is just the limit for one particular vendor's wet scrubber, based on the applicant's specific request in a request for proposal based on financial considerations.
- (e) The VOC concentration limit is not enforceable as a practical matter because the permit does not disclose the conditions under which the VOC concentration is stipulated. The commenter stated that the permit must be revised to state the following additional information if a concentration limit is retained: (1) oxygen content; (2) whether the value is reported wet or dry; (3) averaging time, and (4) molecular basis (e.g., reported as carbon, ethanol, methane, etc).
- (f) The commenter has identified other ethanol plants that achieved higher VOC control efficiencies for DDGS dryers using thermal oxidizers. IDEM does not explain why higher VOC control efficiencies for similar sources do not establish BACT for the Bio-Energy facility. BACT is an emission limit based on the maximum degree of reduction that is achievable. These stack tests indicate that a VOC control efficiency higher than 98% is achievable, has been achieved, and thus should be required here as BACT for VOC emissions from the DDGS dryers.

### Response to Comment 16:

IDEM, OAQ does not consider the BACT requirement as a means to redefine the basic design of the source, or change the fundamental scope of the project when considering available control technologies. Indiana Bio-Energy has applied to construct a dry mill, corn-based ethanol

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<sup>13</sup> Interpoll Laboratories, Results of the March 3, 2006 Air Emission Compliance Testing at the Verasun Fort Dodge Facility in Fort Dodge, Iowa, April 13, 2006 (2.838 ppmw and 4.583 ppmv). See also other recent stack tests including the July 2006 source test at Horizon Ethanol, Jewell, Iowa (3.8 ppmv).

production facility. Therefore, the construction and operation of a cellulose-based ethanol production facility was not considered as an available control technology in the BACT analysis.

BACT limitations do not necessarily reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level. There are several reasons why the permitting authority might choose to do this. One reason is that the control efficiency achievable through the use of the technology may fluctuate, so that it would not always achieve its optimal control efficiency. In that case, setting the emission limitation to reflect the highest control efficiency would make violations of the permit unavoidable. To account for this possibility, a permitting authority must be allowed a certain degree of discretion to set the emission limitation at a level that does not necessarily reflect the highest possible control efficiency, but will allow the Permittee to achieve compliance consistently. While we recognize that 99% may be achievable as an average during testing, IDEM allows for sources to include a safety factor, or margin of error, to allow for minor variations in the operation of the emission units and the control device. This practice has been upheld by the EPA Environmental Appeals Board. See *In re Pennsauken County, New Jersey Resource Recovery Facility*, PSD Appeal No. 88-8, at 5 (Adm'r, Apr. 20, 1989) (Order Denying Review). Also see *In re Masonite Corporation*, PSD Appeal No. 94-1, at 560 (Adm'r, Nov. 1, 1994) (Order Denying Review in Part and Remanding in Part).

The requirement to achieve an overall control efficiency of no less than 98% or a VOC outlet concentration not to exceed 10 ppmv (20 ppmv for the fermentation scrubber) is consistent with BACT determinations made in Indiana and in other states. In addition, the establishment of a VOC concentration limitation in conjunction with a control efficiency requirement is consistent with the compliance requirements established by the U.S. EPA as part of its national ethanol settlements and as part of the recently promulgated NESHAPs. The concentration requirement was established because at extremely low VOC concentrations, a control efficiency of 98% may not be achievable in practice. Many vendors and manufactures will not guarantee their control equipment to efficiencies of 98% at extremely low VOC concentrations. BACT must be achievable on a consistent basis under normal operational conditions.

The testing conditions in the permit specify that the Permittee will use test methods approved by the Commissioner. The specific test methods and testing environment will be specified in the test protocol submitted by the Permittee as required in Condition C.9 (Performance Testing) and will be evaluated by IDEM, OAQ prior to the stack test. The most up to date U.S. EPA approved test method will be required to be used; therefore, the test method is not specified in the permit.

No change has been made to the BACT determination for the fermentation and distillation processes, the DDGS drying system, and the ethanol loading rack.

**Comment 17:**

As the TSD explains, the PTE for the facility is above the major source threshold for PSD. The TSD also explains that IDEM's position is that the PTE is not limited to the major source threshold until after the FESOP is issued and only to the extent that the control equipment is made practically enforceable by the FESOP permit.

The media is reporting that Bio-Energy has already commenced construction or intends to commence construction before the FESOP is issued, assuming that IDEM is going to take the time to evaluate these detailed comments and any other comments it receives from the public. Once Bio-Energy commences construction without a FESOP limiting the PTE, the source becomes a major source. The subsequent issuance of the FESOP does not affect the major source status of the facility because the PSD program follows a "once in, always in" approach. Once a source has commenced construction in violation of the PSD requirements, it is no longer able to achieve synthetic minor source status by lowering its PTE in a subsequent permit. According to EPA Guidance, "[w]hen the case involves a source that failed to obtain any type of permit or limit at the time of construction, the source should not be allowed to avoid the

installation and operation of pollution control equipment or process changes by obtaining a “synthetic” minor limit (usually a permit) after the fact unless compelling circumstances exist...”<sup>14</sup>

**Response to Comment 17:**

IDEM, OAQ is aware that Indiana Bio-Energy has been performing some site preparation work at the location of the proposed facility. However, none of the work that has been done to date constitutes “construction” of an emissions unit as defined pursuant to 326 IAC 1-2-21 or 326 IAC 2-2-1(p). If IDEM, OAQ becomes aware that the facility commenced construction on any emission unit prior to receipt of their construction permit, appropriate actions will be taken.

**Comment 18:**

IDEM failed to make its BACT analysis, which is usually in Appendix B, available on its webpage. The webpage contained the draft permit, the TSD, and Appendix A of the TSD but not Appendix B. IDEM should post Appendix B on the webpage and offer a new public comment period once the public has access to all of the relevant information.

**Response to Comment 18:**

IDEM agrees that the draft permit provided for public review did not include Appendix B. Therefore, IDEM put the draft permit out for Public Notice a second time from January 31, 2007 through March 2, 2007.

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<sup>14</sup> See Memorandum from Eric V. Schaeffer, Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements at 2 (Nov. 17, 1998), available at <<http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/nsrguida.pdf>>.

# Indiana Department of Environmental Management Office of Air Quality

## Technical Support Document (TSD) for a New Source Review and a Federally Enforceable State Operating Permit (FESOP)

### Source Background and Description

Source Name: Indiana Bio-Energy, LLC  
Source Location: 1469 South Adams Street, Bluffton, IN 46714  
County: Wells  
SIC Code: 2869  
Operation Permit No.: F179-23641-00033  
Permit Reviewer: ERG/MP

The Office of Air Quality (OAQ) has reviewed a FESOP application from Indiana Bio-Energy, LLC (Indiana Bio-Energy) relating to the operation of an ethanol production plant.

### History

Indiana Bio-Energy submitted an application on September 13, 2006, to IDEM, OAQ applying for a Federally Enforceable State Operating Permit to construct and operate a new ethanol production plant at 1469 South Adams Street, Bluffton, IN 46714. This is the first air permit approval for this source.

### Permitted Emission Units and Pollution Control Equipment

There are no permitted emission units at this source during this review process.

### Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted emission units operating at this source during this review process.

### New Emission Units and Pollution Control Equipment

The application includes information relating to the prior approval for the construction and operation of the following equipment pursuant to 326 IAC 2-8-4(11):

- (a) One (1) grain receiving and handling operation, approved for construction in 2007, controlled by baghouse C20, exhausting through stack S20, and consisting of the following:
  - (1) Three (3) grain receiving pits, identified as EU001, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (2) Two (2) grain legs and conveying system, identified as EU002, approved for construction in 2007, each with a maximum throughput rate of 20,000 bushels of corn per hour.
  - (3) Two (2) grain silos, identified as EU003, approved for construction in 2007, each with a maximum throughput rate of 40,000 bushels of corn per hour.

- (b) Two (2) corn scalper, identified as EU004, approved for construction in 2007, each with a maximum throughput rate of 3,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (c) One (1) day storage/surge bin, identified as EU005, approved for construction in 2007, with a capacity of 6,000 bushels of corn per hour, controlled by baghouse C20, and exhausting through stack S20.
- (d) Four (4) hammermills, identified as EU006, EU007, EU008, and EU009, approved for construction in 2007, each with a maximum throughput rate of 40 tons of corn per hour, controlled by baghouse C30, and exhausting through stack S30.
- (e) One (1) fermentation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons per hour (as ethanol), controlled by scrubber C40, with emissions exhausted through stack S40. This process consists of the following:
  - (1) Two (2) slurry tanks, identified as EU010 and EU011, approved for construction in 2007.
  - (2) Seven (7) fermenters, identified as EU012 through EU018, approved for construction in 2007.
  - (3) Two (2) yeast propagation tanks, identified as EU019 and EU020, approved for construction in 2007.
  - (4) One (1) beer well, identified as EU021, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (f) Two (2) recuperative thermal oxidizers, identified as C10, with two (2) Waste Heat Recovery Boilers identified as B10 and B11, approved for construction in 2007, with a maximum heat input capacity of 122 MMBtu/hr each, using natural gas as fuel, with emissions exhausted through stack S10.

Under 40 CFR, Subpart Db, the recuperative thermal oxidizers and associated waste heat boilers are considered be new steam generating units.

- (g) One (1) distillation process, approved for construction in 2007, with a maximum throughput rate of 14,300 gallons of ethanol per hour, controlled by thermal oxidizer C10, with emissions exhausted through stack S10. This process consists of the following:
  - (1) One (1) beer column, identified as EU022, approved for construction in 2007.
  - (2) One (1) rectifier column, identified as EU023, approved for construction in 2007.
  - (3) One (1) side stripper, identified as EU024, approved for construction in 2007.
  - (4) Two (2) sets of three (3) molecular sieves, identified as EU025, approved for construction in 2007.
  - (5) Two (2) sets of four (4) evaporators, identified as EU026, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (h) Two (2) sets of three (3) centrifuges, identified as EU027 and EU028, approved for construction in 2007.
- (i) Four (4) natural gas fired DDGS dryers, identified as EU029 through EU032, approved for construction in 2007, each with a maximum heat input rate of 45 MMBtu/hr, with a total maximum throughput rate of 42 tons of DDGS per hour, controlled by multicyclones C029 through C032, respectively, with emissions venting to thermal oxidizer C10, and exhausting to stack S10.
- (j) One (1) DDGS cooling drum, identified as EU033, approved for construction in 2007, with a maximum throughput rate of 42 tons/hr of DDGS, controlled by baghouse C70, and exhausting to stack S70.
- (k) One (1) DDGS handling and storage operation, approved for construction in 2007, with a maximum throughput rate of 220 tons/hr of DDGS, and consisting of the following:
  - (1) Two (2) DDGS storage silos, identified as EU034, approved for construction in 2007, controlled by baghouse C90, with emissions exhausted to stack S90.
  - (2) One (1) DDGS storage building, identified as EU035, approved for construction in 2007.
- (l) One (1) DDGS loadout operation, identified as EU036, approved for construction in 2007, controlled by baghouse C90, with emissions exhausted to stack S90, with a maximum throughput rate of 550 tons/hr of DDGS, and consisting of the following:
  - (1) One (1) DDGS conveyor, approved for construction in 2007.
  - (2) One (1) DDGS truck/rail loadout spout, approved for construction in 2007.
- (m) One (1) ethanol loading system, identified as EU037, consisting of two (2) rail loading spouts and two (2) truck loading spouts, approved for construction in 2007, with a maximum throughput rate of 36,000 gallons per hour when loading trucks, and 120,000 gallons per hour when loading railcars. This unit is controlled by enclosed flare C50, which is fueled by natural gas and has a pilot gas flare heat input capacity of 12.4 Btu/hr, and exhausts through stack S50.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (n) One (1) diesel fire pump, identified as EU038, approved for construction in 2007, with a maximum power output rate of 300 HP, and exhausting to stack S100.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU038 is considered a new certified National Fire Protection Association (NFPA) fire pump.

### **Insignificant Activities**

The source also consists of the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) Solvent recycling systems with batch capacity less than or equal to 100 gallons.
- (b) Forced and induced draft cooling tower system not regulated under a NESHAP.
- (c) Replacement or repair of bags in baghouses and filters in other air filtration equipment.
- (d) Paved roads and parking lots with limited public access. [326 IAC 6-4]

- (e) Blowdown for any of the following: sight glass; boiler; compressors; pumps; and cooling tower.
- (f) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
  - (1) One (1) off spec tank for 190-proof ethanol, identified as T65, approved for construction in 2007, with a maximum capacity of 200,000 gallons.
  - (2) One (1) tank for 200-proof ethanol, identified as T63, approved for construction in 2007, with a maximum capacity of 200,000 gallons of 200-proof ethanol.
  - (3) One (1) denatured ethanol tank, identified as T61, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
  - (4) One (1) denatured ethanol tank, identified as T62, approved for construction in 2007, with a maximum capacity of 1,500,000 gallons of denatured ethanol.
  - (5) One (1) denaturant tank, identified as T64, approved for construction in 2007, with a maximum capacity of 200,000 gallons of natural gasoline. [326 IAC 8-4-3]
  - (6) One (1) corrosion inhibitor tank, identified as Tank CI, approved for construction in 2007, with a maximum capacity of 3,000 gallons of corrosion inhibitor.
  - (7) One (1) diesel storage tank, identified as C2, approved for construction in 2007, with a maximum storage capacity less than 2,000 gallons of diesel fuel.
  - (8) One (1) thin stillage tank, identified as C3, approved for construction in 2007, with a maximum storage capacity of 374,000 gallons of thin stillage.
  - (9) One (1) syrup tank, identified as C4, approved for construction in 2007, with a maximum storage capacity of 180,000 gallons of syrup.

Under 40 CFR 60, Subpart Kb, storage tanks T61 through T65 are considered to be new volatile organic liquid storage tanks.

- (g) One (1) biomethanator, identified as EU039, approved for construction in 2007, exhausting to the DDGS dryers as supplement fuel. When dryers EU029 and EU031 are down, methane emissions from the biomethanator are controlled by a 6.4 MMBtu/hr flare CE15, and exhausting to stack EP15. [326 IAC 2-8-4]

### Existing Approvals

No air approvals have been issued to this source.

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the FESOP be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An administratively complete FESOP application for the purposes of this review was received on September 13, 2006.

**Emission Calculations**

See Appendix A of this document for detailed emission calculations (pages 1 through 15). The PTE for the storage tanks is 2.70 tons per year (tons/yr) of VOC, which was calculated using EPA TANKS 4.0.9d software.

**Potential to Emit**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential to Emit (tons/yr)
PM	Greater than 100
PM-10	Greater than 100
SO <sub>2</sub>	Less than 100
VOC	Greater than 100
CO	Greater than 100
NO <sub>x</sub>	Greater than 100

HAPs	Potential to Emit (tons/yr)
Acetaldehyde	Greater than 10
Acrolein	Greater than 10
Formaldehyde	Greater than 10
Methanol	Greater than 10
All Other HAPs	Less than 10
Total HAPs	Greater than 25

- (a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of PM10, VOC, CO, and NOx are equal to or greater than 100 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7. The source will be issued a FESOP because the source will limit its emissions below the Title V levels.
- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is greater than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination of HAPs is greater than twenty-five (25) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7. The source will be issued a FESOP because the source will limit its HAP emissions below the Title V levels.
- (c) Fugitive Emissions  
 Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are counted toward determination of PSD applicability.

**Potential to Emit After Issuance**

The table below summarizes the potential to emit, reflecting all limits of the emission units. Any control equipment is considered enforceable only after issuance of this FESOP and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/Emission Unit	Potential To Emit (tons/year)						
	PM	PM10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Grain Receiving and Handling	14.3	14.3					
Grain Receiving - Fugitive	7.65	3.07					
Fermentation	0.58	0.31		50.0			7.75
RTO Stack	23.2	23.2	81.4	21.6	84.0	92.9	7.60
DDGS Cooler	2.82	2.82		8.92			1.02
DDGS Handling and Loadout	1.71	1.71					
DDGS Loadout - Fugitive	0.77	0.26					
Ethanol Loadout and Flare				5.6	10.05	1.85	1.69
Paved Roads (Fugitive)	22.9	4.46					
Cooling Tower (Insignificant)	13.7	13.7					
Diesel Fire Pump (Insignificant)	0.002	0.002	0.010	0.002	0.005	0.086	
Storage Tanks (Insignificant)				2.70			
Equipment Leaks (Insignificant)				8.85			1.55
Biomethanator Flare				0.73	5.19	0.95	
Wet Cake Storage*							
Other Insignificant Activities	1.00	1.00		1.00			
<b>Total Emissions</b>	<b>88.6</b>	<b>64.8</b>	<b>81.4</b>	<b>99.4</b>	<b>99.3</b>	<b>95.7</b>	<b>19.6</b>

Note: The portions of the table left blank indicate that the pollutant is not emitted by the emission unit.

\* This plant is capable of producing both DDGS and WDGS. The emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

### County Attainment Status

The source is located in Wells County.

Pollutant	Status
PM10	Attainment
PM2.5	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Wells County has been classified as unclassifiable or attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM 2.5 emissions. Therefore, until the U.S.EPA adopts specific provisions for

PSD review for PM<sub>2.5</sub> emissions, it has directed states to regulate PM<sub>10</sub> emissions as surrogate for PM<sub>2.5</sub> emissions. See the State Rule Applicability – Entire Source section.

- (b) Wells County has been classified as attainment or unclassifiable in Indiana for all remaining pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability – Entire Source section.

### Source Status

New Source PSD and Emission Offset Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	89
PM <sub>10</sub>	65
SO <sub>2</sub>	81
VOC	99
CO	99
NO <sub>x</sub>	96
Single HAP	Less than 10
Combination HAPs	Less than 25

This new source is not a PSD major stationary source because no regulated pollutant is emitted at a rate of one hundred (100) tons per year or greater, and it is in one of the twenty-eight (28) listed source categories.

### Federal Rule Applicability

- (a) This source does not have a grain elevator with a permanent storage capacity greater than 2.5 million bushels. Therefore, the requirements of the New Source Performance Standards for Grain Elevators (326 IAC 12, 40 CFR 60.300-304, Subpart DD) are not included in this permit.
- (b) The two 122 MMBtu/hr Thermal Oxidizers (C10) are used to produce steam and each of them has a maximum heat input capacity greater than 100 MMBtu/hr and will be constructed after June 19, 1984. Therefore, they are both subject to the New Source Performance Standards for Industrial-Commercial-Institutional Steam Generating Units (326 IAC 12, 40 CFR 60.40b-49b, Subpart Db).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed Thermal Oxidizers (C10) are subject to the following portions of 40 CFR 60, Subpart Db.

- (1) 40 CFR 60.40b
- (2) 40 CFR 60.41b
- (3) 40 CFR 60.44b(a), (e), (h) and (i)
- (4) 40 CFR 60.46b(a)
- (5) 40 CFR 60.46b(c)
- (6) 40 CFR 60.46b(e)(1)
- (7) 40 CFR 60.48b(b)
- (8) 40 CFR 60.48b(b)(1)
- (9) 40 CFR 60.48b(c)
- (10) 40 CFR 60.48b(d)
- (11) 40 CFR 60.48b(e)(2)
- (12) 40 CFR 60.48b(f)
- (13) 40 CFR 60.48b(g)
- (14) 40 CFR 60.49(a)(1) and (3)
- (15) 40 CFR 60.49b(b)
- (16) 40 CFR 60.49b(c)

- (17) 40 CFR 60.49b(d)
- (18) 40 CFR 60.49b(g)(1-10)
- (19) 40 CFR 60.49b(i)
- (20) 40 CFR 60.49b(v)
- (21) 40 CFR 60.49b(w)

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to the Thermal Oxidizers (C10), except when otherwise specified in 40 CFR 60, Subpart Db.

- (c) Tanks T61 through T65 have capacities greater than 75 cubic meters (19,813 gallons) and will be used to store volatile organic liquids. Therefore, these tanks are subject to the New Source Performance Standards for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after July 23, 1984 (326 IAC 12, 40 CFR 60.110b - 117b, Subpart Kb).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed storage tanks (T61 through T65) are subject to the following portions of 40 CFR 60, Subpart Kb.

- (1) 40 CFR 60.110b
- (2) 40 CFR 60.111b
- (3) 40 CFR 60.112b(a)(1)
- (4) 40 CFR 60.113b(a)
- (5) 40 CFR 60.115b(a)
- (6) 40 CFR 60.116b(a-e)
- (7) 40 CFR 60.117b

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to the storage tanks T61 through T65, except when otherwise specified in 40 CFR 60, Subpart Kb.

- (d) Ethanol is one of the chemicals listed in 40 CFR 60.489. Therefore, this ethanol production plant is subject to the requirements of New Source Performance Standards for Volatile Organic Liquid Storage Vessels for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (326 IAC 12, 40 CFR 60.480 - 489, Subpart VV).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed ethanol production plant is subject to the following portions of 40 CFR 60, Subpart VV.

- (1) 40 CFR 60.480
- (2) 40 CFR 60.481
- (3) 40 CFR 60.482-1
- (4) 40 CFR 60.482-2
- (5) 40 CFR 60.482-3
- (6) 40 CFR 60.482-4
- (7) 40 CFR 60.482-5
- (8) 40 CFR 60.482-6
- (9) 40 CFR 60.482-7
- (10) 40 CFR 60.482-8
- (11) 40 CFR 60.482-9
- (12) 40 CFR 60.482-10
- (13) 40 CFR 60.483-1
- (14) 40 CFR 60.483-2
- (15) 40 CFR 60.485
- (16) 40 CFR 60.486
- (17) 40 CFR 60.487

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to this source, except when otherwise specified in 40 CFR 60, Subpart VV.

- (e) The diesel fire pump, identified as EU038, will commence construction after July 11, 2005 and was manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006. Therefore, the fire pump, identified as EU038, is subject to the New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (326 IAC 12, 40 CFR 60.4200 - 4209, Subpart IIII).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed fire pump (EU038) is subject to the following portions of 40 CFR 60, Subpart IIII

- (1) 40 CFR 60.4200(a)(2)
- (2) 40 CFR 60.4200(a)(3)
- (3) 40 CFR 60.4200(b)
- (4) 40 CFR 60.4205(c)
- (5) 40 CFR 60.4206
- (6) 40 CFR 60.4207(b)
- (7) 40 CFR 60.4207(c)
- (8) 40 CFR 60.4208
- (9) 40 CFR 60.4209(a)
- (10) 40 CFR 60.4211(a)
- (11) 40 CFR 60.4211(b)
- (12) 40 CFR 60.4211(e)
- (13) 40 CFR 60.4212
- (14) 40 CFR 60.4214(b)
- (15) 40 CFR 60.4218
- (16) 40 CFR 60.4219
- (17) Tables 1, 5, and 8

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to this source, except when otherwise specified in 40 CFR 60, Subpart IIII.

- (f) Ethanol is one of the chemicals listed in 40 CFR 60.667. However, according to the EPA memorandum from Mr. George T. Czerniak dated December 6, 2002, the manufacture of ethanol using a fermentation process (biological synthesis) was excluded from the scope of NSPS, Subpart NNN. Therefore, the distillation unit at this new ethanol production plant is not subject to the requirements of New Source Performance Standards for Volatile Organic Liquid Storage Vessels VOC Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (326 IAC 12, 40 CFR 60.660 - 667, Subpart NNN).
- (g) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14 and 20, and 40 CFR Part 61 and 63) included in this permit.
- (h) This source will limit HAP emissions from the entire source to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ) are not included in this permit.
- (i) The requirements of 40 CFR Part 63, Subpart F (National Emission Standards for Organic Hazardous Air Pollutants From Synthetic Organic Chemical Manufacturing Industry), 40 CFR Part 63, Subpart G (National Emission Standards for Organic Hazardous Air Pollutants from Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater), and 40 CFR Part 63, Subpart H (National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks), are not included in this permit because (1) this source has accepted limits that make it a minor source of hazardous air pollutants; (2) the source

does not manufacture as a primary product any of the chemicals listed in Table 1 of 40 CFR 63, Subpart F, Tetrahydro-benzaldehyde, or Crotonaldehyde; and (3) the source does not use as a reactant, manufacture as a product or co-product any of the chemicals listed in Table 2 of 40 CFR 63, Subpart F.

- (j) The requirements of 40 CFR 63, Subpart I – National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks are not included in this permit. The source does not operate any of the processes specified in 40 CFR 63.190(b).
- (k) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements for the NESHAP for Industrial Process Cooling Towers (40 CFR 63, Subpart Q) are not included in this permit.
- (l) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Organic Liquids Distribution (non-gasoline) (40 CFR 63, Subpart EEEE) are not included in this permit.
- (m) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Miscellaneous Organic Chemical Manufacturing (40 CFR 63, Subpart FFFF) are not included in this permit.
- (n) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63, Subpart DDDDD) are not included in this permit.

**State Rule Applicability – Entire Source**

**326 IAC 2-2 (Prevention of Significant Deterioration (PSD))**

The source will be approved for construction in 2007. The source is in one of the twenty-eight (28) source categories as defined in 326 IAC 2-2-1 and the potential to emit PM, PM10, VOC, CO, and NOx from the entire source before control is greater than one hundred (100) tons/yr.

In order to make the requirement of 326 IAC 2-2 (PSD) not applicable, the source shall comply with the following emission limitations:

- (a) The PM emissions from the grain receiving, handling, and DDGS load-out operations shall not exceed the emission limits listed in the table below:

Unit ID	Unit Description	Baghouse ID	PM Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005	Grain Receiving, Conveyors, Storage Bins, Corn Scalper, and Surge Bin	C20	2.06
EU006, EU007, EU008, EU009	Hammermill #1-4	C30	1.20
EU034, EU036	DDGS storage silo, DDGS Loadout	C90	0.39

This is equivalent to 16.0 tons/yr of PM. The source will use baghouses to ensure compliance with these limits. With baghouse control, the source is capable of complying with these limits.

- (b) The PM emissions from the fermentation scrubber, which is used to control emissions from the fermentation operations, shall not exceed 0.13 lbs/hr. This is equivalent to 0.58 tons/yr of PM emissions.
- (c) The PM emissions from the DDGS cooler shall not exceed 0.64 lbs/hr. This is equivalent to 2.82 tons/yr of PM emissions.

- (d) The PM emissions from the thermal oxidizer, which is used to control emissions from the distillation operations and dryers, shall not exceed 5.30 lbs/hr. This is equivalent to 23.2 tons/yr of PM emissions.
- (e) The Permittee shall use periodic sweeping to control PM emissions from the unpaved roads. The sweeping shall be performed in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-2.

Combined with the PM emissions from the cooling tower, fire pump, grain receiving/loadout fugitives, unpaved roads, and other insignificant activities at this source, the PM emissions from the entire source are limited to less than one hundred (100) tons/yr.

The source also accepted limits on the throughput and on the emission rates of PM10, VOC, CO, and NOx, which limit emissions of all regulated pollutants from the entire source to less than one hundred (100) tons/yr (see the discussion of 326 IAC 2-8-4 below). Therefore, the requirements of 326 IAC 2-2 are not applicable.

#### 326 IAC 2-4.1 (New Sources of Hazardous Air Pollutants)

The source also accepted FESOP limits on the HAP emissions from the entire source, which limits the emissions from the source to less than ten (10) tons/yr for a single HAP and less than twenty-five (25) tons/yr for any combination of HAPs (see the discussion of 326 IAC 2-8-4 below). Therefore, the requirements of 326 IAC 2-4.1 are not applicable.

#### 326 IAC 2-8-4 (FESOP)

The potential to emit PM10, VOC, CO, and NOx, before controls, for the entire source is greater than one hundred (100) tons/yr. In addition, the potential to emit HAP before control from this source is greater than ten (10) tons/yr for a single HAP (Acetaldehyde) and greater than twenty-five (25) tons/yr for total HAPs. Pursuant to 326 IAC 2-8-4 (FESOP), the source shall comply with the following:

- (a) The PM10 emissions from the grain receiving, handling, and DDGS handling and load-out operations shall not exceed the emission limits listed in the table below:

Unit ID	Unit Description	Baghouse ID	PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005	Grain Receiving, Conveyors, Storage Bins, Corn Scalper, and Surge Bin	C20	2.06
EU006, EU007, EU008, EU009	Hammermill #1-4	C30	1.20
EU034, EU036	DDGS storage silo, DDGS Loadout	C90	0.39

This is equivalent to 16.0 tons/yr of PM. The source will use baghouses to ensure compliance with these limits. With baghouse control, the source is capable of complying with these limits.

- (b) The total grain received shall not exceed 1,100,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (c) The total DDGS produced shall not exceed 356,880 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (d) The Permittee shall use periodic sweeping to control PM and PM10 emissions from the paved roads. The sweeping shall be performed in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-8.
- (e) The Permittee shall comply with the following requirements for the fermentation scrubber:
  - (1) The VOC emissions from the scrubber shall not exceed 11.4 lbs/hr.

- (2) The PM10 emissions from the scrubber shall not exceed 0.13 lbs/hr.
  - (3) Total HAP emissions shall not exceed 1.77 lbs/hr, and Acetaldehyde emissions shall not exceed 1.44 lbs/hr.
- (f) The emissions from thermal oxidizer (C10), which is used to control emissions from the distillation operations and the dryers, shall not exceed the following:
- (1) PM10 emissions shall not exceed 5.30 lbs/hr. This is equivalent to 23.2 tons/yr of PM.
  - (2) VOC emissions shall not exceed 4.93 lbs/hr. This is equivalent to 20.5 tons/yr of VOC.
  - (3) CO emissions shall not exceed 19.2 lbs/hr. This is equivalent to 83.0 tons/yr of CO.
  - (4) NOx emissions shall not exceed 21.2 lbs/hr. This is equivalent to 92.9 tons/yr of NOx.
  - (5) Total HAP emissions shall not exceed 1.73 lbs/hr. This is equivalent to 7.6 tons/yr. Formaldehyde emissions shall not exceed 0.38 lbs/hr, which is equivalent to 1.66 tons/yr. Acetaldehyde emissions shall not exceed 0.34 lbs/hr, which is equivalent to 1.5 tons/yr.
- (g) The Permittee shall comply with the following requirements for the ethanol loading rack (EU037):
- (1) The denatured ethanol load-out rate shall not exceed 110,000,000 gallons per twelve (12) consecutive month period with compliance determined at the end of each month.
  - (2) The Permittee shall use flare C50 to control the emissions from the loading rack when loading denatured ethanol to trucks or railcars.
  - (3) The operating hours for the flare C50 shall not exceed 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
  - (4) CO emissions from flare C50 shall not exceed 4.59 lbs/hr.
  - (5) NOx emissions from flare C50 shall not exceed 0.84 lbs/hr.
  - (6) VOC emissions from flare C50 shall not exceed 2.76 lbs/hr.
  - (7) The ethanol loading rack (EU037) shall utilize submerged loading methods.
  - (8) The railcars and trucks shall not use vapor balance services.
- (h) The Permittee shall comply with the following requirements for the DDGS Cooling Drum (EU033):
- (1) The VOC emissions from the DDGS cooling drum shall not exceed 2.04 lbs/hr.
  - (2) The PM10 emissions from the DDGS cooling drum shall not exceed 0.64 lbs/hr.
- (i) The operating hours for the diesel fire pump (EU038) shall not exceed 50 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

- (j) The operating hours for the biomethanator flare (CE15) shall not exceed 4,380 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

Combined with the PM10, VOC, CO, NOx, and HAP emission units, the emissions from the entire source are limited to less than one hundred (100) tons/yr for PM10, VOC, CO and NOx, and less than ten (10) tons/yr for a single HAP and less than twenty-five (25) tons/yr total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

#### 326 IAC 2-6 (Emission Reporting)

This source is located in Wells County, is not required to operate under a Part 70 permit, and emits less than 5 tons per year of lead. Therefore, the source is only subject to the requirements of 326 IAC 2-6-5 (Additional Information Requests).

#### 326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity for sources shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

#### 326 IAC 6-4 (Fugitive Dust Emissions)

Pursuant to 326 IAC 6-4, the source shall not generate fugitive dust to the extent that some portion of the material escapes beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located.

#### 326 IAC 6-5 (Fugitive Particulate Emissions Limitations)

The potential fugitive particulate emissions, as defined in 326 IAC 6-5-2, from the paved roads at this source are less than 25 tons/yr. Therefore, the requirements of 326 IAC 6-5 are not applicable.

### State Rule Applicability – Thermal Oxidizer System

#### 326 IAC 6-2-4 (PM Emissions for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-4(a), indirect heating facilities constructed after September 12, 1983, shall be limited by the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where Pt = emission rate limit (lbs/MMBtu)  
Q = total source heat input capacity (MMBtu/hr)

The total source heat input capacity is  $122 \times 2 = 244$  MMBtu/hr. Therefore, the PM emission limit for the thermal oxidizer system is:

$$Pt = \frac{1.09}{244^{0.26}} = 0.26 \text{ lbs/MMBtu.}$$

A PM emission limit of 0.26 lbs/MMBtu is equivalent to 63.44 lbs/hr ( $0.26 \text{ lbs/MMBtu} \times 244 \text{ MMBtu/hr} = 63.44 \text{ lbs/hr}$ ) of PM emissions from the thermal oxidizer system. According to the emission calculations in Appendix A, the total PM emissions from the thermal oxidizer system

C10 is 5.3 lbs/hr. Therefore, this unit is capable of complying with the PM requirements in 326 IAC 6-2-4.

**State Rule Applicability - Grain Receiving and Handling Operations**

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2, particulate emissions from each of the following operations shall not exceed the pound per hour limit listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU001, EU002, EU003	Grain Receiving, Conveyors, and Storage Bins	560	70.3
EU004, EU005	Corn Scalper, Surge Bin	168	56.6
EU006	Hammermill #1	40	42.5
EU007	Hammermill #2	40	42.5
EU008	Hammermill #3	40	42.5
EU009	Hammermill #4	40	42.5

The pounds per hour limitations were calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and } P = \text{process weight rate in tons per hour}$$

Pursuant to 326 IAC 6-3-2(e)(3), when the process weight exceeds 200 tons per hour, the maximum allowable emission may exceed the emission limits shown in the table above, provided the concentration of particulate matter in the gas discharged to the atmosphere is less than 0.10 pounds per 1,000 pounds of gases.

According to the emission calculations (see Appendix A), the potential to emit PM after control from these grain receiving, handling, and ship out operations is less than the emission limits above. Therefore, these operations can comply with 326 IAC 6-3-2 using the baghouses.

**State Rule Applicability – Fermentation Process**

326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)

The fermentation process will be constructed after January 1, 1980 and has potential VOC emissions greater than twenty-five (25) tons per year. Therefore, this fermentation process is subject to 326 IAC 8-1-6 and the Permittee is required to control VOC emissions through the use of Best Available Control Technology (BACT). According to the BACT analysis in Appendix B, the BACT for this process has been determined to be the following:

- (a) The VOC emissions from the fermentation process shall be controlled by a wet scrubber.
- (b) The overall average VOC control efficiency for the wet scrubber (including the capture efficiency and control efficiency) shall be at least 98% or the VOC outlet concentration shall not exceed 20 ppmv.
- (c) The VOC emissions from the outlet of the wet scrubber shall not exceed 11.4 lbs/hr.

**State Rule Applicability – Distillation Process**

326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)

The distillation process will be constructed after January 1, 1980 and has potential VOC emissions greater than twenty-five (25) tons per year. Therefore, this distillation process is subject to 326 IAC 8-1-6 and the Permittee is required to control VOC emissions through the use

of Best Available Control Technology (BACT). According to the BACT analysis in Appendix B, the BACT for this process has been determined to be the following:

- (a) The VOC emissions from the distillation process shall be controlled by a thermal oxidizer.
- (b) The overall average VOC control efficiency for the thermal oxidizer system (including the capture efficiency and control efficiency) shall be at least 98% or the VOC outlet concentration shall not exceed 10 ppmv.
- (c) The VOC emissions from the outlet of the thermal oxidizer system shall not exceed 4.93 lbs/hr.

**State Rule Applicability – DDGS Drying, Cooling, and loadout Process**

**326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)**

Pursuant to 326 IAC 6-3-2, particulate emissions from each of the DDGS dryers (EU029 through EU032), the DDGS cooler (EU033), and the DDGS loadout operations (EU034, EU035, and EU036) shall not exceed the pound per hour limits listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU029	DDGS Dryer	42	43.0
EU030	DDGS Dryer	42	43.0
EU031	DDGS Dryer	42	43.0
EU032	DDGS Dryer	42	43.0
EU033	DDGS Cooler	42	43.0
EU034	DDGS Storage Silo	220	59.5
EU035	DDGS Storage Building	220	59.5
EU036	DDGS Loadout Operation	550	70.1

The pounds per hour limitations were calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

Pursuant to 326 IAC 6-3-2(e)(3), when the process weight exceeds 200 tons per hour, the maximum allowable emission may exceed the emission limits shown in the table above, provided the concentration of particulate matter in the gas discharged to the atmosphere is less than 0.10 pounds per 1,000 pounds of gases.

The use of the thermal oxidizer system (C10), and the DDGS cooler and DDGS storage and handling baghouses (C70 and C90) is necessary to comply with the emission limits above.

**326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)**

The DDGS dryers (EU029 through EU032) will be constructed after January 1, 1980 and each of them has potential VOC emissions greater than 25 tons per year. There are no other rules in 326 IAC 8 applicable to these dryers. Therefore, these dryers are subject to 326 IAC 8-1-6 and the Permittee is required to control VOC emissions using the Best Available Control Technology (BACT). Based on the information in Appendix B, BACT for the DDGS dryers has been determined to be the following:

- (a) The VOC emissions from the DDGS dryers shall be controlled by a thermal oxidizer.
- (b) The overall efficiency for the thermal oxidizer (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.

- (c) The VOC emissions from the thermal oxidizer shall not exceed 4.93 lbs/hr.

The DDGS cooler (EU033) will be constructed after January 1, 1980 and has potential VOC emissions less than 25 tons per year. Therefore, the cooler is not subject to 326 IAC 8-1-6.

### **State Rule Applicability – Ethanol Loading Rack (EU037)**

#### **326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)**

The ethanol loading rack at this source will be constructed after January 1, 1980 and has potential VOC emissions greater than 25 tons per year. There are no other rules in 326 IAC 8 applicable to this unit. Therefore, this unit is subject to 326 IAC 8-1-6 and the Permittee is required to control VOC emissions using Best Available Control Technology (BACT). Based on the information provided in Appendix B, BACT for this ethanol loading rack (EU037) has been determined to be the following:

- (a) The VOC emissions from ethanol loadout shall be collected and controlled by a flare when loading denatured ethanol.
- (b) The overall efficiency for the enclosed flare (including the capture efficiency and destruction efficiency) shall be at least 98%.
- (c) The VOC emissions from the flare for both truck and rail shall not exceed 2.76 lbs/hr. This limit was calculated based on the worst-case emission rate between loading trucks and loading railcars. The worst-case hourly emissions occur during truck loading, and the limit was calculated using a VOC emission factor of 3.83 lbs/kgal, the maximum truck loadout rate of 36 kgal/hr, and the flare control efficiency of 98% ( $3.83 \text{ lbs/kgal} \times 36 \text{ kgal/hr} \times (1-98\%) = 2.76 \text{ lbs/hr}$ ). The VOC emission factor of 3.83 lbs/kgal for truck loading was calculated using the equation in AP-42, Chapter 5.2 (see the emission calculations in Appendix A).

### **State Rule Applicability - Cooling Tower (Insignificant Activity)**

#### **326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)**

Pursuant to 326 IAC 6-3-1(b)(11), particulate emissions from the noncontact cooling tower systems are exempt from the requirements of 326 IAC 6-3.

### **State Rule Applicability – Storage Tanks T61 through T65 (Insignificant Activities)**

#### **326 8-4-3 (Petroleum Liquid Storage Facilities)**

The denaturant storage tank (T64) has a maximum capacity greater than 39,000 gallons and will be used to store gasoline which has a vapor pressure greater than 1.52 psi. Therefore, tank T64 is subject to the requirements of 326 IAC 8-4-3. Tank T64 will be equipped with an internal floating roof.

- (a) Pursuant to 326 IAC 8-4-3(b)(1)(B), storage tank T64 shall be maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
- (b) Pursuant to 326 IAC 8-4-3(b)(1)(C), all openings, except stub drains, shall be equipped with covers, lids, or seals such that:
- (1) The cover, lid or seal shall be in the closed position at all times except when in actual use;
  - (2) Automatic bleeder vents shall be closed at all times except when the roof is floated off or landed on the roof leg supports;
  - (3) Rim vents, if provided, shall be set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

- (c) Pursuant to 326 IAC 8-4-3(d), the Permittee shall maintain the following records for a period of two (2) years for tank T64:
- (1) The types of volatile petroleum liquid stored;
  - (2) The maximum true vapor pressure of the liquids as stored; and
  - (3) The results of the inspections performed on the storage vessels.

The above records shall be made available to the IDEM, OAQ upon written request. Tanks T61, T62, T63, and T65 will not be used to store petroleum. Therefore, these tanks are not subject to requirements of 326 IAC 8-4-3.

#### 326 IAC 8-9 (Volatile Organic Liquid Storage Vessels)

The source is not located in Clark, Floyd, Lake, or Porter County. Therefore, the requirements of 326 IAC 8-9-1 are not applicable to the tanks at this source.

### Testing Requirements

In order to demonstrate compliance with the FESOP and PSD minor limits, and 40 CFR 60, Subpart Db, the Permittee shall perform the following tests within 60 days after achieving the maximum capacity but not later than 180 days after initial startup of the ethanol production plant:

- (a) PM and PM10 tests for baghouses C20, C30, and C90, which are used to control the particulate emissions from the three (3) grain receiving pits identified as EU001, the two (2) grain legs and conveying systems identified as EU002, the four (4) grain bins identified as EU003, the corn scalper identified as EU004, the surge bin identified as EU005, the four hammermills (EU006, EU007, EU008, and EU009), the DDGS storage silo identified as EU034, and the DDGS conveyor and loadout spout identified as EU036.
- (b) PM, PM10, and VOC tests for the fermentation scrubber system stack (S40). The fermentation scrubber (C40) is used to control the emissions from the fermentation operations.
- (c) PM, PM10, VOC, NO<sub>x</sub>, CO, and HAP tests for the thermal oxidizer system stack (S10). The thermal oxidizer system (C10) is used to control the emissions from the distillation process and the DDGS dryers (EU029 through EU032).
- (d) PM, PM10, and VOC tests for the DDGS cooling drum baghouse stack (S70). The cooling drum baghouse (C70) is used to control the emissions from the cooling drum (EU033).
- (e) VOC, NO<sub>x</sub>, and CO emissions from the enclosed flare C50, which is used to control the emissions from the ethanol loading rack.

These tests shall be repeated at least once every five (5) years from the date of the last valid compliance demonstration.

### Compliance Requirements

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this source are as follows:

1. The three (3) grain receiving pits identified as EU001, the two (2) grain legs and conveying systems identified as EU002, the four (4) grain bins identified as EU003, the corn scalper identified as EU004, the surge bin identified as EU005, the four (4) hammermills identified as EU006, EU007, EU008, and EU009, the DDGS cooler identified as EU033, the DDGS storage silo identified as EU034, and the DDGS conveyor and loadout spout identified as EU036 have applicable compliance monitoring conditions as specified below. These units are controlled by baghouses C20, C30, C70, and C90.

#### Visible Emissions Notations

- (a) Visible emission notations of the baghouse stack exhausts (stacks S20, S30, S70, and S90) shall be performed once per day during normal daylight operations. A trained employee or a trained contractor shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee or contractor is a person who has worked or trained at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### Parametric Monitoring

- (a) The Permittee shall record the pressure drop across the baghouses used in conjunction with the grain receiving and handling operations (EU001 through EU005), the hammermills (EU006 through EU009), the DDGS cooler (EU033), and the DDGS handling and loadout operations (EU034 and EU036), at least once per day when these units are in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

- (c) In the event that bag failure has been observed:
- (1) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
  - (2) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

These monitoring conditions are necessary because the baghouses controlling the three (3) grain receiving pits identified as EU001, the two (2) grain legs and conveying systems identified as EU002, the four (4) grain bins identified as EU003, the corn scalper identified as EU004, the surge bin identified as EU005, the four (4) hammermills identified as EU006, EU007, EU008, and EU009, the DDGS cooler identified as EU033, the DDGS storage silo identified as EU034, and the DDGS conveyor and loadout spout identified as EU036 must operate properly to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8 (FESOP), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

2. The fermentation process, which is controlled by scrubber C40, has applicable compliance monitoring conditions as specified below:

Visible Emissions Notations

- (a) Visible emission notations of the stack exhaust from the scrubber stack (S40) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### Parametric Monitoring

- (a) The Permittee shall monitor and record the pressure drop and the flow rate of the scrubber C40 at least once per day when the fermentation and/or the distillation process is in operation. When for any one reading, the pressure drop across the scrubber is outside the normal range of 2.0 and 8.0 inches of water, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. When for any one reading, the flow rate of the scrubber is less than the normal minimum of 35 gallons per minute, or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range or a flow rate that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instruments used for determining the pressure drop and flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.
- (c) In the event that a scrubber malfunction has been observed:
- Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

These monitoring conditions are necessary because the scrubber C40 must operate properly to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8 (FESOP), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

3. The distillation process and the DDGS dryers (EU029 through EU032), which are controlled by thermal oxidizer system C10, have applicable compliance monitoring conditions as specified below:

#### Visible Emissions Notations

- (a) Visible emission notations of the stack exhaust from the thermal oxidizer system stack (S10) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C -

Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### Parametric Monitoring

- (a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer system (C10) for measuring operating temperature. For the purpose of this condition, continuous means no less than once per minute. The output of this system shall be recorded as a 3-hour average. From the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature of 1,400°F.
- (b) The Permittee shall determine the 3-hour average temperature from the most recent valid stack test that demonstrates compliance with limits in this permit, as approved by IDEM.
- (c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature as observed during the compliant stack test.
- (d) The Permittee shall determine fan amperage or duct pressure from the most recent valid stack test that demonstrates compliance with limits in this permit, as approved by IDEM, OAQ.
- (e) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the approved stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in most recent compliant stack test.

These monitoring conditions are necessary because the thermal oxidizer (C10) must operate properly at all times the distillation processes and the DDGS dryers (EU029 through EU032) are in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), 326 IAC 8-1-6 (BACT), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

4. The ethanol loading rack (EU037), which is controlled by enclosed flare C50 has applicable compliance monitoring conditions as specified below:

The presence of a flare flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

These monitoring conditions are necessary because flare C50 must operate properly at all times that the ethanol loading rack (EU037) is in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), and 326 IAC 8-1-6 (BACT).

#### **Conclusion**

The construction and operation of this ethanol production plant shall be subject to the conditions of the FESOP 179-23641-00033.

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From Grain Receiving and Handling Operations**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C20	Grain Unloading	Baghouse	0.005	48,000	2.06	9.01	99%	901
C30	Hammermill	Baghouse	0.005	28,000	1.20	5.26	99%	526
Total						14.3		1,427

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
Grain Receiving	1,100,000	0.180	0.059	95%	4.95	1.62
Grain Handling/Storage	1,100,000	0.061	0.0340	95%	1.68	0.94
Grain Scalping	1,100,000	0.012	0.0060	95%	0.33	0.17
Bin Vents	1,100,000	0.025	0.0125	95%	0.69	0.34
<b>Total</b>					<b>7.65</b>	<b>3.07</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-1 (04/03). Assume all the grain receiving and loadout is by truck, which is the worst case scenario. Capture efficiency reflects that the 95% of emissions will be captured and controlled through the Grain Unloading baghouse C20.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From the Fermentation Process**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Process Description:**

Max. Throughput Rate: 110 MMgal/yr of ethanol  
Control Equipment: Wet Scrubber C40

**2. Potential to Emit (PTE) of VOC and HAP:**

Pollutant	*Emission Rate after Control (lbs/MMgal)	PTE after Control (tons/yr)
VOC	909.00	50.0
PM	10.51	0.6
PM10	5.55	0.3
HAP		
Acetaldehyde	115	6.3
Acrolein	5.88	0.3
Methanol	19.85	1.1
Formaldehyde	0.22	0.01
<b>Total HAPs</b>	<b>140.95</b>	<b>7.75</b>

\* Emission factors provided by the source based on stack test results from similar facilities, scaled linearly based on production capacity.  
The Permittee will perform stack testing to demonstrate compliance with the above emission rates.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/MMgal) x 110 MMgal/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Criteria Pollutants  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Thermal Oxidizers, Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
244 (2 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	53.4	0.64

Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1 and 1.4-2 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**2. Dryers, Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
180 (4 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	39.4	0.47

NOx emission factor from manufacturer, SO2 emission factor from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**3. Dryers, Process Emissions**

DDGS Throughput Limit  
(tons/yr)  
356,880

	Pollutant			
	CO	VOC	PM/PM-10	SO2
Emission Rate (lbs/ton) *	0.471	0.121	0.13	0.45
Limited PTE (tons/yr)	84.0	21.6	23.2	80.3

\* Emission rates were estimated by the source based on stack testing results from similar facilities.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton) x DDGS Throughput Limit (tons/yr) x 1 ton/2000 lbs

**4. Total Emissions from RTO Stack**

	Pollutant				
	NOx	SO2	CO	VOC	PM/PM-10
Thermal Oxidizers - Combustion Emissions	53.4	0.64			
Dryers - Combustion Emissions	39.4	0.47			
Dryers - Process Emissions		80.3	84.0	21.6	23.2
<b>Total Potential to Emit (tons/yr)</b>	<b>92.9</b>	<b>81.4</b>	<b>84.0</b>	<b>21.6</b>	<b>23.2</b>

**Methodology**

Total Potential to Emit (tons/yr) = (Thermal Oxidizers, Combustion Emissions) + (Dryers, Combustion Emissions) + (Dryers, Process Emissions)  
The Permittee will perform stack tests to verify the emissions from the RTO stack.

**Appendix A: Emission Calculations  
HAP Emissions  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

DDGS Throughput Limit  
(tons/yr)

356,880
---------

	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
Emission Rate before Control (lb/ton) *	0.28	0.07	0.31	0.11	0.94
<b>PTE after Control in tons/yr</b>	<b>1.50</b>	<b>0.35</b>	<b>1.66</b>	<b>0.59</b>	<b>4.10</b>
<b>PTE before Control in tons/yr</b>	<b>50.0</b>	<b>11.78</b>	<b>55.3</b>	<b>19.6</b>	<b>137</b>

\* HAP emission rates were estimated by the source based on stack testing results from similar facilities.  
The Permittee will perform stack tests to verify the HAP emissions from these units. HAP control efficiency assumed to be 97%.

**Methodology**

PTE after Control (tons/yr) = Emission Rate before Control (lb/ton) x DDGS Throughput Limit (tons/yr) x 1 ton/2000 lbs x (1 - 97% control efficiency)

PTE before Control (tons/yr) = Emission Rate after Control (tons/yr) x (1/(1 - 97% control efficiency))

**Appendix A: Emission Calculations  
HAP Emissions from Natural Gas Combustion  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

Heat Input Capacity  
MMBtu/hr

Potential Throughput  
MMCF/yr

424 (3 units combined)

3714.2

Emission Factor in lbs/MMCF	Pollutant					Total HAPs
	Hexane	Formaldehyde	Toluene	Benzene	Nickel	
	1.8	7.5E-02	3.4E-03	2.1E-03	2.1E-03	
<b>Potential to Emit in tons/yr</b>	3.34	0.14	6.31E-03	3.90E-03	3.90E-03	<b>3.50</b>

Emission factors are from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

**Methodology**

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lbs/MMCF) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 and VOC Emissions  
From the DDGS Cooler**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Potential to Emit PM/PM10**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C70	DDGS Cooler Bypass	Baghouse	0.005	15,000	0.64	2.82	99%	282
Total						2.82		282

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr  
 PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs  
 PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit VOC:**

Annual DDGS Production Limit: 356,880 tons/yr  
 VOC Emission Factor: 0.05 lbs/ton of DDGS (provided by the source based on stack test results from similar facility)

PTE of VOC (tons/yr) = 356,880 tons/yr x 0.05 lbs/ton x 1 ton/2000 lbs = **8.92 tons/yr**

**3. Potential to Emit HAPs:**

Emission Rate (lbs/ton DDGS) *	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
3.00E-03	1.30E-03	7.00E-04	7.00E-04	0.23	
<b>Limited PTE in tons/yr</b>	<b>0.54</b>	<b>0.23</b>	<b>0.12</b>	<b>0.12</b>	<b>1.02</b>

\* HAP emission rates were estimated by the source based on stack testing results from a similar engineered site (Glacial Lakes Energy, MN) and scaled linearly based on production capacity. The Permittee will perform stack tests to verify the HAP emissions from these units.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton DDGS) x DDGS production limit (tons/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From DDGS Handling and Loadout Operations**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C90	DDGS Handling and Loadout	Baghouse	0.005	9,100	0.39	1.71	99%	170.8
<b>Total</b>						<b>1.71</b>		<b>170.8</b>

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
	DDGS Handling and Loadout Fugitives	356,880	0.0860	0.0290	95%	0.77	0.26
<b>Total</b>						<b>0.77</b>	<b>0.26</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-2 (03/03).

Capture efficiency reflects that 95% of emissions will be captured and controlled through the DDGS Handling and Loadout baghouse C90.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**VOC and HAP Emissions from Ethanol Loading Racks**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**FESOP: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: January 30, 2007**

**1. Emission Factors: AP-42**

Denatured ethanol will be shipped by either truck railcar loading via the ethanol loading rack. Railcars will be dedicated fleets, but the trucks may be used to carry gasoline prior to filling with ethanol. Both railcars and trucks will be filled by submerged loading process. The ethanol loading rack will be controlled by flare C50.

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck and rail loading racks can be estimated from the following equation:

$$L = 12.46 \times (SPM)/T$$

where:

L = loading loss (lbs/kgal)  
 S = a saturation factor (see AP-42, Table 5.2-1)  
 P = true vapor pressure of the liquid loaded (psia)  
 M = molecular weight of vapors  
 T = temperature of the bulk liquid loaded (degree R)

Previous Stored Liquid	*S	P (psia)	M (lbs/mole lbs)	T (degree R)	L (lbs/kgal)
Gasoline (normal)	1.0	4.3895	66	511	7.06
Gasoline (clean cargo)	0.5	4.3895	66	511	3.53
Denatured Ethanol (normal)	0.6	0.50	49.7	511	0.36
Denatured Ethanol (clean cargo)	0.5	0.50	49.7	511	0.30

Therefore, the emission factor for loading denatured ethanol to the trucks which stored gasoline previously

$$= L(\text{gasoline, normal}) - L(\text{gasoline, clean cargo}) + L(\text{denatured ethanol, clean cargo}) = 3.83 \quad (\text{lbs/kgal})$$

**2. Potential to Emit VOC Before Control:**

(1) Assume all ethanol loaded out via truck:

Loading rate for trucks: 110 MMgal/yr  
 PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 3.83 lbs/kgal x 1 ton/2000 lbs = **211 tons/yr**

(2) Assume all ethanol loaded out via rail:

Loading rate for rail: 110 MMgal/yr  
 PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 0.36 lbs/kgal x 1 ton/2000 lbs = **20.0 tons/yr**

**3. Limited Potential to Emit:**

Annual Production Limit: 110,000 kgal/yr (total)  
 Flare Control Efficiency: 98%

(1) Assume all ethanol loaded out via truck (controlled by flare):  
 PTE of VOC from truck loading (tons/yr) = 3.83 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **4.22 tons/yr**

(2) Assume all denatured ethanol is loaded to railcars (controlled by flare):  
 PTE of VOC (tons/yr) = 0.36 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **0.25 tons/yr**

**Worst case scenario is when loading 110 MMgal/yr denatured ethanol to trucks = 4.22 tons/yr**

**4. Potential to Emit HAPs:**

HAP emissions are mainly from the unloading process for trucks, which may have been used to ship gasoline previously.

HAP	HAP Fraction*	PTE of HAP before Control (tons/yr)	Limited PTE of HAP after Control (tons/yr)
Benzene	2.45E-02	5.17	0.10
Ethyl benzene	2.00E-02	4.22	0.08
Cumene	1.00E-02	2.11	0.04
Xylenes	1.20E-01	25.31	0.51
Toluene	1.50E-01	31.63	0.63
MTBE	7.50E-02	15.82	0.32
<b>Total</b>		<b>84.3</b>	<b>1.69</b>

\* This is the HAP fraction for gasoline vapors.

**Methodology**

PTE of HAP before Control (tons/yr) = PTE of VOC before Control (tons/yr) x HAP %

Limited PTE of HAP after Control (tons/yr) = Limited PTE of VOC by Trucks (tons/yr) x HAP %

**Appendix A: Emission Calculations  
Combustion Emissions  
From Flare C50 for Ethanol Loading Rack**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

Heat Input Capacity  
MMBtu/hr

Limited Operating Hours  
hr/yr

12.4

4,380

	Pollutant					
Emission Factor	*PM NA	*PM10 NA	*SO <sub>2</sub> NA	**NO <sub>x</sub> 0.068 (lbs/MMBtu)	VOC 0.052 (lbs/MMBtu)	**CO 0.370 (lbs/MMBtu)
<b>Unlimited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>3.69</b>	<b>2.82</b>	<b>20.10</b>
<b>Unlimited Potential to Emit in lb/hr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>0.84</b>	<b>0.64</b>	<b>4.59</b>
<b>Limited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>1.85</b>	<b>1.41</b>	<b>10.05</b>

\* PM, PM10, and SO<sub>2</sub> emission factors are negligible due to the smokeless design and minimal H<sub>2</sub>S levels.

\*\* Emission factors for NO<sub>x</sub>, CO, and VOC are from AP-42, Chapter 13, Table 13.5-1.

**Methodology**

Unlimited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hr/yr x 1 ton/2000 lbs

Unlimited PTE of NO<sub>x</sub>, CO, and VOC (lb/hr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu)

Limited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Fugitive Emissions From Roads**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**FESOP: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: January 30, 2007**

**1. Paved Road Emission Factors: AP-42**

According to AP-42, Chapter 13.2.1 - Paved Roads (12/03), the PM/PM10 emission factors for paved roads can be estimated from the following equation:

$$E = (k \times (sL/2)^a \times (w/3)^b - C) \times (1 - p/(4 \times 365))$$

where:

- E = emission factor (lb/vehicle mile traveled)
  - sL (non-Winter) = road surface silt loading (g/m<sup>2</sup>) = 0.6 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)
  - sL (Winter) = sL (non-Winter) x 4 (g/m<sup>2</sup>) = 2.4 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)
  - w = mean vehicle weight (tons) = 27.5 tons
  - k = empirical constant = 0.082 for PM and 0.016 for PM10
  - a = empirical constant = 0.65
  - b = empirical constant = 1.5
  - C = emission factor for exhaust, brake and tire wear = 0.00047 for PM and PM10
  - p = number of days per year with 0.01 inches precipitation = 120
- PM Emission Factor (non-Winter) =  $(0.082 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.95$  lbs/mile  
 PM10 Emission Factor (non-Winter) =  $(0.016 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.19$  lbs/mile
- PM Emission Factor (Winter) =  $(0.082 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 2.35$  lbs/mile  
 PM10 Emission Factor (Winter) =  $(0.016 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.46$  lbs/mile
- PM Emission Factor (Average Annual) = ((PM Emission Factor (non-Winter) x 9) + (PM Emission Factor (Winter) x 3))/12  
 PM Emission Factor (Average Annual) = 1.30 lbs/mile  
 PM10 Emission Factor (Average Annual) = ((PM10 Emission Factor (non-Winter) x 9) + (PM10 Emission Factor (Winter) x 3))/12  
 PM10 Emission Factor (Average Annual) = 0.25 lbs/mile

**2. Potential to Emit (PTE) of PM/PM10 from Paved Roads:**

Vehicle Type	Ave. Weight of Vehicles* (tons)	Maximum Trip Number* (trips/yr)	Round Trip Distance* (mile/trip)	Vehicle Mile Traveled (VMT) (miles/yr)	Traffic Component (%)	Component Vehicle Weight (tons)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
Denaturant Receiving	27.5	733	1.00	733	0.7%	0.18	0.5	0.09
Ethanol Loadout	27.5	14,667	1.00	14,667	13.3%	3.66	9.56	1.86
Grain Receiving	27.5	44,000	1.00	44,000	39.9%	10.98	28.68	5.59
DDGS Loadout	27.5	14,275	1.00	14,275	12.95%	3.56	9.31	1.81
Wet DGS Loadout	27.5	36,574	1.00	36,574	33.17%	9.12	23.84	4.65
<b>Total **</b>				<b>110,249</b>	<b>100%</b>	<b>27.5</b>	<b>62.6</b>	<b>12.2</b>

\* This information is provided by the source.

\*\* Total emissions do not include emissions from DDGS Loadout as Wet DGS Loadout represents worst-case road emissions.

**Methodology**

Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round Trip Distance (mile/trip)  
 Traffic Component (%) = VMT / Total VMT  
 Component Vehicle Weight = Ave. Weight of Vehicles (tons) x Traffic Component (%)  
 PTE of PM/PM10 before Control (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors (Average Annual) x 1 ton/2000 lbs

**3. Potential to Emit (PTE) of PM/PM10 after Control from Paved Roads:**

The source will use periodic sweeping to control the fugitive dust emissions. The control efficiency from sweeping is assumed to be 50%.

- PTE of PM after Control = 62.6 tons/yr x (1-50%) = **31.28 tons/yr**
- PTE of PM10 after Control = 12.19 tons/yr x (1-50%) = **6.10 tons/yr**

**4. Unpaved Road Emission Factors: AP-42**

According to AP-42, Section 13.2.2 Unpaved Roads, November 2006, the PM/PM10 emission factors for unpaved roads can be estimated from the following equation:

$$\text{lbs/VMT Equation: } E = k (s/12)^a (W/3)^b$$

Where:

- Particle size multiplier k = 4.9 dimensionless (PM-30 or TSP) / 8.5 Table 13.2.2-1
  - surface material silt content (%) s = 5.00 tons
  - mean vehicle weight W = 0.7 PM-30 or TSP Table 13.2.2-2 / 0.45 PM-10 Table 13.2.2-2
  - Equation constants a = 0.9 PM-10 Table 13.2.2-2 / 0.45 PM-10 Table 13.2.2-2
  - b = 0.7 PM-30 or TSP Table 13.2.2-2 / 0.45 PM-10 Table 13.2.2-2
- PM Emission Factor =  $(4.9) \times (8.5/12)^{0.7} \times (5/3)^{0.45} = 4.84$  lbs/mile  
 PM10 Emission Factor =  $(1.5) \times (8.5/12)^{0.9} \times (5/3)^{0.45} = 1.38$  lbs/mile

**5. Potential to Emit (PTE) of PM/PM10 from unpaved Roads:**

Emission Area	Vehicle Weight (tons)	Unpaved Total VMT	Total Vehicle Emissions (lb/yr)	Total Vehicle Emissions (tpy)
Maintenance Roads (PM)	5.00	75	363	0.18
Maintenance Roads (PM10)	5.00	75	104	0.05

**Methodology**

Total Vehicle Emissions (tons/yr) = Unpaved Total VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 Emissions  
From the the Cooling Tower**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Process Description:**

Type of Cooling Tower:	Induced Draft
Circulation Flow Rate:	50,000 gal/min
Total Drift:	0.005% of the circulating flow
Total Dissolved Solids:	2,500 ppm
Density:	8.345 lbs/gal

**2. Potential to Emit PM/PM10:**

Assume all the dissolved solids become PM10 emissions and assume PM emissions are equal to PM10 emissions.

PTE of PM/PM10 (lbs/hr) =  $50,000 \text{ gal/min} \times 60 \text{ min/hr} \times 0.005\% \times 8.345 \text{ lbs/gal} \times 2,500 \text{ ppm} \times 1/1,000,000 \text{ ppm} =$  **3.13 lbs/hr**

PTE of PM/PM10 (tons/yr) =  $3.13 \text{ lbs/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lbs} =$  **13.7 tons/yr**

**Appendix A: Emission Calculations  
Criteria Pollutants  
From the Diesel Fire Pump**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

Power Output  
Horse Power (HP)

Operation Limit  
hr/yr

300

50

	Pollutant					
Emission Factor in lb/HP-hr*	PM** 2.00E-04	PM10** 2.00E-04	SO <sub>2</sub> 1.30E-03	NO <sub>x</sub> 1.15E-02	VOC 3.00E-04	CO 6.00E-04
<b>Limited Potential to Emit in tons/yr</b>	<b>0.002</b>	<b>0.002</b>	<b>0.01</b>	<b>0.09</b>	<b>0.002</b>	<b>0.005</b>

\* Emission factors from engine manufacturer.

\*\* Assume PM10 emissions are equal to PM emissions.

**Methodology**

Limited Potential to Emit (tons/yr) = Power Output (HP) x Emission Factor (lb/HP-hr) x Operation Limit (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Criteria Pollutants  
From Kerosene Space Heaters**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

Heat Input Capacity  
MMBtu/hr

Potential Throughput  
kgals/year

S = Weight % Sulfur  
**0.5**

**0.495**

32.1

Emission Factor in lb/kgal	Pollutant				
	PM/PM10*	SO2	NO <sub>x</sub>	VOC	CO
	0.4	71 (142.0 S)	18.0	0.713	5.0
Potential Emission in tons/yr	0.01	1.1	0.3	0.01	0.1

\*PM emissions assumed to equal PM10 emissions

**Methodology**

1 gallon of Kerosene has a heating value of 135,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 kgal/1,000 gal x 1 gal/0.135 MMBtu

Emission Factors are from AP-42, Tables 1.3-1, and 1.3-3 (Residential Furnaces) Supplement E 9/98

Emission (tons/yr) = Throughput (kgals/yr) x Emission Factor (lb/kgal)/2,000 lb/ton

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From Equipment Leaks**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Fugitive VOC Emissions:**

Equipment Component Source	Product	Component Count*	Emission Factor** (kg/hr/source)	Subpart VV Control Effectiveness*** (%)	Fugitive VOC Emissions (tons/yr)
Valves	Light Liquid	545	0.00403	84%	3.39
Pumps	Light Liquid	45	0.0199	69%	2.68
Valves	Gas/Vapor	91	0.00597	87%	0.68
Flanges/Connectors	Gas/Vapor	910	0.00183	87%	2.09
<b>Total</b>					<b>8.85</b>

\* Component count estimated based on similar ethanol plants.

\*\* Emission factors are from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017.

\*\*\* Control Effectiveness is from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017, Table 5-2.

**Methodology**

Fugitive VOC Emissions (tons/yr) = Component Count x Emission Factor (kg/hr/source) x (1 lb/0.45359 kg) x 8760 hr/yr x 1 ton/2000 lbs x (1-Control Effectiveness)

**2. Fugitive HAP Emissions:**

HAP	HAP Fraction*	Fugitive HAP Emissions (tons/yr)
Formaldehyde	1.69E-04	1.50E-03
Acetaldehyde	1.55E-01	1.37
Methanol	1.50E-02	1.33E-01
Acrolein	4.50E-03	3.98E-02
<b>Total</b>		<b>1.55</b>

\* This is the HAP fraction based on stack testing of similar sources.

**Methodology**

Fugitive HAP Emissions (tons/yr) = Fugitive VOC Emissions (tons/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
From Biomethanator Flare**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

This methanator flare only operates when the DDGS dryers are down.

Max. Heat Input  
MMBtu/hr

6.40

Limited Hours  
of operation (hr/yr)

4,380

Emission Factor in lb/MMBtu <sup>a</sup>	Pollutant						
	PM <sup>b</sup>	PM10 <sup>b</sup>	SO <sub>2</sub> <sup>b</sup>	NOx	CO	VOC	HAP <sup>b</sup>
	-	-	-	0.068	0.37	0.052	-
<b>Unlimited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>1.91</b>	<b>10.37</b>	<b>1.46</b>	Negligible
<b>Limited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>0.95</b>	<b>5.19</b>	<b>0.73</b>	Negligible

<sup>a</sup> Emission factors are from AP-42, Tables 13.5-1 and 13.5-2 (AP-42, 01/95).

<sup>b</sup> The Permittee stated that PM/PM10 emissions from this flare are negligible due to the smokeless design. The PTE of SO<sub>2</sub> and HAP are negligible due to negligible sulfur and HAP presence in the gas stream.

**Methodology**

Unlimited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hrs/yr x 1 ton/2000 lbs

Limited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Hours of operation (hrs/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PTE Summary**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: January 30, 2007**

**1. Limited Potential To Emit after Control - Criteria Pollutants**

<b>Emission Units</b>	<b>PM</b>	<b>PM10</b>	<b>SO<sub>2</sub></b>	<b>*NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>Total HAPs</b>
Grain Receiving and Handling	14.3	14.3	-	-	-	-	-
Grain Receiving - Fugitive	7.65	3.07	-	-	-	-	-
Fermentation	0.58	0.31	-	-	50.0	-	7.75
Distillation, Dryers and RTO Sytem	23.2	23.2	81.4	92.9	21.6	84.0	7.60
DDGS Cooler	2.82	2.82	-	-	8.92	-	1.02
DDGS Handling and Loadout	1.71	1.71	-	-	-	-	-
DDGS Loadout - Fugitive	0.77	0.26	-	-	-	-	-
Wet Cake Storage*	-	-	-	-	See Note	-	See Note
Ethanol Loadout and Flare	-	-	-	1.85	5.6	10.05	1.69
Paved Roads (Fugitive)	31.3	6.10	-	-	-	-	-
Unpaved Roads (Fugitive)	0.18	0.05	-	-	-	-	-
Cooling Tower	13.7	13.7	-	-	-	-	-
Diesel Fire Pump	0.002	0.002	0.01	0.09	0.002	0.005	Negligible
Space Heaters	0.40	0.40	1.14	0.29	0.01	0.08	-
Storage Tanks**	-	-	-	-	2.70	-	Negligible
Leaks	-	-	-	-	8.85	-	1.55
Biomethanator Flare	-	-	-	0.95	0.73	5.19	-
Other Insignificant Activities	1.00	1.00	-	-	1.00	-	-
<b>Total PTE</b>	<b>97.5</b>	<b>66.9</b>	<b>82.6</b>	<b>96.0</b>	<b>99.4</b>	<b>99.4</b>	<b>19.6</b>

Note:

\* This plant is capable of producing both DDGS and MDGS. Emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

\*\* Emissions from the storage tanks were calculated by the Permittee using EPA TANKS software (version 4.09d) and have been verified.

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From Grain Receiving and Handling Operations**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C20	Grain Unloading	Baghouse	0.005	48,000	2.06	9.01	99%	901
C30	Hammermill	Baghouse	0.005	28,000	1.20	5.26	99%	526
Total						14.3		1,427

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
Grain Receiving	1,100,000	0.180	0.059	95%	4.95	1.62
Grain Handling/Storage	1,100,000	0.061	0.0340	95%	1.68	0.94
Grain Scalping	1,100,000	0.012	0.0060	95%	0.33	0.17
Bin Vents	1,100,000	0.025	0.0125	95%	0.69	0.34
<b>Total</b>					<b>7.65</b>	<b>3.07</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-1 (04/03). Assume all the grain receiving and loadout is by truck, which is the worst case scenario. Capture efficiency reflects that the 95% of emissions will be captured and controlled through the Grain Unloading baghouse C20.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From the Fermentation Process**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Process Description:**

Max. Throughput Rate: 110 MMgal/yr of ethanol  
Control Equipment: Wet Scrubber C40

**2. Potential to Emit (PTE) of VOC and HAP:**

Pollutant	*Emission Rate after Control (lbs/MMgal)	PTE after Control (tons/yr)
VOC	909.00	50.0
PM	10.51	0.6
PM10	5.55	0.3
HAP		
Acetaldehyde	115	6.3
Acrolein	5.88	0.3
Methanol	19.85	1.1
Formaldehyde	0.22	0.01
<b>Total HAPs</b>	<b>140.95</b>	<b>7.75</b>

\* Emission factors provided by the source based on stack test results from similar facilities, scaled linearly based on production capacity.  
The Permittee will perform stack testing to demonstrate compliance with the above emission rates.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/MMgal) x 110 MMgal/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Criteria Pollutants  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Thermal Oxidizers, Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
244 (2 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	53.4	0.64

Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1 and 1.4-2 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**2. Dryers, Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
180 (4 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	39.4	0.47

NOx emission factor from manufacturer, SO2 emission factor from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**3. Dryers, Process Emissions**

DDGS Throughput Limit  
(tons/yr)  
356,880

	Pollutant			
	CO	VOC	PM/PM-10	SO2
Emission Rate (lbs/ton) *	0.471	0.121	0.13	0.45
Limited PTE (tons/yr)	84.0	21.6	23.2	80.3

\* Emission rates were estimated by the source based on stack testing results from similar facilities.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton) x DDGS Throughput Limit (tons/yr) x 1 ton/2000 lbs

**4. Total Emissions from RTO Stack**

	Pollutant				
	NOx	SO2	CO	VOC	PM/PM-10
Thermal Oxidizers - Combustion Emissions	53.4	0.64			
Dryers - Combustion Emissions	39.4	0.47			
Dryers - Process Emissions		80.3	84.0	21.6	23.2
<b>Total Potential to Emit (tons/yr)</b>	<b>92.9</b>	<b>81.4</b>	<b>84.0</b>	<b>21.6</b>	<b>23.2</b>

**Methodology**

Total Potential to Emit (tons/yr) = (Thermal Oxidizers, Combustion Emissions) + (Dryers, Combustion Emissions) + (Dryers, Process Emissions)  
The Permittee will perform stack tests to verify the emissions from the RTO stack.

**Appendix A: Emission Calculations  
HAP Emissions  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

DDGS Throughput Limit  
(tons/yr)

356,880
---------

	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
Emission Rate before Control (lb/ton) *	0.28	0.07	0.31	0.11	0.94
<b>PTE after Control in tons/yr</b>	<b>1.50</b>	<b>0.35</b>	<b>1.66</b>	<b>0.59</b>	<b>4.10</b>
<b>PTE before Control in tons/yr</b>	<b>50.0</b>	<b>11.78</b>	<b>55.3</b>	<b>19.6</b>	<b>137</b>

\* HAP emission rates were estimated by the source based on stack testing results from similar facilities.  
The Permittee will perform stack tests to verify the HAP emissions from these units. HAP control efficiency assumed to be 97%.

**Methodology**

PTE after Control (tons/yr) = Emission Rate before Control (lb/ton) x DDGS Throughput Limit (tons/yr) x 1 ton/2000 lbs x (1 - 97% control efficiency)

PTE before Control (tons/yr) = Emission Rate after Control (tons/yr) x (1/(1 - 97% control efficiency))

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr RTO System**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**FESOP: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: October 31, 2006**

Heat Input Capacity  
MMBtu/hr

424

(3 units combined)

Potential Throughput  
MMCF/yr

3714.2

Emission Factor in lbs/MMCF	Pollutant					Total HAPs
	Hexane	Formaldehyde	Toluene	Benzene	Nickel	
	1.8E+00	7.5E-02	3.4E-03	2.1E-03	2.1E-03	
<b>Potential to Emit in tons/yr</b>	3.34	0.14	6.31E-03	3.90E-03	3.90E-03	<b>3.50</b>

Emission factors are from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

#### Methodology

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lbs/MMCF) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 and VOC Emissions  
From the DDGS Cooler**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Potential to Emit PM/PM10**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C70	DDGS Cooler Bypass	Baghouse	0.005	15,000	0.64	2.82	99%	282
Total						2.82		282

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit VOC:**

Annual DDGS Production Limit: 356,880 tons/yr

VOC Emission Factor: 0.05 lbs/ton of DDGS (provided by the source based on stack test results from similar facility)

PTE of VOC (tons/yr) = 356,880 tons/yr x 0.05 lbs/ton x 1 ton/2000 lbs =

**8.92 tons/yr**

**3. Potential to Emit HAPs:**

Emission Rate (lbs/ton DDGS) *	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
3.00E-03	1.30E-03	7.00E-04	7.00E-04	0.23	
<b>Limited PTE in tons/yr</b>	<b>0.54</b>	<b>0.23</b>	<b>0.12</b>	<b>0.12</b>	<b>1.02</b>

\* HAP emission rates were estimated by the source based on stack testing results from a similar engineered site (Glacial Lakes Energy, MN) and scaled linearly based on production capacity. The Permittee will perform stack tests to verify the HAP emissions from these units.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton DDGS) x DDGS production limit (tons/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From DDGS Handling and Loadout Operations**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C90	DDGS Handling and Loadout	Baghouse	0.005	9,100	0.39	1.71	99%	170.8
<b>Total</b>						1.71		170.8

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
	DDGS Handling and Loadout Fugitives	356,880	0.0860	0.0290	95%	0.77	0.26
<b>Total</b>						<b>0.77</b>	<b>0.26</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-2 (03/03).

Capture efficiency reflects that 95% of emissions will be captured and controlled through the DDGS Handling and Loadout baghouse C90.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**VOC and HAP Emissions from Ethanol Loading Racks**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**FESOP: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: October 31, 2006**

**1. Emission Factors: AP-42**

Denatured ethanol will be shipped by either truck railcar loading via the ethanol loading rack. Railcars will be dedicated fleets, but the trucks may be used to carry gasoline prior to filling with ethanol. Both railcars and trucks will be filled by submerged loading process. The ethanol loading rack will be controlled by flare C50.

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck and rail loading racks can be estimated from the following equation:

$$L = 12.46 \times (\text{SPM})/T$$

where:

L = loading loss (lbs/kgal)  
 S = a saturation factor (see AP-42, Table 5.2-1)  
 P = true vapor pressure of the liquid loaded (psia)  
 M = molecular weight of vapors  
 T = temperature of the bulk liquid loaded (degree R)

Previous Stored Liquid	*S	P (psia)	M (lbs/mole lbs)	T (degree R)	L (lbs/kgal)
Gasoline (normal)	1.0	4.3895	66	511	7.06
Gasoline (clean cargo)	0.5	4.3895	66	511	3.53
Denatured Ethanol (normal)	0.6	0.50	49.7	511	0.36
Denatured Ethanol (clean cargo)	0.5	0.50	49.7	511	0.30

Therefore, the emission factor for loading denatured ethanol to the trucks which stored gasoline previously

$$= L(\text{gasoline, normal}) - L(\text{gasoline, clean cargo}) + L(\text{denatured ethanol, clean cargo}) = 3.83 \quad (\text{lbs/kgal})$$

**2. Potential to Emit VOC Before Control:**

(1) Assume all ethanol loaded out via truck:

Loading rate for trucks: 110 MMgal/yr  
 PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 3.83 lbs/kgal x 1 ton/2000 lbs = **211 tons/yr**

(2) Assume all ethanol loaded out via rail:

Loading rate for rail: 110 MMgal/yr  
 PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 0.36 lbs/kgal x 1 ton/2000 lbs = **20.0 tons/yr**

**3. Limited Potential to Emit:**

Annual Production Limit: 110,000 kgal/yr (total)  
 Flare Control Efficiency: 98%

(1) Assume all ethanol loaded out via truck (controlled by flare):  
 PTE of VOC from truck loading (tons/yr) = 3.83 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **4.22 tons/yr**

(2) Assume all denatured ethanol is loaded to railcars (controlled by flare):  
 PTE of VOC (tons/yr) = 0.36 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **0.25 tons/yr**

**Worst case scenario is when loading 110 MMgal/yr denatured ethanol to trucks = 4.22 tons/yr**

**4. Potential to Emit HAPs:**

HAP emissions are mainly from the unloading process for trucks, which may have been used to ship gasoline previously.

HAP	HAP Fraction*	PTE of HAP before Control (tons/yr)	Limited PTE of HAP after Control (tons/yr)
Benzene	2.45E-02	5.17	0.10
Ethyl benzene	2.00E-02	4.22	0.08
Cumene	1.00E-02	2.11	0.04
Xylenes	1.20E-01	25.31	0.51
Toluene	1.50E-01	31.63	0.63
MTBE	7.50E-02	15.82	0.32
<b>Total</b>		<b>84.3</b>	<b>1.69</b>

\* This is the HAP fraction for gasoline vapors.

**Methodology**

PTE of HAP before Control (tons/yr) = PTE of VOC before Control (tons/yr) x HAP %

Limited PTE of HAP after Control (tons/yr) = Limited PTE of VOC by Trucks (tons/yr) x HAP %

**Appendix A: Emission Calculations  
Combustion Emissions  
From Flare C50 for Ethanol Loading Rack**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

Heat Input Capacity  
MMBtu/hr

12.4

Limited Operating Hours  
hr/yr

4,380

Emission Factor	Pollutant					
	*PM	*PM10	*SO <sub>2</sub>	**NO <sub>x</sub>	VOC	**CO
	NA	NA	NA	0.068 (lbs/MMBtu)	0.052 (lbs/MMBtu)	0.370 (lbs/MMBtu)
<b>Unlimited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>3.69</b>	<b>2.82</b>	<b>20.10</b>
<b>Unlimited Potential to Emit in lb/hr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>0.84</b>	<b>0.64</b>	<b>4.59</b>
<b>Limited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>1.85</b>	<b>1.41</b>	<b>10.05</b>

\* PM, PM10, and SO<sub>2</sub> emission factors are negligible due to the smokeless design and minimal H<sub>2</sub>S levels.

\*\* Emission factors for NO<sub>x</sub>, CO, and VOC are from AP-42, Chapter 13, Table 13.5-1.

### Methodology

Unlimited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hr/yr x 1 ton/2000 lbs

Unlimited PTE of NO<sub>x</sub>, CO, and VOC (lb/hr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu)

Limited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Fugitive Emissions From Paved Roads**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Emission Factors: AP-42**

According to AP-42, Chapter 13.2.1 - Paved Roads (12/03), the PM/PM10 emission factors for paved roads can be estimated from the following equation:

$$E = (k \times (sL/2)^a \times (w/3)^b - C) \times (1 - p/(4 \times 365))$$

where:

E = emission factor (lb/vehicle mile traveled)  
sL = road surface silt loading (g/m<sup>2</sup>) = 0.6 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)  
w = mean vehicle weight (tons) = 27.5 tons  
k = empirical constant = 0.082 for PM and 0.016 for PM10  
a = empirical constant = 0.65  
b = empirical constant = 1.5  
C = emission factor for exhaust, brake and tire wear 0.00047 for PM and PM10  
p = number of days per year with 0.01 inches precipitation 120

PM Emission Factor =  $(0.082 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) =$  **0.95 lbs/mile**

PM10 Emission Factor =  $(0.016 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) =$  **0.19 lbs/mile**

**2. Potential to Emit (PTE) of PM/PM10 from Paved Roads:**

Vehicle Type	Ave Weight of Vehicles* (tons)	Trip Number* (trips/yr)	Round Trip Distance* (mile/trip)	Vehicle Mile Traveled (VMT) (miles/yr)	Traffic Component (%)	Component Vehicle Weight (tons)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
Denaturant Receiving	27.5	733	1.00	733	0.7%	0.18	0.3	0.07
Ethanol Loadout	27.5	14,667	1.00	14,667	13.3%	3.66	7.00	1.36
Grain Receiving	27.5	44,000	1.00	44,000	39.9%	10.98	21.00	4.09
DDGS Loadout	27.5	14,275	1.00	14,275	12.95%	3.56	6.81	1.33
Wet DGS Loadout	27.5	36,574	1.00	36,574	33.17%	9.12	17.46	3.40
<b>Total **</b>				<b>110,249</b>	<b>100%</b>	<b>27.5</b>	<b>45.8</b>	<b>8.9</b>

\* This information is provided by the source.

\*\* Total emissions do not include emissions from DDGS Loadout as Wet DGS Loadout represents worst-case road emissions.

**Methodology**

Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round Trip Distance (mile/trip)

Traffic Component (%) = VMT / Total VMT

Component Vehicle Weight = Ave. Weight of Vehicles (tons) x Traffic Component (%)

PTE of PM/PM10 before Control (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2000 lbs

**3. Potential to Emit (PTE) of PM/PM10 after Control from Paved Roads:**

The source will use periodic sweeping to control the fugitive dust emissions.

The control efficiency from sweeping is assumed to be 50%.

PTE of PM after Control = 45.8 tons/yr x (1-50%) = **22.90 tons/yr**

PTE of PM10 after Control = 8.92 tons/yr x (1-50%) = **4.46 tons/yr**

**Appendix A: Emission Calculations  
PM/PM10 Emissions  
From the the Cooling Tower**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Process Description:**

Type of Cooling Tower:	Induced Draft
Circulation Flow Rate:	50,000 gal/min
Total Drift:	0.005% of the circulating flow
Total Dissolved Solids:	2,500 ppm
Density:	8.345 lbs/gal

**2. Potential to Emit PM/PM10:**

Assume all the dissolved solids become PM10 emissions and assume PM emissions are equal to PM10 emissions.

PTE of PM/PM10 (lbs/hr) =  $50,000 \text{ gal/min} \times 60 \text{ min/hr} \times 0.005\% \times 8.345 \text{ lbs/gal} \times 2,500 \text{ ppm} \times 1/1,000,000 \text{ ppm} =$  **3.13 lbs/hr**

PTE of PM/PM10 (tons/yr) =  $3.13 \text{ lbs/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lbs} =$  **13.7 tons/yr**

**Appendix A: Emission Calculations  
Criteria Pollutants  
From the Diesel Fire Pump**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

Power Output  
Horse Power (HP)

Operation Limit  
hr/yr

300

50

	Pollutant					
Emission Factor in lb/HP-hr*	PM** 2.00E-04	PM10** 2.00E-04	SO <sub>2</sub> 1.30E-03	NO <sub>x</sub> 1.15E-02	VOC 3.00E-04	CO 6.00E-04
<b>Limited Potential to Emit in tons/yr</b>	<b>0.002</b>	<b>0.002</b>	<b>0.01</b>	<b>0.09</b>	<b>0.002</b>	<b>0.005</b>

\* Emission factors from engine manufacturer.

\*\* Assume PM10 emissions are equal to PM emissions.

**Methodology**

Limited Potential to Emit (tons/yr) = Power Output (HP) x Emission Factor (lb/HP-hr) x Operation Limit (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From Equipment Leaks**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Fugitive VOC Emissions:**

Equipment Component Source	Product	Component Count*	Emission Factor** (kg/hr/source)	Subpart VV Control Effectiveness*** (%)	Fugitive VOC Emissions (tons/yr)
Valves	Light Liquid	545	0.00403	84%	3.39
Pumps	Light Liquid	45	0.0199	69%	2.68
Valves	Gas/Vapor	91	0.00597	87%	0.68
Flanges/Connectors	Gas/Vapor	910	0.00183	87%	2.09
<b>Total</b>					<b>8.85</b>

\* Component count estimated based on similar ethanol plants.

\*\* Emission factors are from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017.

\*\*\* Control Effectiveness is from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017, Table 5-2.

**Methodology**

Fugitive VOC Emissions (tons/yr) = Component Count x Emission Factor (kg/hr/source) x (1 lb/0.45359 kg) x 8760 hr/yr x 1 ton/2000 lbs x (1-Control Effectiveness)

**2. Fugitive HAP Emissions:**

HAP	HAP Fraction*	Fugitive HAP Emissions (tons/yr)
Formaldehyde	1.69E-04	1.50E-03
Acetaldehyde	1.55E-01	1.37
Methanol	1.50E-02	1.33E-01
Acrolein	4.50E-03	3.98E-02
<b>Total</b>		<b>1.55</b>

\* This is the HAP fraction based on stack testing of similar sources.

**Methodology**

Fugitive HAP Emissions (tons/yr) = Fugitive VOC Emissions (tons/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
From Biomethanator Flare**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

This methanator flare only operates when the DDGS dryers are down.

Max. Heat Input  
MMBtu/hr

6.40

Limited Hours  
of operation (hr/yr)

4,380

Emission Factor in lb/MMBtu <sup>a</sup>	Pollutant						
	PM <sup>b</sup>	PM10 <sup>b</sup>	SO <sub>2</sub> <sup>b</sup>	NOx	CO	VOC	HAP <sup>b</sup>
	-	-	-	0.068	0.37	0.052	-
<b>Unlimited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>1.91</b>	<b>10.37</b>	<b>1.46</b>	Negligible
<b>Limited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>0.95</b>	<b>5.19</b>	<b>0.73</b>	Negligible

<sup>a</sup> Emission factors are from AP-42, Tables 13.5-1 and 13.5-2 (AP-42, 01/95).

<sup>b</sup> The Permittee stated that PM/PM10 emissions from this flare are negligible due to the smokeless design. The PTE of SO<sub>2</sub> and HAP are negligible due to negligible sulfur and HAP presence in the gas stream.

**Methodology**

Unlimited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hrs/yr x 1 ton/2000 lbs

Limited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Hours of operation (hrs/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PTE Summary**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
FESOP: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Limited Potential To Emit after Control - Criteria Pollutants**

<b>Emission Units</b>	<b>PM</b>	<b>PM10</b>	<b>SO<sub>2</sub></b>	<b>*NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>Total HAPs</b>
Grain Receiving and Handling	14.3	14.3	-	-	-	-	-
Grain Receiving - Fugitive	7.65	3.07	-	-	-	-	-
Fermentation	0.58	0.31	-	-	50.0	-	7.75
Distillation, Dryers and RTO Sytem	23.2	23.2	81.4	92.9	21.6	84.0	7.60
DDGS Cooler	2.82	2.82	-	-	8.92	-	1.02
DDGS Handling and Loadout	1.71	1.71	-	-	-	-	-
DDGS Loadout - Fugitive	0.77	0.26	-	-	-	-	-
Wet Cake Storage*	-	-	-	-	See Note	-	See Note
Ethanol Loadout and Flare	-	-	-	1.85	5.6	10.05	1.69
Paved Roads (Fugitive)	22.9	4.46	-	-	-	-	-
Cooling Tower	13.7	13.7	-	-	-	-	-
Diesel Fire Pump	0.002	0.002	0.010	0.086	0.002	0.005	Negligible
Storage Tanks**	-	-	-	-	2.70	-	Negligible
Leaks	-	-	-	-	8.85	-	1.55
Biomethanator Flare	-	-	-	0.95	0.73	5.19	-
Other Insignificant Activities	1.00	1.00	-	-	1.00	-	-
<b>Total PTE</b>	<b>88.6</b>	<b>64.8</b>	<b>81.4</b>	<b>95.7</b>	<b>99.4</b>	<b>99.3</b>	<b>19.6</b>

Note:

\* This plant is capable of producing both DDGS and MDGS. Emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

\*\* Emissions from the storage tanks were calculated by the Permittee using EPA TANKS software (version 4.09d) and have been verified.

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From Grain Receiving and Handling Operations**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C20	Grain Unloading	Baghouse	0.005	48,000	2.06	9.01	99%	901
C30	Hammermill	Baghouse	0.005	28,000	1.20	5.26	99%	526
Total						14.3		1,427

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
Grain Receiving	1,100,000	0.035	0.0078	95%	0.96	0.21
Grain Handling/Storage	1,100,000	0.061	0.0340	95%	1.68	0.94
Grain Scalping	1,100,000	0.012	0.0060	95%	0.33	0.17
Bin Vents	1,100,000	0.025	0.0125	95%	0.69	0.34
<b>Total</b>					<b>3.66</b>	<b>1.66</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-1 (04/03). Assume all the grain receiving and loadout is by truck, which is the worst case scenario. Capture efficiency reflects that the 95% of emissions will be captured and controlled through the Grain unloading baghouse C20.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From the Fermentation and Distillation Process**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Process Description:**

Max. Throughput Rate: 110 MM gal/yr of ethanol  
Control Equipment: Wet Scrubber C40 and thermal oxidizer C10.

**2. Potential to Emit (PTE) of VOC and HAP:**

Pollutant	*Emission Rate after Control (lbs/MM gal)	PTE after Control (tons/yr)
VOC	909.00	50.0
PM	10.51	0.6
PM10	5.55	0.3
HAP		
Acetaldehyde	115	6.3
Acrolein	5.88	0.3
Methanol	19.85	1.1
Formaldehyde	0.22	0.01
<b>Total HAPs</b>	<b>140.95</b>	<b>7.75</b>

\* Emission factors provided by the source based on stack test results from similar facilities, scaled linearly based on production capacity.  
The Permittee will perform stack testing to demonstrate compliance with the above emission rates.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Criteria Pollutants  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr TO/HRSG System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Thermal Oxidizers - Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
244 (2 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	53.44	0.64

Emission factors are from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**2. Dryers - Combustion Emissions**

Heat Input Capacity  
MMBtu/hr  
180 (4 units combined)

	Pollutant	
	NOx	SO2
Emission Factor in lbs/MMBtu	0.05	0.0006
PTE (tons/yr)	39.42	0.47

NOx emission factor from manufacturer, SO2 emission factor from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

**Methodology**

PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8,760 (hr/yr) x 1 ton/2000 lbs

**3. Dryers - Process Emissions**

DDGS Throughput Limit  
(tons/yr)  
356,880

	Pollutant			
	CO	VOC	PM/PM-10	SO2
Emission Rate (lbs/ton) *	0.465	0.115	0.13	0.45
Limited PTE (tons/yr)	82.97	20.52	23.20	80.30

\* Emission rates were estimated by the source based on stack testing results from similar facilities. The Permittee will perform stack tests to verify the emissions from the RTO stack.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton) x DDGS Throughput Limit (tons/yr) x 1 ton/2000 lbs

**3. Total Emissions from RTO Stack**

	Pollutant				
	NOx	SO2	CO	VOC	PM/PM-10
Thermal Oxidizers - Combustion Emissions	53.44	0.64			
Dryers - Combustion Emissions	39.42	0.47			
Dryers - Process Emissions		80.30	82.97	20.52	23.20
<b>Total Potential to Emit (tons/yr)</b>	<b>92.86</b>	<b>81.41</b>	<b>82.97</b>	<b>20.52</b>	<b>23.20</b>

**Methodology**

Total Potential to Emit (tons/yr) = Thermal Oxidizers - Combustion Emissions + (Dryers - Combustion Emissions) + (Dryers - Process Emissions)

**Appendix A: Emission Calculations  
HAP Emissions  
From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr TO/HRSG System**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

DDGS Throughput Limit  
(tons/yr)

356,880
---------

	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
Emission Rate after Control (lb/ton) *	0.28	0.07	0.31	0.11	0.77
<b>PTE after Control in tons/yr</b>	<b>1.23</b>	<b>0.29</b>	<b>1.36</b>	<b>0.48</b>	<b>3.36</b>

\* HAP emission rates were estimated by the source based on stack testing results from similar facilities.  
The Permittee will perform stack tests to verify the HAP emissions from these units.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Four (4) 45 MMBtu/hr DDGS Dryers and Two (2) 122 MMBtu/hr TO/HRSG Systems**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**SPR: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: October 31, 2006**

Heat Input Capacity  
MMBtu/hr

424

(3 units combined)

Potential Throughput  
MMCF/yr

3714.2

Emission Factor in lbs/MMCF	Pollutant					Total HAPs
	Hexane	Formaldehyde	Toluene	Benzene	Nickel	
	1.8E+00	7.5E-02	3.4E-03	2.1E-03	2.1E-03	
<b>Potential to Emit in tons/yr</b>	3.34	0.14	6.31E-03	3.90E-03	3.90E-03	<b>3.50</b>

Emission factors are from AP-42, Chapter 1.4, Table 1.4-3 (AP-42, 03/98).

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

#### Methodology

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

PTE (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lbs/MMCF) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 and VOC Emissions  
From the DDGS Cooler**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Potential to Emit PM/PM10**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C70	DDGS Cooler Bypass	Baghouse	0.005	15,000	0.64	2.82	99%	282
Total						2.82		282

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit VOC:**

Annual DDGS Production Limit: 356,880 tons/yr

VOC Emission Factor: 0.05 lbs/ton of DDGS (provided by the source based on stack test results from similar facility)

PTE of VOC (tons/yr) = 356,880 tons/yr x 0.05 lbs/ton x 1 ton/2000 lbs =

**8.92 tons/yr**

**3. Potential to Emit HAPs:**

Emission Rate (lbs/ton DDGS) *	Pollutant				
	Acetaldehyde	Acrolein	Formaldehyde	Methanol	Total
3.00E-03	1.30E-03	7.00E-04	7.00E-04	0.23	
<b>Limited PTE in tons/yr</b>	<b>0.54</b>	<b>0.23</b>	<b>0.12</b>	<b>0.12</b>	<b>1.02</b>

\* HAP emission rates were estimated by the source based on stack testing results from a similar engineered site (Glacial Lakes Energy, MN) and scaled linearly based on production capacity. The Permittee will perform stack tests to verify the HAP emissions from these units.

**Methodology**

Limited PTE (tons/yr) = Emission Rate (lbs/ton DDGS) x DDGS production limit (tons/yr) x 8760 hr/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**PM and PM10 Emissions**  
**From DDGS Handling and Loadout Operations**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**SPR: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: October 31, 2006**

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/dscf)	Maximum Air Flow Rate (scfm)	PTE of PM/PM10 after Control (lbs/hr)	PTE of PM/PM10 after Control (tons/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (tons/yr)
C90	DDGS Handling and Loadout	Baghouse	0.005	9,100	0.39	1.71	99%	170.8
<b>Total</b>						<b>1.71</b>		<b>170.8</b>

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lbs/hr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (tons/yr) = Grain Loading (gr/dscf) x Max. Air Flow Rate (scfm) x 60 mins/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lbs

PTE of PM/PM10 before Control (tons/yr) = PTE of PM/PM10 after Control (tons/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (tons/yr)	Uncontrolled PM Emission Factor (lbs/ton)	Uncontrolled PM10 Emission Factor (lbs/ton)	Capture Efficiency (%)	Fugitive PM Emissions (tons/yr)	Fugitive PM10 Emissions (tons/yr)
	DDGS Handling and Loadout Fugitives	356,880	0.0033	0.0008	95%	0.03	0.01
<b>Total</b>						<b>0.03</b>	<b>0.01</b>

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-2 (03/03).

Capture efficiency reflects that the majority of emissions will be captured and controlled through the DDGS Handling and Loadout baghouse C90.

**Methodology**

Fugitive PM/PM10 (tons/yr) = Annual Throughput Limit (tons/yr) x Uncontrolled Emission Factor (lbs/ton) x (1-Capture Efficiency%) x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**VOC and HAP Emissions from Ethanol Loading Racks**

**Company Name: Indiana Bio-Energy**  
**Address: 1469 South Adams Street, Bluffton, IN 46714**  
**SPR: 179-23641-00033**  
**Reviewer: ERG/MP**  
**Date: October 31, 2006**

**1. Emission Factors: AP-42**

Denatured ethanol will be shipped by either truck railcar loading via the ethanol loading rack. Railcars will be dedicated fleets, but the trucks may be used to carry gasoline prior to filling with ethanol. Both railcars and trucks will be filled by submerged loading process. The ethanol loading rack will be controlled by flare C50.

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck and rail loading racks can be estimated from the following equation:

$$L = 12.46 \times (SPM)/T$$

where:

L = loading loss (lbs/kgal)  
S = a saturation factor (see AP-42, Table 5.2-1)  
P = true vapor pressure of the liquid loaded (psia)  
M = molecular weight of vapors  
T = temperature of the bulk liquid loaded (degree R)

Previous Stored Liquid	*S	P (psia)	M (lbs/mole lbs)	T (degree R)	L (lbs/kgal)
Gasoline (normal)	1.0	4.3895	66	511	7.06
Gasoline (clean cargo)	0.5	4.3895	66	511	3.53
Denatured Ethanol (normal)	0.6	0.50	49.7	511	0.36
Denatured Ethanol (clean cargo)	0.5	0.50	49.7	511	0.30

Therefore, the emission factor for loading denatured ethanol to the trucks which stored gasoline previously

$$= L(\text{gasoline, normal}) - L(\text{gasoline, clean cargo}) + L(\text{denatured ethanol, clean cargo}) = 3.83 \quad (\text{lbs/kgal})$$

**2. Potential to Emit VOC Before Control:**

(1) Assume all ethanol loaded out via truck:

Loading rate for trucks: 110 MMgal/yr  
PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 3.83 lbs/kgal x 1 ton/2000 lbs = **211 tons/yr**

(2) Assume all ethanol loaded out via rail:

Loading rate for rail: 110 MMgal/yr  
PTE of VOC before Control (tons/yr) = 110 MMgal/yr x 0.36 lbs/kgal x 1 ton/2000 lbs = **20.0 tons/yr**

**3. Limited Potential to Emit:**

Annual Production Limit: 110,000 kgal/yr (total)  
Flare Control Efficiency: 98%

(1) Assume all ethanol loaded out via truck (controlled by flare):  
PTE of VOC from truck loading (tons/yr) = 3.83 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **4.22 tons/yr**

(2) Assume all denatured ethanol is loaded to railcars (controlled by flare):  
PTE of VOC (tons/yr) = 0.36 lbs/kgal x 110,000 kgal/yr x (1-98%) x 1 ton/2000 lbs = **0.25 tons/yr**

**Worst case scenario is when loading 110 MMgal/yr denatured ethanol to trucks = 4.22 tons/yr**

**4. Potential to Emit HAPs:**

HAP emissions are mainly from the unloading process for trucks, which may have been used to ship gasoline previously.

HAP	HAP Fraction*	PTE of HAP before Control (tons/yr)	Limited PTE of HAP after Control (tons/yr)
Benzene	2.45E-02	5.17	0.10
Ethyl benzene	2.00E-02	4.22	0.08
Cumene	1.00E-02	2.11	0.04
Xylenes	1.20E-01	25.31	0.51
Toluene	1.50E-01	31.63	0.63
MTBE	7.50E-02	15.82	0.32
<b>Total</b>		<b>84.3</b>	<b>1.69</b>

\* This is the HAP fraction for gasoline vapors.

**Methodology**

PTE of HAP before Control (tons/yr) = PTE of VOC before Control (tons/yr) x HAP %

Limited PTE of HAP after Control (tons/yr) = Limited PTE of VOC by Trucks (tons/yr) x HAP %

**Appendix A: Emission Calculations  
Combustion Emissions  
From Flare C50 for Ethanol Loading Rack**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

Heat Input Capacity  
MMBtu/hr

Limited Loadout  
hr/yr

12.4

4,380

	Pollutant					
Emission Factor	*PM	*PM10	*SO <sub>2</sub>	**NO <sub>x</sub>	VOC	**CO
	NA	NA	NA	0.068 (lbs/MMBtu)	0.052 (lbs/MMBtu)	0.370 (lbs/MMBtu)
<b>Unlimited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>3.69</b>	<b>2.82</b>	<b>20.10</b>
<b>Limited Potential to Emit in tons/yr</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>1.85</b>	<b>1.41</b>	<b>10.05</b>

\* PM, PM10, and SO<sub>2</sub> emission factors are negligible due to the smokeless design and minimal H<sub>2</sub>S levels.

\*\* Emission factors for NO<sub>x</sub>, CO, and VOC are from AP-42, Chapter 13, Table 13.5-1.

**Methodology**

Unlimited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hr/yr x 1 ton/2000 lbs

Limited PTE of NO<sub>x</sub>, CO, and VOC (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Loadout (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Fugitive Emissions From Paved Roads**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Emission Factors: AP-42**

According to AP-42, Chapter 13.2.1 - Paved Roads (12/03), the PM/PM10 emission factors for paved roads can be estimated from the following equation:

$$E = (k \times (sL/2)^a \times (w/3)^b - C) \times (1 - p/(4 \times 365))$$

where:

E = emission factor (lb/vehicle mile traveled)	
sL = road surface silt loading (g/m <sup>2</sup> ) =	0.6 (g/m <sup>2</sup> ) (AP-42, Table 13.2.1-3)
w = mean vehicle weight (tons) =	27.5 tons
k = empirical constant =	0.082 for PM and 0.016 for PM10
a = empirical constant =	0.65
b = empirical constant =	1.5
C = emission factor for exhaust, brake and tire wear	0.00047 for PM and PM10
p = number of days per year with 0.01 inches precipitation	120

PM Emission Factor =  $(0.082 \times (0.6/2)^{0.65} \times (29/3)^{1.5} - 0.00047) \times (1 - 120/1460) =$  **0.95 lbs/mile**

PM10 Emission Factor =  $(0.016 \times (0.6/2)^{0.65} \times (29/3)^{1.5} - 0.00047) \times (1 - 120/1460) =$  **0.19 lbs/mile**

**2. Potential to Emit (PTE) of PM/PM10 from Paved Roads:**

Vehicle Type	Ave Weight of Vehicles* (tons)	Trip Number* (trips/yr)	Round Trip Distance* (mile/trip)	Vehicle Mile Traveled (VMT) (miles/yr)	Traffic Component (%)	Component Vehicle Weight (tons)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
Denaturant Receiving	27.5	733	1.00	733	0.8%	0.22	0.3	0.07
Ethanol Loadout	27.5	14,667	1.00	14,667	15.9%	4.39	7.00	1.36
Grain Receiving	27.5	44,000	1.00	44,000	47.8%	13.16	21.00	4.09
DDGS Loadout	27.5	14,275	1.00	14,275	15.52%	4.27	6.81	1.33
Wet DGS Loadout	27.5	18,287	1.00	18,287	19.89%	5.47	8.73	1.70
<b>Total **</b>				<b>91,962</b>	<b>100%</b>	<b>27.5</b>	<b>37.1</b>	<b>7.2</b>

\* This information is provided by the source.

\*\* Total emissions do not include emissions from DDGS Loadout as Wet DGS Loadout represents worst-case road emissions.

**Methodology**

Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round-Trip Distance (mile/trip)

Traffic Component (%) = VMT / Total VMT

Component Vehicle Weight = Ave. Weight of Vehicles (ton) x Traffic Component (%)

PTE of PM/PM10 before Control (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 Emissions  
From the the Cooling Tower**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Process Description:**

Type of Cooling Tower:	Induced Draft
Circulation Flow Rate:	50,000 gal/min
Total Drift:	0.005% of the circulating flow
Total Dissolved Solids:	2,500 ppm
Density:	8.345 lbs/gal

**2. Potential to Emit PM/PM10:**

Assume all the dissolved solids become PM10 emissions and assume PM emissions are equal to PM10 emissions.

PTE of PM/PM10 (lbs/hr) =  $50,000 \text{ gal/min} \times 60 \text{ min/hr} \times 0.005\% \times 8.345 \text{ lbs/gal} \times 2,500 \text{ ppm} \times 1/1,000,000 \text{ ppm} =$  **3.13 lbs/hr**

PTE of PM/PM10 (tons/yr) =  $3.13 \text{ lbs/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lbs} =$  **13.7 tons/yr**

**Appendix A: Emission Calculations  
Criteria Pollutants  
From the Diesel Fire Pump**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

Power Output  
Horse Power (HP)

Operation Limit  
hr/yr

300

50

	Pollutant					
Emission Factor in lb/HP-hr*	PM**	PM10**	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO
	2.00E-04	2.00E-04	1.30E-03	1.15E-02	3.00E-04	6.00E-04
<b>Potential to Emit in tons/yr</b>	<b>0.002</b>	<b>0.002</b>	<b>0.01</b>	<b>0.09</b>	<b>0.002</b>	<b>0.005</b>

\* Emission factors from engine manufacturer.

\*\* Assume PM10 emissions are equal to PM emissions.

**Methodology**

PTE (tons/yr) = Power Output (HP) x Emission Factor (lb/HP-hr) x Operation Limit (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From Equipment Leaks**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Fugitive VOC Emissions:**

Equipment Component Source	Product	Component Count*	Emission Factor** (kg/hr/source)	Subpart VV Control Effectiveness*** (%)	Fugitive VOC Emissions (tons/yr)
Valves	Light Liquid	545	0.00403	84%	3.39
Pumps	Light Liquid	45	0.0199	69%	2.68
Valves	Gas/Vapor	91	0.00597	87%	0.68
Flanges/Connectors	Gas/Vapor	910	0.00183	87%	2.09
<b>Total</b>					<b>8.85</b>

\* Component count estimated based on similar ethanol plants.

\*\* Emission factors are from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017.

\*\*\* Control Effectiveness is from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017, Table 5-2.

**Methodology**

Fugitive VOC Emissions (tons/yr) = Component Count x Emission Factor (kg/hr/source) x (1 lb/0.45359 kg) x 8760 hr/yr x 1 ton/2000 lbs x (1-Control Effectiveness)

**2. Fugitive HAP Emissions:**

HAP	HAP Fraction*	Fugitive HAP Emissions (tons/yr)
Formaldehyde	1.69E-04	1.50E-03
Acetaldehyde	1.55E-01	1.37E+00
Methanol	1.50E-02	1.33E-01
Acrolein	4.50E-03	3.98E-02
<b>Total</b>		<b>1.55</b>

\* This is the HAP fraction based on stack testing of fermentation scrubber.

**Methodology**

Fugitive HAP Emissions (tons/yr) = Fugitive VOC Emissions (tons/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
From Biomethanator Flare**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

This methanator flare only operates when the DDGS dryers are down.

Max. Heat Input  
MMBtu/hr

6.40

Limited Hours  
of operation (hr/yr)

4,380

Emission Factor in lb/MMBtu <sup>a</sup>	Pollutant						
	PM <sup>b</sup>	PM10 <sup>b</sup>	SO <sub>2</sub> <sup>b</sup>	NOx	CO	VOC	HAP <sup>b</sup>
	-	-	-	0.068	0.37	0.052	-
<b>Unlimited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>1.91</b>	<b>10.37</b>	<b>1.46</b>	Negligible
<b>Limited PTE (tons/yr)</b>	Negligible	Negligible	Negligible	<b>0.95</b>	<b>5.19</b>	<b>0.73</b>	Negligible

<sup>a</sup> Emission factors are from AP-42, Tables 13.5-1 and 13.5-2 (AP-42, 01/95).

<sup>b</sup> The Permittee stated that PM/PM10 emissions from this flare are negligible due to the smokeless design. The PTE of SO<sub>2</sub> and HAP are negligible due to negligible sulfur and HAP presence in the gas stream.

**Methodology**

Unlimited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x 8760 hrs/yr x 1 ton/2000 lbs

Limited PTE (tons/yr) = Max. Heat Input (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Limited Hours of operation (hrs/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PTE Summary**

**Company Name: Indiana Bio-Energy  
Address: 1469 South Adams Street, Bluffton, IN 46714  
SPR: 179-23641-00033  
Reviewer: ERG/MP  
Date: October 31, 2006**

**1. Limited Potential To Emit after Control - Criteria Pollutants**

<b>Emission Units</b>	<b>PM</b>	<b>PM10</b>	<b>SO<sub>2</sub></b>	<b>*NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>Total HAPs</b>
Grain Receiving and Handling	14.3	14.3	-	-	-	-	-
Grain Receiving - Fugitive	3.66	1.66	-	-	-	-	-
Fermentation	0.58	0.31	-	-	50.0	-	7.75
Dryers and RT/HRSG Systems	23.2	23.2	81.4	92.9	20.5	83.0	6.85
DDGS Cooler	2.82	2.82	-	-	8.92	-	1.02
DDGS Handling and Loadout	1.71	1.71	-	-	-	-	-
DDGS Loadout - Fugitive	0.03	0.01	-	-	-	-	-
Wet Cake Storage*	-	-	-	-	See Note	-	See Note
Ethanol Loadout and Flare	-	-	-	1.85	4.2	10.05	1.69
Paved Roads (Fugitive)	37.08	7.22	-	-	-	-	-
Cooling Tower	13.7	13.7	-	-	-	-	-
Diesel Fire Pump	0.002	0.002	0.010	0.086	0.002	0.005	Negligible
Storage Tanks**	-	-	-	-	2.70	-	Negligible
Leaks	-	-	-	-	8.85	-	1.55
Biomethanator Flare	-	-	-	0.95	0.73	5.19	-
Other Insignificant Activities	1.00	1.00	-	-	1.00	-	-
<b>Total PTE</b>	<b>98.0</b>	<b>65.9</b>	<b>81.4</b>	<b>95.7</b>	<b>96.9</b>	<b>98.2</b>	<b>18.9</b>

Note:

\* This plant is capable of producing both DDGS and MDGS. Emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

\*\* Emissions from the storage tanks were calculated by the Permittee using EPA TANKS software (version 4.09d) and have been verified.

**2. Limited Potential To Emit after Control - HAPs**

## Appendix B

### Best Available Control Technology (BACT) Determinations

#### Source Background and Description

Source Name: Indiana Bio-Energy, LLC  
Source Location: 1469 South Adams Street, Bluffton, IN 46714  
County: Wells  
SIC Code: 2869  
Operation Permit No.: F179-23641-00033  
Permit Reviewer: ERG/MP

The Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) has performed the following Best Available Control Technology (BACT) reviews for a new ethanol production plant. Pursuant to 326 IAC 8-1-6 (New Facilities; General Reduction Requirements), BACT is required for all facilities constructed after January 1, 1980 that have potential VOC emissions of equal to or greater than twenty-five (25) tons per year and are not regulated by other rules in 326 IAC 8. Based on the calculations (see Appendix A) and the analysis of applicable state regulations (see State Rule Applicability section of TSD), the following facilities are subject to the requirements of 326 IAC 8-1-6:

- Fermentation Process;
- Distillation and Dehydration Process;
- DDGS Dryers; and
- Ethanol Loadout.

IDEM, OAQ conducts BACT analyses in accordance with the “*Top-Down*” *Best Available Control Technology Guidance Document* outlined in the 1990 draft US EPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. Those steps are listed below:

- (a) Identify all potentially available control options;
- (b) Eliminate technically infeasible control options;
- (c) Rank remaining control technologies by control effectiveness;
- (d) Evaluate the most effective controls and document the results as necessary; and
- (e) Select BACT.

In accordance with EPA guidance, the BACT analysis should take into account the energy, environmental, and economic impacts. Emission reductions may be achieved through the application of available control techniques, changes in process design, and/or operational limitations.

A summary of the BACT review for the fermentation process is provided in Section B.1, the BACT review for the distillation and dehydration process is provided in Section B.2, the BACT review for the DDGS dryers is provided in Section B.3, and the BACT review for the ethanol loadout is provided in Section B.4. These BACT determinations are based on the following information:

- (a) The EPA RACT/BACT/LAER (RBLC) Clearinghouse; and
- (b) State and local air quality permits.

## **Appendix B.1 Best Available Control Technology (BACT) Determination For the Fermentation Process**

### **Introduction:**

Indiana Bio-Energy, LLC (Indiana Bio-Energy) will use a fermentation process to produce ethanol from grain. The potential VOC emissions from this activity are estimated to be greater than 25 tons per year. Since this facility will be constructed after the January 1, 1980 applicability date and there are no other 326 IAC 8 rules applicable to this process, Indiana Bio-Energy is required to control the VOC emissions from the fermentation process using BACT, pursuant to 326 IAC 8-1-6.

### **Step 1 – Identify Control Options**

The following available technologies were identified and evaluated to control VOC emissions from the fermentation process at ethanol production plants:

(a) IDEM, OAQ reviewed the following six control technologies:

1. Carbon Adsorption:

Carbon adsorption is a process by which VOC is retained on a granular carbon surface, which is highly porous and has a very large surface-to-volume ratio. Organic vapors retained on the adsorbent are thereafter desorbed and both the adsorbate and adsorbent are recovered.

Carbon adsorption systems operate in two phases: adsorption and desorption. Adsorption is rapid and removes most of the VOCs in the stream. Eventually, the adsorbent becomes saturated with the vapors and the system's efficiency drops. The adsorbent must be regenerated or replaced soon after efficiency begins to decline. In regenerative systems, the adsorbent is reactivated with steam or hot air and the adsorbate (solvent) is recovered for reuse or disposal. Non-regenerative systems require the removal of the adsorbent and replacement with fresh or previously regenerated carbon.

2. Wet Scrubbers:

A wet scrubber is an absorption system in which the waste stream is dissolved in a solvent by passing it through a medium containing the solvent. Water is the most commonly used solvent. Other solvents may be used depending on the components of the waste stream.

3. Thermal Oxidation:

An efficient thermal oxidizer design must provide adequate residence time for complete combustion, sufficiently high temperatures for VOC destruction, and adequate velocities to ensure proper mixing without quenching combustion. The type of burners and their arrangement affect combustion rates and residence time. The more thorough the contact between the flame and VOC, the shorter the time required for complete combustion. Natural gas is required to ignite the flue gas mixtures and maintain combustion temperatures. Typically, a heat exchanger upstream of the oxidizer uses the heat content of the oxidizer flue gas to preheat the incoming VOC-laden stream to improve the efficiency of the oxidizer.

Of all the VOC control technologies evaluated, thermal oxidization is least affected by waste stream characteristics. A properly designed thermal oxidizer can handle almost all solvent mixtures (except for fluorinated or chlorinated solvents) and concentrations, and therefore meet all regulatory standards. In addition to the energy penalty associated with thermal oxidization, NO<sub>x</sub> emissions will be generated from the combustion of natural gas

used to fuel the oxidizer. A thermal oxidizer normally provides a VOC destruction efficiency of at least 98%.

4. Catalytic Oxidation:

In a catalytic oxidizer, a catalyst is used to lower the activation energy for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of VOCs without being permanently altered itself. In catalytic oxidization, combustion occurs at significantly lower temperatures than that of direct flame units and can also achieve a destruction efficiency of 98%. However, steps must be taken to ensure complete combustion. The types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese, and nickel. These catalysts are deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic.

5. Flare:

Flares can be used to control almost any VOC stream and can handle fluctuations in VOC concentration, flow rate, heat content, and inert content. Flaring is appropriate for continuous, batch, and variable flow vent stream application. Some streams, such as those containing halogenated or sulfur-containing compounds, are usually not flared because they corrode the flare tip or cause formation of secondary pollutants (such as acid gases or sulfur dioxide). A flare normally provides a VOC destruction efficiency greater than 98%.

6. Refrigeration Condenser:

Condensation is the process by which the temperature of the waste stream is lowered to below the boiling points of the waste constituents. A refrigeration condenser normally provides a VOC control efficiency greater than 90%.

(b) The search for the fermentation process in EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following:

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
DRS Ventures, LLC	F139-22981-00020	11/13/06 (IN)	Fermentation	Wet scrubber combined with a thermal oxidizer with an overall control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 6.12 lbs/hr.	Under Construction
Central Indiana Ethanol, LLC	SPR 053-22564-00062	07/20/06 (IN)	Fermentation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 7.62 lbs/hr.	Under Construction
Premier Ethanol, LLC	F075-22858-00032	9/18/06(IN)	Fermentation	Wet scrubber combined with a thermal oxidizer with an overall control efficiency of 99% or VOC < 10 ppmv. VOC emissions < 10.5 lbs/hr.	Under Construction
Putnam Ethanol, LLC	SPM 133-22480-00003	3/23/06 (IN)	Fermentation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 5.85 lbs/hr.	Under Construction
The Andersons Clymers Ethanol, LLC	F017-21536-00023	2/15/06 (IN)	Fermentation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 7.5 lbs/hr.	Under Construction
ASA Linden, LLC	F017-21453-00061	2/8/06 (IN)	Fermentation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 10.2 lbs/hr.	Under Construction
Hartford Energy, LLC	F009-21592-00024	1/31/06 (IN)	Fermentation	Wet scrubber with a control efficiency of 98%. VOC emissions < 2.22 lbs/hr.	Under Construction
Central Indiana Ethanol, LLC	F053-21057-00062	08/04/05 (IN)	Fermentation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 6.0 lbs/hr.	Under Construction

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
United Wisconsin Grain Producers	WI-0204	8/14/03 (WI)	Fermentation	Wet scrubber (packed tower). VOC Emissions < 7.4 lbs/hr	Not Available
Michigan Ethanol	MI-0359	11/04/02 (MI)	Fermentation	BACT determined to be a scrubber with 97% control efficiency and VOC emissions < 6.0 lbs/hr	97.4% (03/19/03)
Grain Processing Corporation	IN-0075	06/10/97 (IN)	Fermentation	Scrubber with 95% control efficiency	Not Available
Cargill, Inc.	NE-0016	04/25/96 (NE)	Fermentation	BACT determined to be a wet scrubber with a VOC emission limit of 11.8 lbs/hr	Not Available

In addition to the RBLC data, IDEM obtained the following information for the fermentation processes at other ethanol production plants from ICM (an ethanol plant manufacturer):

Source, State	Max. Ethanol Production Rate (MMgal/yr)	Control Technology	Emission Limits	Stack Test Results and Dates
Agri-Energy*, MN	22	Wet scrubber and thermal oxidizer	95% removal or 10 ppm	0.58 lbs/hr (01/30/03)
AI-Corn*, MN	34.5	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	99.2%; 6.65 lbs/hr (01/21/03)
Central MN Ethanol*, MN	22	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	99.0%; 2.04 lbs/hr (11/27/02)
Corn Plus, MN	44	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
CVEC, MN	49.5	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
Diversified Energy Co.**, MN	20	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	2.74 lbs/hr (01/04)
Ethanol 2000**, MN	35	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	98.28%; 5.40 lbs/hr (12/04/02)
Agra Resources Coop. (dba EXOL), MN	50	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
Pro-Corn, MN	50	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	5.11 lbs/hr (04/01/03)
ACE Ethanol*, WI	20	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	1.07 lbs/hr (11/20/02)
CMEC, MN	22	Wet scrubber	4.3 lbs/hr	98.98%; 2.88 lbs/hr (11/26/02)
MN Energy, MN	19	Wet scrubber	NA	23 lbs/hr (04/07/03)
Gopher State, MN	NA	2 wet scrubbers in series	98% collection efficiency	99.5%; 0.81 lbs/hr (07/09/03)

\* lbs/hr as ethanol

\*\* lbs/hr as carbon multiplied by the Midwest Scaling Factor of 2.0

## **Step 2 – Eliminate Technically Infeasible Control Options**

After reviewing the above technologies, IDEM, OAQ eliminated carbon adsorption as not technically feasible for fermentation processes. The reasons for eliminating carbon adsorption are as follows:

**Carbon Adsorption:** Carbon adsorption uses intermolecular forces to accumulate organic material at the surface of an adsorbent (typically activated carbon). These intermolecular forces include the small momentary dipoles that result from the movement of electrons within molecular bonds (van der Waals interactions). The incidence of van der Waals interactions increases with larger molecules because there are more bonds within each molecule. For this reason, carbon adsorption is most effective for larger molecules. The VOC compounds emitted from the fermentation system include several small molecules, such as ethanol (MW = 46), acetaldehyde (MW = 44), and formaldehyde (MW = 30). Due to the small size of these molecules, the van der Waals interactions are weak. Since carbon adsorption typically requires a VOC concentration of at least 200 to 1,000 ppmv and average VOC molecular weights of at least 50 to 60 atomic units, this technology is considered infeasible for controlling the VOC emissions from the fermentation system.

### **Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

Using the control efficiencies reported for similar sources, IDEM, OAQ has ranked the remaining control technologies as follows:

<b>Control Technology</b>	<b>Control Efficiency</b>
Wet Scrubber and Thermal Oxidizer	99% or <10 ppmv
Wet Scrubber	99% or <10 ppmv
Thermal Oxidizer	99% or <10 ppmv
Catalytic Oxidizer	98%
Flare	98%
Refrigeration Condenser	90%

### **Step 4 – Evaluate the Most Effective Controls and Document Results**

IDEM is aware that other vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed ethanol plants. However, BACT limitations do not necessarily need to reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level. A wet scrubber, a thermal oxidizer, and the combination of a wet scrubber and thermal oxidizer are each capable of achieving the same level of control.

### **Step 5 – Select BACT**

The Permittee proposes to use a wet scrubber as the BACT for the fermentation process. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent BACT for the fermentation process at this source:

- (a) The VOC emissions from the fermentation process shall be controlled by a wet scrubber.
- (b) The overall average VOC control efficiency for the wet scrubber (including the capture efficiency and control efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 20 ppmv.
- (c) The VOC emissions from the outlet of the wet scrubber shall not exceed 11.4 lbs/hr.

## Appendix B.2 Best Available Control Technology (BACT) Determination For Distillation and Dehydration Process

### Introduction:

Indiana Bio-Energy will use distillation to concentrate the ethanol produced in the fermentation process. The potential VOC emissions from the distillation process are estimated to be greater than 25 tons per year. Since this facility will be constructed after the January 1, 1980 applicability date and there are no other 326 IAC 8 rules applicable to this process, Indiana Bio-Energy is required to implement BACT to comply with 326 IAC 8-1-6.

### Step 1 – Identify Control Options

The following available technologies were identified and evaluated to control VOC emissions from the distillation and dehydration process at ethanol production plants:

(a) IDEM, OAQ reviewed the following six (6) control technologies. The detail description of each control technology can be found in Step 1 of Appendix B.1.

1. Carbon Adsorption;
2. Wet Scrubbers (packed tower);
3. Thermal Oxidation;
4. Catalytic Oxidation;
5. Flare; and
6. Refrigeration Condenser.

(b) The search for the distillation process in EPA’s RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following:

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
DRS Ventures, LLC	F139-22981-00020	11/13/06 (IN)	Distillation	Wet scrubber combined with a thermal oxidizer with an overall control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 6.12 lbs/hr.	Under Construction
Central Indiana Ethanol, LLC	SPR 053-22564-00062	07/20/06 (IN)	Distillation/Dryers	RTOs with a control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 7.5 lbs/hr.	Under Construction
Premier Ethanol, LLC	F075-22858-00032	9/18/06 (IN)	Distillation	Wet scrubber combined with a thermal oxidizer with an overall control efficiency of 99% or VOC < 10 ppmv. VOC emissions < 10.5 lbs/hr.	Under Construction
Putnam Ethanol, LLC	SPM 133-22480-00003	3/23/06 (IN)	Distillation	TO/HRSG system with a control efficiency of 98% or VOC < 10ppmv. VOC emissions < 10.5 lbs/hr	Under Construction
The Andersons Clymers Ethanol, LLC	F017-21536-00023	2/15/06 (IN)	Distillation and Evaporation processes	Two TO/HRSG systems with a control efficiency of 98% or VOC < 10ppmv. VOC emissions < 8.15 lbs/hr	Under Construction
ASA Linden, LLC	F017-21453-00061	2/8/06 (IN)	Distillation	Two TO/HRSG systems with a control efficiency of 98% or VOC < 10ppmv. VOC emissions < 8.5 lbs/hr	Under Construction
Hartford Energy, LLC	F009-21592-00024	1/31/06 (IN)	Distillation	TO/HRSG system with a control efficiency of 98%. VOC emissions < 10.56 lbs/hr	Under Construction

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
Central Indiana Ethanol, LLC	F053-21057-00062	08/04/05 (IN)	Fermentation/ Distillation	Wet scrubber with a control efficiency of 98% or VOC < 20 ppmv. VOC emissions < 6.0 lbs/hr.	Under Construction
United Wisconsin Grain Producers	WI-0204	8/14/03 (WI)	Distillation/Dryers	RTO with a control efficiency of 98% or VOC emissions < 5 ppm	Not Available
Michigan Ethanol	MI-0359	11/04/02 (MI)	Distillation	Wet scrubber with a control efficiency of 98%. VOC emissions < 0.46 lbs/hr	94.0% (03/19/03)
Grain Processing Corp.	IN-0075	06/10/97 (IN)	Distillation	Wet scrubber with a control efficiency of 95%	Not Available
Cargill, Inc.	NE-0016	04/25/96 (NE)	Distillation	Wet scrubber and a VOC emission limit of 2.22 lbs/hr	Not Available

In addition to the RBLC data, IDEM obtained the following information for the distillation processes at other ethanol production plants from ICM (an ethanol plant manufacturer):

Source, State	Max. Ethanol Production Rate (MMgal/yr)	Control Technology	Emission Limits	Stack Test Results and Dates
Agri-Energy*, MN	22	Wet scrubber and thermal oxidizer	95% removal or 10 ppm	0.58 lbs/hr (01/30/03)
AI-Corn*, MN	34.5	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	99.2%; 6.65 lbs/hr (01/03)
Central MN Ethanol*, MN	22	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	99.0%; 2.04 lbs/hr (11/27/02)
Corn Plus, MN	44	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
CVEC, MN	49.5	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
Diversified Energy Co.***, MN	20	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	2.74 lbs/hr (01/04)
Ethanol 2000**, MN	35	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	5.40 lbs/hr (12/05/02)
Agra Resources Coop. (dba EXOL), MN	50	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
Pro-Corn, MN	50	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	Not Available
ACE Ethanol*, WI	20	Wet scrubber	95% removal or 20 ppm for less than 200 ppm inlet	1.07 lbs/hr (11/20/02)

\* lbs/hr as ethanol

\*\* lbs/hr as carbon multiplied by the Midwest Scaling Factor of 2.0

## **Step 2 – Eliminate Technically Infeasible Control Options**

IDEM, OAQ believes that carbon adsorption is not technically feasible for the control of VOC emissions from the distillation process. The primary VOC constituents emitted from this process are ethanol and acetaldehyde. Carbon adsorption is only technically feasible for VOC concentrations of 200 to 1,000 ppmv and an average VOC molecular weight of 50 to 60 atomic units.

## **Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

Using the control efficiencies reported for similar sources, IDEM, OAQ has ranked the remaining control technologies as follows:

Control Technology	Control Efficiency
Wet Scrubber and Thermal Oxidizer	99% or <10 ppmv
Wet Scrubber	99% or <10 ppmv
Thermal Oxidizer	99% or <10 ppmv
Catalytic Oxidizer	98%
Flare	98%
Refrigeration Condenser	90%

#### **Step 4 – Evaluate the Most Effective Controls and Document Results**

IDEM is aware that other vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed ethanol plants. However, BACT limitations do not necessarily need to reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level. A wet scrubber, a thermal oxidizer, and the combination of a wet scrubber and thermal oxidizer are each capable of achieving the same level of control.

#### **Step 5 – Select BACT**

The Permittee proposes to use a thermal oxidizer as the BACT for the distillation process. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent BACT for the distillation process at this source:

- (a) The VOC emissions from the distillation process shall be controlled by a thermal oxidizer.
- (b) The overall average VOC control efficiency for the thermal oxidizer system (including the capture efficiency and control efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.
- (c) The VOC emissions from the outlet of the thermal oxidizer system shall not exceed 4.93 lbs/hr.

**Appendix B.3  
 Best Available Control Technology (BACT) Determination  
 For the DDGS Dryers (EU029 through EU032)**

**Introduction:**

VOCs will be emitted from the DDGS drying process as trace quantities of alcohol from the fermentation process are evaporated. Other sources of VOC emissions result from the combustion of fuel in the dryers and the partial oxidation of organic material during the drying process. The potential VOC emissions from the DDGS dryers are greater than 25 tons per year and there are no other rules in 326 IAC 8 applicable to DDGS dryers; therefore, the Permittee is required to control the VOC emissions from the DDGS dryers with BACT.

**Step 1 – Identify Control Options**

The following available technologies were identified and evaluated to control VOC emissions from the dryers at ethanol production plants:

(a) IDEM, OAQ reviewed the following six (6) control technologies. The detail description of each control technology can be found in Step 1 of Appendix B.1.

1. Carbon Adsorption;
2. Wet Scrubbers;
3. Thermal Oxidation;
4. Catalytic Oxidation;
5. Flare; and
6. Refrigeration Condenser.

(b) The search for DDGS dryers in EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following:

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
DRS Ventures, LLC	F139-22981-00020	11/13/06 (IN)	Dryers	Thermal Oxidation with an overall control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 2.0 lbs/hr.	Under Construction
Central Indiana Ethanol, LLC	SPR 053-22564-00062	07/20/06 (IN)	Distillation/Dryers	RTOs with a control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 7.5 lbs/hr.	Under Construction
Premier Ethanol, LLC	F075-22858-00032	9/18/06 (IN)	Dryers	Thermal oxidizer with an overall control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 10.5 lbs/hr.	Under Construction
Putnam Ethanol, LLC	SPM 133-22480-00003	3/23/06 (IN)	Dryers	TO/HRSG system with a control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 10.5 lbs/hr	Under Construction
The Andersons Clymers Ethanol, LLC	F017-21536-00023	2/15/06 (IN)	Dryers	Two TO/HRSG systems with a control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 8.15 lbs/hr	Under Construction
ASA Linden, LLC	F017-21453-00061	2/8/06 (IN)	Dryers	Two TO/HRSG systems with a control efficiency of 98% or VOC < 10 ppmv. VOC emissions < 8.5 lbs/hr	Under Construction
Hartford Energy, LLC	F009-21592-00024	1/31/06 (IN)	Dryers	TO/HRSG system with a control efficiency of 98%. VOC emissions < 10.56 lbs/hr	Under Construction
Central Indiana Ethanol, LLC	F053-21057-00062	08/04/05 (IN)	Dryers	RTO with a control efficiency of 98%. VOC emissions < 6.0 lbs/hr	Under Construction
United Wisconsin Grain Producers	WI-0204	8/14/03 (WI)	Distillation/Dryers	RTO with a control efficiency of 98% or VOC emissions < 5 ppm	Not Available
Michigan Ethanol	MI-0359	11/04/02 (MI)	Dryer	RTO with a control efficiency of 95%	99.6% (03/19/03)

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
Archer Daniels Midland Co.	IL-0087	12/27/02 (IL)	Feed Dryer	RTO with a control efficiency of 95% and VOC < 10 ppm	Not Available
New Energy Corp.	T141-6956-00033	Draft (IN)	DDGS Dryers	RTO with a control efficiency of 95%	98.8% (RTO1) 99.2% (RTO2) (06/30/04)

In addition to the RBLC data, IDEM obtained the following information for the DDGS drying processes at other ethanol production plants from ICM (an ethanol plant manufacturer):

Source, State	Max. Ethanol Production Rate (MMgal/yr)	Control Technology	Emission Limits	Stack Test Results and Dates
Ace Ethanol, WI	NA	RTO	96% reduction	NA
Agri-Energy, MN	22	RTO	95% destruction or 10 ppm	99.59% (01/28/03)
AI-Corn, MN	30	TO	95% destruction or 10 ppm	0.11 lbs/hr (08/03/04)
Central MN Ethanol, MN	22	Wet scrubber	95% destruction or 10 ppm	NA
Corn Plus, MN	44	TO or Boiler	95% destruction or 10 ppm	NA
CVEC, MN	49.5	RTO	95% destruction or 10 ppm	NA
Diversified Energy Co., MN	20	RTO	95% destruction or 10 ppm	NA
Ethanol 2000, MN	35	RTO	95% destruction or 10 ppm	97.74 %; 5.94 lbs/hr (10/31/02)
Agra Resources Coop. (dba EXOL), MN	50	RTO	95% destruction or 10 ppm	NA
Pro-Corn, MN	50	RTO	95% destruction or 10 ppm	97.7%; 3.54 lbs/hr (04/01/03)
Gopher State, MN	NA	RTO	95% destruction and 7.7 lbs/hr	1.225 lbs/hr (09/21/01)
EXOL, MN	NA	RTO	NA	0.42 lbs/hr (08/26/03)
DENCO, MN	30	RTO	6.0 lbs/hr	97.3%; 1.93 lbs/hr (01/20/04)

## **Step 2 – Eliminate Technically Infeasible Control Options**

After reviewing the above technologies, IDEM, OAQ eliminated carbon adsorption, catalytic oxidation, flares, and refrigeration condensers as not technically feasible for DDGS drying processes. The reasons for eliminating these control technologies are as follows:

**Carbon adsorption:** Carbon adsorption typically requires a VOC concentration of at least 200 to 1,000 ppm and an average VOC molecular weight of at least 50 to 60 atomic units. Therefore, IDEM, OAQ concludes that carbon adsorption is not an effective control for the DDGS dryers due to the characteristics of the dryer exhaust gases.

**Catalytic Oxidizer:** Catalytic oxidizers use a catalyst to lower the operating temperature of the oxidation unit. The catalyst must remain effective during operation in order for the control efficiency of the device be maintained. Fouling of the catalyst will rapidly decrease the control efficiency. The catalyst material used for catalytic oxidation has small channels for the waste gas stream to flow through. As a result, particulate matter in the dryer exhaust gasses is likely to accumulate in the catalyst material, thereby fouling the catalyst and reducing the control efficiency. For this reason, IDEM, OAQ has concluded that catalytic oxidation is an unreliable control technology for the dryers because of the presence of particulates in the exhaust gases.

**Flares:** Since flares do not maintain a constant combustion zone temperature, they require supplemental natural gas to enrich the waste gas stream if the VOC concentration is low. In order to increase the heat value of the DDGS dryer exhaust, natural gas must be added to the exhaust gases prior to the flare.

**Refrigeration Condensers:** OAQ believes that condensers would be technically infeasible because the dryer exhaust characteristics of low VOC concentration and high volumetric flow rate would make them ineffective.

### **Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

IDEM, OAQ has ranked the remaining control technologies by control efficiency as follows:

Control Technology	Control Efficiency
Thermal Oxidation	99% or < 10 ppmv
Wet Scrubber	Less than 96%*

\* A wet scrubber applied to this type of operation will not achieve the level of control that a thermal oxidizer will because of the large flow rate and dilute VOC concentration. Mass transfer in a contact scrubber is driven by concentration. Elevated temperature and particulate matter are also negative properties of this gas stream that make wet scrubbing a less appropriate control technology than the alternatives. The control efficiency is based on a wet scrubber that was applied to a spent grain dryer at an ethanol plant in Luverne, MN.

### **Step 4 – Evaluate the Most Effective Controls and Document Results**

IDEM is aware that other vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed ethanol plants. However, BACT limitations do not necessarily need to reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level.

### **Step 5 – Select BACT**

Indiana Bio-Energy proposed to use a thermal oxidizer with a control efficiency of 98% to control the VOC emissions from the DDGS dryers. The exhausts from the distillation process, and the DDGS dryers will be controlled using the same thermal oxidizer (C10). The thermal oxidizer will vent to stack S10. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent BACT for the DDGS dryers at this source:

- (a) The VOC emissions from the DDGS dryers shall be controlled by a thermal oxidizer.
- (b) The overall efficiency for the thermal oxidizer (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.
- (c) The VOC emissions from the thermal oxidizer shall not exceed 4.93 lbs/hr.

## Appendix B.4 Best Available Control Technology (BACT) Determination For Ethanol Loadout

### Introduction:

Indiana Bio-Energy will ship denatured ethanol using either tank trucks or railcars. During loading, VOCs will be emitted as ethanol vapors and gases present in the tanks from previous cargos are displaced by liquid ethanol. The railcars are dedicated tanks, but the trucks may have previously been used to transport gasoline. The potential VOC emissions from this activity were calculated using the methodology in AP-42, Section 5.2, Transportation and Loading of Petroleum Liquids (1/95) and are estimated to be greater than 25 tons per year from the denatured ethanol loading operations (see calculations in Appendix A).

The potential VOC emissions from the ethanol loading rack are greater than 25 tons per year. Since this unit will be constructed after the January 1, 1980 applicability date and there are no other rules in 326 IAC 8 applicable to this unit, the Permittee is required to control the VOC emissions from the ethanol loading rack with BACT.

### Step 1 – Identify Control Options

(a) IDEM, OAQ reviewed the following five (5) control technologies. The detailed description of each control technology can be found in Step 1 of Appendix B.1.

1. Carbon Adsorption;
2. Wet Scrubbers;
3. Thermal Oxidation;
4. Flare; and
5. Refrigeration Condenser.

(b) The search for ethanol loading process in EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following:

Plant	PBLD ID or Permit #	Date Issued and State	Facility	Control Technology and Permit Date	Stack Test Results and Dates
DRS Ventures, LLC	F139-22981-00020	11/13/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 0.26 lbs/hr.	Under Construction
Central Indiana Ethanol, LLC	SPR 053-22564-00062	07/20/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC < 0.92 lbs/hr.	Under Construction
Premier Ethanol, LLC	F075-22858-00032	9/18/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 2.81 lbs/hr.	Under Construction
Putnam Ethanol, LLC	SPM 133-22480-00003	3/23/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 0.92 lbs/hr.	Under Construction
The Andersons Clymers Ethanol, LLC	F017-21536-00023	2/15/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 2.03 lbs/hr.	Under Construction
ASA Linden, LLC	F017-21453-00061	2/8/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 1.25 lbs/hr.	Under Construction
Hartford Energy, LLC	F009-21592-00024	1/31/06 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%. VOC emissions < 0.0224 lbs per 1000 gallons of denatured ethanol, and < 0.70 tpy. Submerged fill loading that uses normal service.	Under Construction
Central Indiana Ethanol, LLC	F053-21057-00062	08/04/05 (IN)	Ethanol Loading Rack	Flare with a control efficiency of 98%	Under Construction
Motiva Enterprises, L.L.C.	CT-0149	10/22/03 (CT)	Fuel Loading Rack	Vapor recovery unit with carbon absorption unit	Not Available
United Wisconsin Grain Producers	WI-0204	8/14/03 (WI)	Ethanol Loading Rack	Flare with a control efficiency of 94%	Not Available
Archer Daniels	IL-0090	03/28/03 (IL)	Ethanol Loading	Flare with a control efficiency of	Not Available

Midland Co.			Rack	95%	
Van Waters & Rogers	CA-0894	09/01/99 (CA)	Truck Loading Stations	Thermal oxidizer with a control efficiency of 95%	Not Available

IDEM obtained the following information for the ethanol loadout processes at other ethanol production plants from ICM (an ethanol plant manufacturer):

Source, State	Max. Ethanol Production Rate (MMgal/yr)	Control Technology	Emission Limits
Agri-Energy, MN	22	DDGS Dryer/TO	Truck: 95% Destruction or 10ppm of VOC emissions from the thermal oxidizer. Railcar: dedicated ethanol vessels only
Al-Corn, MN	30	DDGS Dryer/TO	Truck: 95% Destruction or 10ppm of VOC emissions from the thermal oxidizer. Railcar: dedicated ethanol vessels only
Central MN Ethanol, MN	22	DDGS Dryer	Truck: Route to dryer control equipment Railcar: dedicated ethanol vessels only
Corn Plus, MN	44	Boiler/TO	95% destruction or 10 ppm limit for boiler
CVEC, MN	49.5	DDGS Dryer/TO	Truck: Route to dryer control equipment (95% reduction or 10 ppm) Railcar: Dedicated ethanol vessels only
Diversified Energy Co., MN	20	Flare	95% destruction
Ethanol 2000, MN	35	Flare	95% destruction
Agra Resources Coop. (dba EXOL), MN	50	DDGS Dryer/TO	Truck: 95% destruction or 10 ppm limit for VOC emissions from the thermal oxidizer
Pro-Corn, MN	50	Flare	95% destruction

### **Step 2 – Eliminate Technically Infeasible Control Options**

After reviewing the above technologies, IDEM, OAQ eliminated carbon adsorption and wet scrubbers as not technically feasible for ethanol loadout processes. The reasons for eliminating these technologies are as follows:

**Carbon Adsorption:** Carbon adsorption is effective when there is sufficient VOC concentration and adequate van der Waals interactions. Because the primary VOC being emitted is ethanol, the van der Waals interactions would be minimal. Therefore, carbon adsorption is not typically used in this type of application. According to Calgon Carbon Industries, carbon adsorption is actually used in some applications to purify ethanol. This means that carbon adsorption is so ineffective at capturing ethanol that it is used to remove contaminants from ethanol. Therefore, carbon adsorption is considered technologically infeasible for controlling the VOC emissions from the ethanol loadout facility.

**Wet Scrubbers:** Wet scrubbers are reasonably effective for controlling VOC emissions when the VOCs are easily absorbed in water. Several characteristics control the effectiveness of wet scrubbers for VOC removal. The one parameter that can be easily analyzed to determine if wet scrubbing is effective is the solubility of the pollutants in the absorbent (water). The constituents in gasoline include many different organic compounds. Some of these compounds have limited solubility in water and, therefore, potentially affect the control efficiency of the scrubber. A significant amount of VOC emissions emitted during loadout arises from the displacement of petroleum or gasoline vapors present in the tank from the previous cargo. While the emissions from the ethanol would be effectively controlled by a wet scrubber, the VOC emissions resulting from the displacement of gasoline or petroleum vapors would not be effectively controlled by a wet scrubber.

### **Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

A condenser, thermal oxidizer, and flare are the only technically feasible control options for the ethanol loadout. IDEM, OAQ reviewed industry data to determine the VOC control efficiency of each of the remaining control technologies. The results of this review are summarized in the following table:

Control Technology	VOC Control Efficiency
Flare	98%
Thermal Oxidizer	99%

Refrigeration Condenser	Greater than 90%
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#### **Step 4 – Evaluate the Most Effective Controls and Document Results**

IDEM is aware that some vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed ethanol plants. However, BACT limitations do not necessarily need to reflect the highest possible control efficiency achievable by the technology on which the emission limitation is based. The permitting authority has discretion to base the emission limitation on a control efficiency that is somewhat lower than the optimal level

#### **Step 5 – Select BACT**

Indiana Bio-Energy, LLC proposed to use a flare, C50, with a destruction efficiency of 98% to control the VOC emissions from the ethanol loading rack for trucks and railcars. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent BACT for the ethanol loading rack at this source:

- (a) The VOC emissions from ethanol loadout shall be collected and controlled by a flare when loading denatured ethanol.
- (b) The overall efficiency for the enclosed flare (including the capture efficiency and destruction efficiency) shall be at least 98%.
- (c) The VOC emissions from the flare for both truck and rail shall not exceed 2.76 lbs/hr. This limit was calculated based on the worst-case emission rate between loading trucks and loading railcars. The worst-case hourly emissions occur during truck loading, and the limit was calculated using a VOC emission factor of 3.83 lbs/kgal, the maximum truck loadout rate of 36 kgal/hr, and the flare control efficiency of 98% ( $3.83 \text{ lbs/kgal} \times 36 \text{ kgal/hr} \times (1-98\%) = 2.76 \text{ lbs/hr}$ ). The VOC emission factor of 3.83 lbs/kgal for truck loading was calculated using the equation in AP-42, Chapter 5.2 (see the emission calculations in Appendix A).