**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*
**Governor**

*Thomas W. Easterly*
**Commissioner**

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
**www.idem.IN.gov**

TO: Interested Parties / Applicant

DATE: April 30, 2008

RE: Bio Alternative LLC / 171-25735-00029

FROM: Matthew Stuckey, Branch 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, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

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

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

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

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

Enclosures
FNPER.dot12/03/07

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
*We make Indiana a cleaner, healthier place to live.*

*Mitchell E. Daniels, Jr.*
Governor

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Commissioner

100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(317) 232-8603
(800) 451-6027
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# New Source Construction and Federally Enforceable State Operating Permit OFFICE OF AIR QUALITY

## Bio-Alternative, LLC
## 11778 South 600 West
## Covington, Indiana 47932

(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 for existing equipment and is intended to fulfill the new source review procedures pursuant to 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.: F171-25735-00029 | |
|---|---|
| Issued by: Original Signed By:<br><br>Matthew Stuckey, Chief<br>Permits Branch<br>Office of Air Quality | Issuance Date: April 30, 2008<br><br>Expiration Date: April 30, 2013 |

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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 through A.3 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 biodiesel refining production plant.

| | |
|---|---|
| Source Address: | 11778 South 600 West, Covington, Indiana 47932 |
| Mailing Address: | 233 North Garrard, Rantoul, Illinois, 61866 |
| General Source Phone Number: | (217) 892-3333 |
| SIC Code: | 2869 |
| County Location: | Warren |
| Source Location Status: | Attainment for all criteria pollutants |
| Source Status: | Federally Enforceable State Operating Permit Program<br>Minor Source, under PSD<br>Minor Source, Section 112 of the Clean Air Act<br>1 of 28 Source Categories |

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

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

One (1) biodiesel production process, permitted to construct in 2008, with a maximum production capacity of 18.8 MMgal of biodiesel per year.

(a) One (1) product recovery operation, permitted to construct in 2008, is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. The recovery operation includes a series of two (2) vessels, a Methylester Evaporator / Vacuum Condenser, identified as PV-301 / ES-602. Unrecoverable gases are exhausted to the Natural Gas-Fired Package Boiler, identified as H-710. The following storage vessels and the production processes are incorporated into the vapor recovery system:

(1) One (1) Vacuum Condenser Receiver Tank, identified as PV-602, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(2) One (1) Final Reactant Receiver Tank, identified as PV-603, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(3) One (1) Vegetable Oil Tank, identified as TK-106, with a capacity of 50,000 gallons (maximum annual throughput 18,800,000 gallons), and permitted to construct in 2008.

(4) Twelve (12) Finished Methyl Esters Tanks, identified as TK-107 through TK-118, each with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(5) One (1) Reaction Blend Tank, identified as TK-201, with a capacity of 4,500

gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR this is considered a reactor process unit. This process unit is subject to 40 CFR 63, Subpart RRR.

(6) Two (2) Reaction Mix Tanks (Reactant and Methyl Esters), identified as TK-203 and TK-204, each with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR these are considered a reactor process unit. These process units are subject to 40 CFR 63, Subpart RRR.

(7) One (1) Rework Tank (Vegetable Oil), identified as TK-207, with a capacity of 4,500 gallons (maximum annual throughput 1,000 gallons), and permitted to construct in 2008.

(8) One (1) Light Phase Receiver Tank (Reactant and Methyl Esters), identified as TK-211, with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008.

(9) Two (2) Heavy Phase Storage Tanks (Reactant and Glycerin), identified as TK-212 and TK-214, each with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(10) One (1) Heavy Phase Receiver Tank (Reactant and Glycerin), identified as TK-213, with a capacity of 15 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(11) One (1) ME Day Tank (Methyl Esters), identified as TK-305, with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(12) One (1) Evaporated Heavy Phase Tank (Glycerin), identified as TK-306, with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(13) One (1) Chiller Package, identified as H-725, permitted to construct in 2008, and used to recover reactant and to cool product. The chiller package includes one (1) Chilled Water Tank, identified as TK-720, with a capacity of 3,100 gallons.

(14) One (1) Recovered Reactant Tank, identified as TK-102, with a capacity of 4,500 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(15) Two (2) Fresh Reactant Tanks, identified as TK-103 and TK-104, each with a capacity of 30,000 gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008.

(16) One (1) Economizer, identified as ES-302, and permitted to construct in 2008.

(17) One (1) Product Cooler, identified as ES-204, and permitted to construct in 2008.

(18) One (1) Reactant Condenser, identified as ES-602, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(19) One (1) Final Condenser, identified as ES-603, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which

distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(b) One (1) Quatro Mixer Pump, identified as MX-106, with a max capacity of 10 gallons per minute, and permitted to construct in 2008.

(c) Equipment leak losses of VOC from pumps in light liquid service, compressors, pressure relief devices in gas/vapor, sampling connection systems, open-ended valves or lines, valves in gas/vapor service and in light liquid service, pumps and valves in heavy liquid service, pressure relief devises in light liquid or heavy liquid service and connectors, closed vent systems and control devices. Under 40 CFR 60, Subpart VVa, equipment leak losses are affected facilities in VOC service.

(d) One (1) Dry Catalyst Feeder, with a maximum capacity of 160 pounds of catalyst per hour, permitted to construct in 2008, and equipped with a sock/sleeve for particulate control. The feeder includes a 3 cubic foot storage bin.

(e) One (1) biodiesel and glycerin truck loadout process, permitted to construct in 2008. Trucks shall be filled by a submerged fill pipe loading process.

(f) One (1) vegetable oil and reactant truck receiving process, permitted to construct in 2008.

(g) One (1) Natural Gas-Fired Package Boiler, identified as H-710, permitted to construct in 2008, and with a heat input capacity of 9.90 MMBtu/hr. Steam from the boiler is transferred to the Evaporator Heater, identified as ES-303.

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

This stationary source also includes the following insignificant activities:

(a) Closed loop heating and cooling systems.

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

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

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]

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)]

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]

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, F171-25735-00029, 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]

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]

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)]

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)]

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)]

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

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

(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
MC 61-53 IGCN 1003
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.12 Compliance Order Issuance [326 IAC 2-8-5(b)]

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.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) within ninety (90) days after issuance of this permit, 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
MC 61-53 IGCN 1003
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
MC 61-53 IGCN 1003
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]

(a) All terms and conditions of permits established prior to F171-25735-00029 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)]

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)]

(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
MC 61-53 IGCN 1003
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]

(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)]

(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
MC 61-53 IGCN 1003
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 permit.

(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
MC 61-53 IGCN 1003
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
MC 61-53 IGCN 1003
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 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 [326 IAC 2-8-15(d)]
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]

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][IC 13-30-3-1]

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]

(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
MC 61-53 IGCN 1003
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]

(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]

(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.2 and A.3.

(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]

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.

(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]

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]

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]

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

(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
MC 61-52 IGCN 1003
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.8 Performance Testing [326 IAC 3-6]

(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
MC 61-53 IGCN 1003
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.9 Compliance Requirements [326 IAC 2-1.1-11]

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.10 Compliance Monitoring [326 IAC 2-8-4(3)][326 IAC 2-8-5(a)(1)]

Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance. 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 within ninety (90) days, 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
MC 61-53 IGCN 1003
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.11 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

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.12 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)][326 IAC 2-8-5(1)]

(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.13 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]

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.14 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]

(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.15 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4][326 IAC 2-8-5]

(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 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.16 General Record Keeping Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-5]

(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 within ninety (90) days of permit issuance.

C.17 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]

(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
MC 61-53 IGCN 1003
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.18 Compliance with 40 CFR 82 and 326 IAC 22-1

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 EMISSIONS UNIT OPERATION CONDITIONS

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

One (1) biodiesel production process, permitted to construct in 2008, with a maximum production capacity of 18.8 MMgal of biodiesel per year.

(a) One (1) product recovery operation, permitted to construct in 2008, is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. The recovery operation includes a series of two (2) vessels, a Methylester Evaporator / Vacuum Condenser, identified as PV-301 / ES-602. Unrecoverable gases are exhausted to the Natural Gas-Fired Package Boiler, identified as H-710. The following storage vessels and the production processes are incorporated into the vapor recovery system:

(1) One (1) Vacuum Condenser Receiver Tank, identified as PV-602, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(2) One (1) Final Reactant Receiver Tank, identified as PV-603, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(3) One (1) Vegetable Oil Tank, identified as TK-106, with a capacity of 50,000 gallons (maximum annual throughput 18,800,000 gallons), and permitted to construct in 2008.

(4) Twelve (12) Finished Methyl Esters Tanks, identified as TK-107 through TK-118, each with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(5) One (1) Reaction Blend Tank, identified as TK-201, with a capacity of 4,500 gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR this is considered a reactor process unit. This process unit is subject to 40 CFR 63, Subpart RRR.

(6) Two (2) Reaction Mix Tanks (Reactant and Methyl Esters), identified as TK-203 and TK-204, each with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR these are considered a reactor process unit. These process units are subject to 40 CFR 63, Subpart RRR.

(7) One (1) Rework Tank (Vegetable Oil), identified as TK-207, with a capacity of 4,500 gallons (maximum annual throughput 1,000 gallons), and permitted to construct in 2008.

(8) One (1) Light Phase Receiver Tank (Reactant and Methyl Esters), identified as TK-211, with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008.

(9) Two (2) Heavy Phase Storage Tanks (Reactant and Glycerin), identified as TK-212 and TK-214, each with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(10) One (1) Heavy Phase Receiver Tank (Reactant and Glycerin), identified as TK-213,

with a capacity of 15 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(11) One (1) ME Day Tank (Methyl Esters), identified as TK-305, with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(12) One (1) Evaporated Heavy Phase Tank (Glycerin), identified as TK-306, with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(13) One (1) Chiller Package, identified as H-725, permitted to construct in 2008, and used to recover reactant and to cool product. The chiller package includes one (1) Chilled Water Tank, identified as TK-720, with a capacity of 3,100 gallons.

(14) One (1) Recovered Reactant Tank, identified as TK-102, with a capacity of 4,500 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(15) Two (2) Fresh Reactant Tanks, identified as TK-103 and TK-104, each with a capacity of 30,000 gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008.

(16) One (1) Economizer, identified as ES-302, and permitted to construct in 2008.

(17) One (1) Product Cooler, identified as ES-204, and permitted to construct in 2008.

(18) One (1) Reactant Condenser, identified as ES-602, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(19) One (1) Final Condenser, identified as ES-603, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(b) One (1) Quatro Mixer Pump, identified as MX-106, with a max capacity of 10 gallons per minute, and permitted to construct in 2008.

(c) Equipment leak losses of VOC from pumps in light liquid service, compressors, pressure relief devices in gas/vapor, sampling connection systems, open-ended valves or lines, valves in gas/vapor service and in light liquid service, pumps and valves in heavy liquid service, pressure relief devises in light liquid or heavy liquid service and connectors, closed vent systems and control devices. Under 40 CFR 60, Subpart VVa, equipment leak losses are affected facilities in VOC service.

(d) One (1) Dry Catalyst Feeder, with a maximum capacity of 160 pounds of catalyst per hour, permitted to construct in 2008, and equipped with a sock/sleeve for particulate control. The feeder includes a 3 cubic foot storage bin.

(e) One (1) biodiesel and glycerin truck loadout process, permitted to construct in 2008. Trucks shall be filled by a submerged fill pipe loading process.

(f) One (1) vegetable oil and reactant truck receiving process, permitted to construct in 2008.

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

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

D.1.1 VOC and HAP Limits [326 IAC 2-8-4] [326 IAC 2-2] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4 (FESOP), the Permittee shall comply with the following:

(a) The VOC emissions from the natural gas-fired package boiler (H-710) shall not exceed 5.22 pounds VOC per thousand gallons of biodiesel throughput.

(b) The Methanol emissions from the natural gas-fired package boiler (H-710) shall not exceed 0.56 pounds VOC per thousand gallons of biodiesel throughput.

(c) The biodiesel production process throughput shall not exceed 18.8 MMgal of biodiesel per twelve (12) consecutive month period.

Combined with the VOC and HAP emissions from the other emission units at this source, the VOC, single HAP, and a combination of HAP emissions from the entire source are limited to less than one hundred (100), less than ten (10), and less than twenty-five (25) tons per year, respectivly. Therefore, the requirements of 326 IAC 2-2 (PSD), 326 IAC 2-4.1 (MACT), and 326 IAC 2-7 (Part 70 Program) are not applicable.

D.1.2 VOC Emissions [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 (BACT), the Permittee shall control the VOC emissions from the biodiesel production process using Best Available Control Technology (BACT). The BACT for the biodiesel production process has been determined to be the following:

(a) The reactant recovery condenser and natural gas-fired package boiler (H-710) shall operate at all times that the biodiesel production processes are in operation.

(b) The overall efficiency for the reactant recovery condenser and natural gas-fired package boiler (H-710) (including the capture efficiency and destruction efficiency) shall be at least 98%.

D.1.3 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 the condenser and the natural gas-fired package boiler.

**Compliance Determination Requirements**

D.1.4 VOC and HAP Control

In order to comply with Conditions D.1.1 and D.1.2, the condenser and the natural gas-fired package boiler shall be in operation and control emissions from the biodiesel production processes at all times when the biodiesel production processes are in operation.

D.1.5 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]

In order to demonstrate compliance with Conditions D.1.1 and D.1.2, the Permittee shall perform VOC and HAP (methanol) testing, for the condenser and the natural gas-fired package boiler (H-710) within 60 days after achieving the maximum capacity, but no later than 180 days after initial startup, utilizing methods as approved by the Commissioner. The VOC testing shall include emission rate, capture efficiency, and destruction efficiency.

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.1.6 Boiler Temperature

(a) A continuous monitoring system shall be calibrated, maintained, and operated for the boiler (H-170) for measuring the operating combustion zone temperature.

For the purpose of this condition, continuous means no less often than once per minute.

The output of this system shall be recorded as a 3-hour average.

From the date of startup until the approved stack test results are available, the Permittee shall operate the boiler (H-170) at or above the 3-hour average combustion zone temperature of 1,400$^{O}$F.

(b) The Permittee shall determine the 3-hour average combustion zone temperature from the most recent valid stack test that demonstrates compliance with limits in Conditions D.1.1 and D.1.2, as approved by IDEM.

(c) On and after the date the approved stack test results are available, the Permittee shall operate the boiler (H-170) at or above the 3-hour average combustion zone temperature as observed during the compliant stack test.

D.1.7 Visible Emissions Notations

(a) Daily visible emission notations of the boiler (H-710) shall be performed during normal daylight operations while the biodiesel production processes are in operation. 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.

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

D.1.8 Record Keeping Requirements [326 IAC 8-5-6(e)]

(a) To document compliance with Condition D.1.1, the Permittee shall maintain records of the amount of biodiesel production.

(b) To document compliance with Condition D.1.6, the Permittee shall maintain continuous records of temperature for the boiler (H-710) when the biodiesel production processes are in operation. The Permittee shall include in its records the temperature used to demonstrate compliance during the most recent compliance stack test.

(c) To document compliance with Condition D.1.7, the Permittee shall maintain records of daily visible emission notations of the boiler (H-710) while the biodiesel production processes are in operation. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.9 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.1.1 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 "responsible official" as defined by 326 IAC 2-7-1(34).

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

D.1.10 General Provisions Relating to NSPS RRR [326 IAC 12] [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 the reaction blend and mix tanks (TK-201, TK-203, and 204), except as otherwise specified in 40 CFR Part 60, Subpart RRR.

(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

D.1.11 Emissions From Synthetic Organic Chemicals Manufacturing Industry Reactor Processes NSPS [40 CFR Part 60, Subpart RRR] [326 IAC 12]

The Permittee which engages in synthetic organic chemical manufacturing shall comply with the following provisions of 40 CFR Part 60, Subpart RRR (included as Attachment B of this permit), upon startup:

(1) 40 CFR 60.700
(2) 40 CFR 60.701
(3) 40 CFR 60.702(b)
(4) 40 CFR 60.703(b)
(5) 40 CFR 60.704(a), (c) and (d)
(6) 40 CFR 60.705(a), (d), (e), (k), (q), (r), (s),
(7) 40 CFR 60.706
(8) 40 CFR 60.707

## SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

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

(g) One (1) Natural Gas-Fired Package Boiler, identified as H-710, permitted to construct in 2008, and with a heat input capacity of 9.90 MMBtu/hr. Steam from the boiler is transferred to the Evaporator Heater, identified as ES-303.

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

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

D.2.1 Particulate Emissions [326 IAC 6-2-4]

Pursuant to 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating), particulate emissions from the 9.90 MMBtu/hr boiler (identified as H-710) shall be limited to 0.6 pounds per MMBtu heat input.

**SECTION D.3 SOURCE OPERATION CONDITIONS**

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

(c) Equipment leak losses of VOC from pumps in light liquid service, compressors, pressure relief devices in gas/vapor, sampling connection systems, open-ended valves or lines, valves in gas/vapor service and in light liquid service, pumps and valves in heavy liquid service, pressure relief devises in light liquid or heavy liquid service and connectors, closed vent systems and control devices. Under 40 CFR 60, Subpart VVa, equipment leak losses are affected facilities in VOC service.

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

D.3.1 General Provisions Relating to NSPS VVa [326 IAC 12] [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 the equipment leak losses, except as otherwise specified in 40 CFR Part 60, Subpart VVa.

(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

D.3.2 Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry NSPS [40 CFR Part 60, Subpart VVa]

The Permittee which engages in synthetic organic chemical manufacturing shall comply with the following provisions of 40 CFR Part 60, Subpart VVa (included as Attachment A of this permit), upon startup:

(1) 40 CFR 60.480a
(2) 40 CFR 60.481a
(3) 40 CFR 60.482-1a
(4) 40 CFR 60.482-2a
(5) 40 CFR 60.482-3a
(6) 40 CFR 60.482-4a
(7) 40 CFR 60.482-5a
(8) 40 CFR 60.482-6a
(9) 40 CFR 60.482-7a
(10) 40 CFR 60.482-8a
(11) 40 CFR 60.482-9a
(12) 40 CFR 60.482-10a
(13) 40 CFR 60.482.11a
(14) 40 CFR 60.483-1a
(15) 40 CFR 60.483-2a
(16) 40 CFR 60.484a
(17) 40 CFR 60.485a
(18) 40 CFR 60.486a
(19) 40 CFR 60.487a
(20) 40 CFR 60.489a

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY

## FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) CERTIFICATION

Source Name: Bio-Alternative, LLC
Source Address: 11778 South 600 West, Covington, Indiana 47932
Mailing Address: 233 North Garrard, Rantoul Illinois, 61866
FESOP Permit No.: F171-25735-00029

**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**
**MC 61-53 IGCN 1003**
**Indianapolis, Indiana 46204-2251**
**Phone: 317-233-0178**
**Fax: 317-233-6865**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)**
**EMERGENCY OCCURRENCE REPORT**

Source Name: Bio-Alternative, LLC
Source Address: 11778 South 600 West, Covington, Indiana 47932
Mailing Address: 233 North Garrard, Rantoul Illinois, 61866
FESOP Permit No.: F171-25735-00029

**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<br>Describe: |
| Type of Pollutants Emitted: TSP, PM-10, $SO_2$, VOC, $NO_X$, 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: Bio-Alternative, LLC
Source Address: 11778 South 600 West, Covington, Indiana 47932
Mailing Address: 233 North Garrard, Rantoul, Illinois, 61866
FESOP No.: F171-25735-00029
Facility: Biodiesel production process
Parameter: Biodiesel production
Limit: The biodiesel production process throughput shall not exceed 18.8 MMgal of biodiesel per twelve (12) consecutive month period.

YEAR:_____

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | This Month | Previous 11 Months | 12 Month Total |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ 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: Bio-Alternative, LLC
Source Address: 11778 South 600 West, Covington, Indiana 47932
Mailing Address: 233 North Garrard, Rantoul Illinois, 61866
FESOP Permit No.: F171-25735-00029

**Months: _____ to _____ Year: _____**



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 "No deviations occurred this reporting period".

□ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.

□ THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD

| | |
|---|---|
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |

| | |
|---|---|
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |

| | |
|---|---|
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |

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
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Bio-Alternative, LLC
11778 South 600 West
Covington, Indiana 47932

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 Bio-Alternative, LLC 11778 South 600 West, Covington, Indiana 47932, completed construction of the biodiesel production plant on _____in conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on December 19, 2007 and as permitted pursuant to New Source Construction Permit and Federally Enforceable State Operating Permit No. F171-25735-00029, Plant ID No. 171-00029 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
## to a Federally Enforceable State Operating Permit (FESOP)

**Source Background and Description**

| | |
|---|---|
| Source Name: | Bio-Alternative LLC |
| Source Location: | 11778 South, 600 West, Covington, Indiana 47932 |
| County: | Warren |
| SIC Code: | 2869 |
| Permit No.: | 171-25735-00029 |
| Permit Reviewer: | ERG/BL |

On March 6, 2008, the Office of Air Quality (OAQ) had a notice published in The Review Republican in Williamsport, Indiana, stating that Bio-Alternative LLC, had applied for a Federally Enforceable State Operating Permit (FESOP). The notice also stated that OAQ proposed to issue a permit modification for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice 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.

On March 28, 2008, comments on the draft permit were submitted by Paul Dubenetzky on behalf of Bio-Alternative LLC. The summary of the comments is as follows. New language is shown in **bold** and deleted language is shown in ~~strikeout~~.

**Bio-Alternative LLC Comments**

**Comment 1, Add-on control for VOC:**

The original 326 IAC 8-1-6 BACT analysis submitted as part of the application proposed that an enclosed flare would be used to achieve 98% reduction of the VOC from production process and storage vessels waste gasses. Mr. Dubenetzky commented that a natural gas-fired boiler will also achieve 98% reduction in VOC similar to the initially proposed enclosed flare. Bio-Alternative now proposes to route the waste gasses (containing VOC and HAP) to the boiler. The waste generated will be introduced to the burner as part of the combustion air.

**Comment 2, VOC BACT Limit:**

The permit establishes 326 IAC 8-1-6 BACT as an enclosed flare with 98% destruction efficiency and a 1.12 pound VOC per hour emission limit. A natural gas-fired boiler will initially replace the proposed enclosed flare.

Mr. Dubenetzky does not believe that the pound per hour limit is justified under the definition of BACT. The relevant language from the 326 IAC 1-2-6 definition of BACT states that, “An emission limitation ….or equipment standard based on the maximum degree of reduction of each pollutant…which would be emitted from ….any…proposed facility….which the commissioner, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility….through application of production processes and available methods, systems, and techniques, including fuel cleaning, or treatment, or innovative fuel combustion techniques for control of such pollutant…”

Historically IDEM has established a maximum emissions level that is based on the applicant's demonstration that certain control techniques are not economically feasible on a dollar per ton of removal. However, Bio-Alternative relied on no such demonstration. The maximum degree of reduction achievable regardless of economic impact is 98%. The pound per hour emissions limit is superfluous and does not have a basis.

Mr. Dubenetzky suggests that a 5.22 pounds VOC per thousand gallons of throughput is sufficient to limit PTE to less than 50 tons per year and satisfy the requirements of the 326 IAC 8-1-6 BACT.

**Response to Comments 1 and 2:**

IDEM agrees with the new proposed VOC add on control since the VOC control effectiveness of the natural gas-fired boiler is comparable to the effectiveness of an enclosed flare.

IDEM also agrees to remove the short-term VOC limit from the permit since the control efficiency should be sufficient to ensure effective VOC control. The following table clarifies changes to the 326 IAC 8-1-6 BACT requirements:

| | **Initial Proposed BACT requirements** | **New Proposed BACT requirements** |
|---|---|---|
| Add-on Control | Enclosed Flare | Boiler |
| Percent Reduction | 98% | 98% |
| VOC limit | 1.12 lbs/hr (4.90 tons/yr at 8,760 hrs/yr) | - |
| Methanol limit | - | - |
| Production limit | - | - |

The following changes have been made to the permit as a result of this comment:

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

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

One (1) biodiesel production process, permitted to construct in 2008, with a maximum production capacity of 18.8 MMgal of biodiesel per year.

(a) One (1) product recovery operation, permitted to construct in 2008, is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. The recovery operation includes a series of two (2) vessels, a Methylester Evaporator / Vacuum Condenser, identified as PV-301 / ES-602. Unrecoverable gases are exhausted to ~~an enclosed flare on stack EP-1~~ **the Natural Gas-Fired Package Boiler, identified as H-710**. The following storage vessels and the production processes are incorporated into the vapor recovery system:

. . .

**SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS**

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

One (1) biodiesel production process, permitted to construct in 2008, with a maximum production capacity of 18.8 MMgal of biodiesel per year.

(a) One (1) product recovery operation, permitted to construct in 2008, is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. The recovery operation includes a series

of two (2) vessels, a Methylester Evaporator / Vacuum Condenser, identified as PV-301 / ES-602. Unrecoverable gases are exhausted to ~~an enclosed flare on stack EP-1~~ **the Natural Gas-Fired Package Boiler, identified as H-710**. The following storage vessels and the production processes are incorporated into the vapor recovery system:

. . .

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

. . .

D.1.2 VOC Emissions [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6 (BACT), the Permittee shall control the VOC emissions from the biodiesel production process using Best Available Control Technology (BACT). The BACT for the biodiesel production process has been determined to be the following:

(a) The reactant recovery condenser and ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** shall operate at all times that the biodiesel production processes are in operation.

(b) The overall efficiency for the reactant recovery condenser and ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** (including the capture efficiency and destruction efficiency) shall be at least 98%.

~~(c) The VOC emissions from the enclosed flare system shall not exceed 1.12 pounds per hour~~.

D.1.3 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 the condenser and the ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)**.

D.1.4 VOC and HAP Control

In order to comply with Conditions D.1.1 and D.1.2, the condenser and the ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** shall be in operation and control emissions from the biodiesel production processes at all times when the biodiesel production processes are in operation.

D.1.5 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]

In order to demonstrate compliance with Conditions D.1.1 and D.1.2, the Permittee shall perform VOC and HAP (methanol) testing, for the condenser and the ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** within 60 days after achieving the maximum capacity, but no later than 180 days after initial startup, utilizing methods as approved by the Commissioner. The VOC testing shall include emission rate, capture efficiency, and destruction efficiency.

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.

D.1.6 ~~Flare Pilot Flame~~ **Boiler Temperature**

~~In order to comply with Conditions D.1.1 and D.1.2, the Permittee shall continuously monitor the presence of a flare pilot flame using a thermocouple or any equivalent device to detect the presence of a flame when the biodiesel production processes is in operation.~~

~~The presence of a pilot flame shall be verified by using a thermocouple or a flame sensor, or an equivalent device, and the result shall be recorded once per day, when the biodiesel production processes are in operation.~~

**(a) A continuous monitoring system shall be calibrated, maintained, and operated for the boiler (H-170) for measuring the operating combustion zone temperature.**

**For the purpose of this condition, continuous means no less often than once per minute.**

**The output of this system shall be recorded as a 3-hour average.**

**From the date of startup until the approved stack test results are available, the Permittee shall operate the boiler (H-170) at or above the 3-hour average combustion zone temperature of 1,400$^{O}$F.**

**(b) The Permittee shall determine the 3-hour average combustion zone temperature from the most recent valid stack test that demonstrates compliance with limits in Conditions D.1.1 and D.1.2, as approved by IDEM.**

**(c) On and after the date the approved stack test results are available, the Permittee shall operate the boiler (H-170) at or above the 3-hour average combustion zone temperature as observed during the compliant stack test.**

D.1.7 Visible Emissions Notations

(a) Daily visible emission notations of the ~~flare~~ **boiler (H-710)** shall be performed during normal daylight operations while the biodiesel production processes are in operation. 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.1.8 Record Keeping Requirements [326 IAC 8-5-6(e)]

(a) **To document compliance with Condition D.1.1, the Permittee shall maintain records of the amount of biodiesel production.** ~~To document compliance with Condition D.1.2, the Permittee shall maintain a log of pilot flame inspections.~~

(b) To document compliance with Condition D.1.6, the Permittee shall maintain **continuous** records of temperature ~~or other parameters sufficient to demonstrate the presence of a pilot flame~~ **for the boiler (H-710)** when the biodiesel production processes are in operation. **The Permittee shall include in its records the temperature used to demonstrate compliance during the most recent compliance stack test.**

(c) To document compliance with Condition D.1.7, the Permittee shall maintain records of daily visible emission notations of the ~~flare~~ **boiler (H-710)** while the biodiesel production processes are in operation. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

**Responses to Comment 1 and 2, Continued:**

IDEM has revised Appendix B of the Technical Support Document, IDEM to reflect revisions in construction plans. In the BACT analysis (Steps 4 and 5) included in Appendix B, IDEM, OAQ ranked the technical feasible control technologies and combinations of control technologies. The following changes have been made to the permit as a result of this comment:

The revised ranking including the condenser with boiler is as follows:

**Step 4 – Evaluate the Most Effective Controls and Document Results**

A search of EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following similar sources. The identified sources are presented below in descending order; the highest control efficiency is presented first:

| Plant | PBLD ID or Permit # | Date Issued and State | Facility | BACT Determination |
|---|---|---|---|---|
| Louis Dreyfus Agricultural Industries LLC - Claypool | T085-21297-00102 | 1/24/2006 (IN) | Soybean oil and biodiesel<br><br>Methylester evaporator / vacuum condenser | Condenser with Scrubber;<br>99% control efficiency for loading<br>95% during upset operations<br>VOC emissions < 9.3 lbs/hr. |
| ** Bio-Alternative, LLC* | *F171-25735-00029* | *Proposed (IN)* | *Biodiesel refining production* | *Condenser with ~~Flare~~ **Boiler Combustion**;*<br>*98% control efficiency*<br>*VOC emissions < 1.12 lbs/hr.* |
| Indiana Clean Energy, LLC | F023-22833-00040 | 12/15/2006 (IN) | Biodiesel<br><br>Methylester evaporator / vacuum condenser | Condenser with Flare;<br>98% control efficiency<br>VOC emissions < 2.32 lbs/hr. |
| Chinook Bioproducts, LLC | F021-24517-00058 | 11/14/07 (IN) | Ethanol plant<br><br>Germ, Fiber, and Corn Protein Concentrate Dryers | Thermal Oxidizer;<br>98% control efficiency.<br>VOC emissions < 4.68 lbs/hr. |
| AVOCA, LLC | 01819T28 | 07/29/2004 (NC) | Plant Nutrient and Botanical Extraction | Evaporator / Condenser;<br>96% control efficiency;<br>VOC emissions < 9.1 lbs/hr |
| Dome Petrochemical, LLC | PSD-TX-1007 | 05/23/2001 (TX) | Petrochemical Plant | Condenser with Oxidizer;<br>No efficiency specified;<br>VOC emissions < 25.9 lbs/hr |
| Formosa Plastics Corp | PSD-TX-760 (M5) | 02/10/00 (TX) | Ethylene glycol Plant | Condenser with Incinerator;<br>Incinerator temp >1600F;<br>No efficiency specified;<br>VOC emissions < 0.8 lbs/hr. |
| Sunoco, Inc. | 07-00500 | 11/16/2004 (OH) | Refinery | Thermal Oxidizer (PSD-BACT);<br>No efficiency specified;<br>VOC emissions < 6.11 lbs/hr. |
| Minnesota Soybean Processors | 10500053-003 | 5/14/2004 (MN) | Animal feed and Biodiesel | No control;<br>No efficiency specified;<br>VOC emissions < 619 tons/yr |

* Bio-Alternative, LLC, has opted to use a condenser and ~~an enclosed flare system~~ **a natural gas-fired package boiler** as the most effective control technology. The condenser will not only be used to control methanol emissions, it will also enable Bio-Alternative, LLC to collect and recycle the reactant used in the process. IDEM has determined that the use of a condenser and ~~enclosed~~

~~flare system~~ **the package boiler** that achieves a 98% control efficiency represents BACT for this type of operation, which is comparable with the existing BACT specified for the majority of sources listed above.

IDEM is aware that certain pollution control vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed biodiesel refining production plants (for example Louis Dreyfus Agricultural T 085-21297-00102, issued January 24, 2006). 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 condenser with scrubber, a condenser with a ~~flare~~ **boiler**, a condenser with an oxidizer, and a condenser with an incinerator are each capable of achieving the same level of control.

**Step 5 – Select BACT**

Since the condenser and ~~enclosed flare system~~ **a natural gas-fired package boiler** will achieve a 98% overall control efficiency and ~~enclosed flares have~~ **combustion has** been used to control VOC emissions from other similar plants, Bio-Alternative LLC has proposed to use a reactant recovery condenser (PV-301 / ES-602) in combination with ~~an enclosed flare system~~ **a natural gas-fired package boiler** to control the VOC emissions from the biodiesel production processes. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent the revised the revised BACT for the biodiesel production processes.

**Comment 3, FESOP VOC limits:**

Mr. Dubenetzky commented that the FESOP were inappropriately derived from the BACT analysis that was submitted as part of the application. The BACT estimated annual controlled emission rate was converted to 1.12 pounds VOC per hour and 0.12 pounds of methanol per hour. These limits equate to about 5.0 tons VOC and 0.5 tons methanol per year. The FESOP rule cited provides authority to limit Potential to Emit (PTE) to less than 100 tons VOC and 10 tons methanol per year.

Mr. Dubenetzky suggests that a 5.22 pounds VOC per thousand gallons of throughput is sufficient to limit PTE to less than 50 tons per year and satisfy the requirements of the FESOP rule. This limit will provide an adequate margin of safety with respect to compliance and allow for future operational flexibility as the plant is constructed and operated. The uncontrolled and controlled emissions will vary with temperature during the year and may be different if there are minor changes to the configuration of the plant. Similarly, Mr. Dubenetzky suggests a limit of 0.56 pounds methanol per thousand gallons of throughput.

**Response to Comment 3:**

Since the new FESOP limits proposed by the Permittee will limit emissions to less than the Part 70 thresholds of 100 tons per year for VOC and 10 tons per year for single HAP. IDEM agrees to these changes. However, since the limits are in terms of pounds per thousand gallons of throughput, IDEM has include the maximum throughput of 18.8 MMgal per 12-consectutive month period in the FESOP limit and a reporting requirement. Condition numbers have been adjusted where appropriate.

Summary of revisions to FESOP requirements
The following table clarifies changes to the FESOP requirements:

| | **Initial Proposed FESOP requirements** | **New Proposed FESOP requirements** |
|---|---|---|
| VOC limit | 1.12 lbs/hr (4.90 tons/yr at 8,760 hrs/yr) | 5.22 lbs/1000 gal (4.90 tons/yr at 18.8 MMgal/yr) |
| Methanol limit | 0.12 lbs/hr (0.52 tons/yr at 8,760 hrs/yr) | 0.56 lbs/1000 gal (0.52 tons/yr at 18.8 MMgal/yr) |
| Production limit | - | 18.8 MMgal/yr |

VOC and methanol emission limits and the maximum production capacity of the process, 18.8 MMgal of biodiesel per year, will render 326 IAC 2-7 (Part 70 Permit Program), 326 IAC 2-2 (PSD) and 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP)) not applicable.

The following changes have been made to the permit as a result of this comment:

D.1.1 VOC and HAP Limits [326 IAC 2-8-4] [326 IAC 2-2] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4 (FESOP), the Permittee shall comply with the following:

(a) The VOC emissions from the ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** shall not exceed ~~1.12 pounds per hour~~ **5.22 pounds VOC per thousand gallons of biodiesel throughput**.

(b) The Methanol emissions from the ~~enclosed flare system~~ **natural gas-fired package boiler (H-710)** shall not exceed ~~0.12 pounds per hour~~ **0.56 pounds VOC per thousand gallons of biodiesel throughput**.

**(c) The biodiesel production process throughput shall not exceed 18.8 MMgal of biodiesel per twelve (12) consecutive month period.**

Combined with the VOC and HAP emissions from the other emission units at this source, the VOC, single HAP, and a combination of HAP emissions from the entire source are limited to less than one hundred (100), less than ten (10), and less than twenty-five (25) tons per year, respectivly. Therefore, the requirements of 326 IAC 2-2 (PSD), 326 IAC 2-4.1 (MACT), and 326 IAC 2-7 (Part 70 Program) are not applicable.

. . .

**D.1.9 Reporting Requirements**

**A quarterly summary of the information to document compliance with Condition D.1.1 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 "responsible official" as defined by 326 IAC 2-7-1(34).**

. . .

## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
## OFFICE OF AIR QUALITY
## COMPLIANCE DATA SECTION

**FESOP Quarterly Report**

**Source Name:** **Bio-Alternative, LLC**
**Source Address:** **11778 South 600 West, Covington, Indiana 47932**
**Mailing Address:** **233 North Garrard, Rantoul, Illinois, 61866**
**FESOP No.:** **F171-25735-00029**
**Facility:** **Biodiesel production process**
**Parameter:** **Biodiesel production**
**Limit:** **The biodiesel production process throughput shall not exceed 18.8 MMgal of biodiesel per twelve (12) consecutive month period.**

**YEAR:**_____

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | This Month | Previous 11 Months | 12 Month Total |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ **No deviation occurred in this quarter.**

☐ **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.**

**Comment 4, NSPS:**

The requirements of the New Source Performance Standard (NSPS) for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes (40 CFR Part 60, Subpart RRR), are included in this permit for reactors TK-201, TK-203, and 204 processes. For the purpose of demonstrating compliance with 40 CFR 60.702, any affected facility shall conduct an initial performance test. Mr. Dubenetzky commented that Bio-Alternative LLC plans to apply to the U.S. EPA for a waiver from stack testing to demonstrate compliance with the NSPS.

Bio-Alternative LLC plans to demonstrate to the U.S. EPA that the boiler configuration and flame temperature will destroy pollutants that pass through the Methylester Evaporator / Vacuum Condenser. According to EPA's database of searchable letters or memoranda, the Applicability Determination Index (ADI), similar requests have been approved. Bio-Alternative LLC believes that if this waiver is granted for this NSPS, then similar logic should be applied to the testing requirements to demonstrate compliance with 326 IAC 8-1-6 BACT and demonstrate 326 IAC 2-2 (PSD), 326 IAC 2-4.1 (MACT), and 326 IAC 2-7 (Part 70 Program) are not applicable.

**Response to Comment 4:**

Bio-Alternative LLC must apply to the U.S. EPA for the waver from the NSPS compliance requirements. However, testing will still be required by IDEM because the source must demonstrate compliance with the FESOP limits and confirm the control efficiency requirements under 326 IAC 8-1-6 BACT.

# ATTACHMENT A

**PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES**
**Subpart VVa—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006**

# New Source Construction and Federally Enforceable State Operating Permit OFFICE OF AIR QUALITY

**Bio-Alternative, LLC**
**11778 South 600 West**
**Covington, Indiana 47932**
**171-25735-00029**

# Attachment A

**Title 40: Protection of Environment**
**PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES**

Subpart VVa—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

**Source:** 72 FR 64883, Nov. 16, 2007, unless otherwise noted.

***§ 60.480a 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 §60.481a) within a process unit is an affected facility.

(b) Any affected facility under paragraph (a) of this section that commences construction, reconstruction, or modification after November 7, 2006, 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 §60.486a(i).

(2) Any affected facility that has the design capacity to produce less than 1,000 Mg/yr (1,102 ton/yr) of a chemical listed in §60.489 is exempt from §§60.482–1a through 60.482–11a.

(3) If an affected facility produces heavy liquid chemicals only from heavy liquid feed or raw materials, then it is exempt from §§60.482–1a through 60.482–11a.

(4) Any affected facility that produces beverage alcohol is exempt from §§60.482–1a through 60.482–11a.

(5) Any affected facility that has no equipment in volatile organic compounds (VOC) service is exempt from §§60.482–1a through 60.482–11a.

(e) *Alternative means of compliance* —(1) *Option to comply with part 65.* (i) Owners or operators may choose to comply with the provisions of 40 CFR part 65, subpart F, to satisfy the requirements of §§60.482–1a through 60.487a for an affected facility. When choosing to comply with 40 CFR part 65, subpart F, the requirements of §§60.485a(d), (e), and (f), and 60.486a(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.

(ii) *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)(1)(ii) 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.

(2) *Part 63, subpart H.* (i) Owners or operators may choose to comply with the provisions of 40 CFR part 63, subpart H, to satisfy the requirements of §§60.482–1a through 60.487a for an affected facility. When choosing to comply with 40 CFR part 63, subpart H, the requirements of §60.485a(d), (e), and (f), and §60.486a(i) and (j) still apply.

(ii) *Part 60, subpart A.* Owners or operators who choose to comply with 40 CFR part 63, subpart H 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)(ii) do not apply to owners or operators of equipment subject to this subpart complying with 40 CFR part 63, subpart H, except that provisions required to be met prior to implementing 40 CFR part 63 still apply. Owners and operators who choose to comply with 40 CFR part 63, subpart H, must comply with 40 CFR part 63, subpart A.

## *§ 60.481a Definitions.*

As used in this subpart, all terms not defined herein shall have the meaning given them in the Clean Air Act (CAA) 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 × 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 × (B ÷ 100);

(2) The percent Y is determined from the following equation: Y = 1.0 − 0.575 log X, where X is 2006 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 Value for B**

| Subpart applicable to facility | Value of B to be used in equation |
|---|---|
| VVa | 12.5 |
| GGGa | 7.0 |

*Closed-loop system* means an enclosed system that returns process fluid to the process.

*Closed-purge system* means a system or combination of systems and portable containers to capture purged liquids. Containers for purged liquids must be covered or closed when not being filled or emptied.

*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, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment or that close an opening in a pipe that could be connected to another pipe. Joined fittings welded completely around the circumference of the interface are not considered connectors for the purpose of this regulation.

*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 action for the purpose of stopping or reducing leakage of organic material to the 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 judgment and standards such as ASME B31.3, Process Piping (available from the American Society of Mechanical Engineers, P.O. Box 2300, Fairfield, NJ 07007–2300).

*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 §60.485a(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 §60.485a(d) specify how to determine that a piece of equipment is not in VOC service.)

*Initial calibration value* means the concentration measured during the initial calibration at the beginning of each day required in §60.485a(b)(1), or the most recent calibration if the instrument is recalibrated during the day (i.e., the calibration is adjusted) after a calibration drift assessment.

*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 the components assembled and connected by pipes or ducts to process raw materials and to produce, as intermediate or final products, one or more of the chemicals listed in §60.489. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product. For the purpose of this subpart, process unit includes any feed, intermediate and final product storage vessels (except as specified in §60.482–1a(g)), product transfer racks, and connected ducts and piping. A process unit includes all equipment as defined in this subpart.

*Process unit shutdown* means a work practice or operational procedure that stops production from a process unit or part of a process unit during which it is technically feasible to clear process material from a process unit or part of a process unit consistent with safety constraints and during which repairs can be accomplished. The following are not considered process unit shutdowns:

(1) 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.

(2) An unscheduled work practice or operational procedure that would stop production from a process unit or part of a process unit for a shorter period of time than would be required to clear the process unit or part of the process unit of materials and start up the unit, and would result in greater emissions than delay of repair of leaking components until the next scheduled process unit shutdown.

(3) The use of spare equipment and technically feasible bypassing of equipment without stopping production.

*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 defined in the applicable sections of this subpart and, except for leaks identified in accordance with §§60.482–2a(b)(2)(ii) and (d)(6)(ii) and (d)(6)(iii), 60.482–3a(f), and 60.482–10a(f)(1)(ii), is re-monitored as specified in §60.485a(b) to verify that emissions from the equipment are below the applicable leak definition.

*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.

*Storage vessel* means a tank or other vessel that is used to store organic liquids that are used in the process as raw material feedstocks, produced as intermediates or final products, or generated as wastes. Storage vessel does not include vessels permanently attached to motor vehicles, such as trucks, railcars, barges or ships.

*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.

*Transfer rack* means the collection of loading arms and loading hoses, at a single loading rack, that are used to fill tank trucks and/or railcars with organic liquids.

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

## *§ 60.482-1a Standards: General.*

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

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

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

(2) If the Administrator makes a determination that a means of emission limitation is at least equivalent to the requirements of §§60.482–2a, 60.482–3a, 60.482–5a, 60.482–6a, 60.482–7a, 60.482–8a, or 60.482–10a, 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 §§60.482–2a through 60.482–10a if it is identified as required in §60.486a(e)(5).

(e) Equipment that an owner or operator designates as being in VOC service less than 300 hr/yr is excluded from the requirements of §§60.482–2a through 60.482–11a if it is identified as required in §60.486a(e)(6) and it meets any of the conditions specified in paragraphs (e)(1) through (3) of this section.

(1) The equipment is in VOC service only during startup and shutdown, excluding startup and shutdown between batches of the same campaign for a batch process.

(2) The equipment is in VOC service only during process malfunctions or other emergencies.

(3) The equipment is backup equipment that is in VOC service only when the primary equipment is out of service.

(f)(1) If a dedicated batch process unit operates less than 365 days during a year, an owner or operator may monitor to detect leaks from pumps, valves, and open-ended valves or lines at the frequency specified in the following table instead of monitoring as specified in §§60.482–2a, 60.482–7a, and 60.483.2a:

| Operating time (percent of hours during year) | Equivalent monitoring frequency time in use | | |
|---|---|---|---|
| | Monthly | Quarterly | Semiannually |
| 0 to <25 | Quarterly | Annually | Annually. |
| 25 to <50 | Quarterly | Semiannually | Annually. |
| 50 to <75 | Bimonthly | Three quarters | Semiannually. |
| 75 to 100 | Monthly | Quarterly | Semiannually. |

(2) Pumps and valves that are shared among two or more batch process units that are subject to this subpart may be monitored at the frequencies specified in paragraph (f)(1) of this section, provided the operating time of all such process units is considered.

(3) The monitoring frequencies specified in paragraph (f)(1) of this section are not requirements for monitoring at specific intervals and can be adjusted to accommodate process operations. An owner or operator may monitor at any time during the specified monitoring period (e.g., month, quarter, year), provided the monitoring is conducted at a reasonable interval after completion of the last monitoring campaign. Reasonable intervals are defined in paragraphs (f)(3)(i) through (iv) of this section.

(i) When monitoring is conducted quarterly, monitoring events must be separated by at least 30 calendar days.

(ii) When monitoring is conducted semiannually ( *i.e.* , once every 2 quarters), monitoring events must be separated by at least 60 calendar days.

(iii) When monitoring is conducted in 3 quarters per year, monitoring events must be separated by at least 90 calendar days.

(iv) When monitoring is conducted annually, monitoring events must be separated by at least 120 calendar days.

(g) If the storage vessel is shared with multiple process units, the process unit with the greatest annual amount of stored materials (predominant use) is the process unit the storage vessel is assigned to. If the storage vessel is shared equally among process units, and one of the process units has equipment subject to this subpart, the storage vessel is assigned to that process unit. If the storage vessel is shared equally among process units, none of which have equipment subject to this subpart of this part, the storage vessel is assigned to any process unit subject to subpart VV of this part. If the predominant use of the storage vessel varies from year to year, then the owner or operator must estimate the predominant use initially and reassess every 3 years. The owner or operator must keep records of the information and supporting calculations that show how predominant use is determined. All equipment on the storage vessel must be monitored when in VOC service.

### *§ 60.482-2a 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 §60.485a(b), except as provided in §60.482–1a(c) and (f) and paragraphs (d), (e), and (f) of this section. A pump that begins operation in light liquid service after the initial startup date for the process unit must be monitored for the first time within 30 days after the end of its startup period, except for a pump that replaces a leaking pump and except as provided in §60.482–1a(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, except as provided in §60.482–1a(f).

(b)(1) The instrument reading that defines a leak is specified in paragraphs (b)(1)(i) and (ii) of this section.

(i) 5,000 parts per million (ppm) or greater for pumps handling polymerizing monomers;

(ii) 2,000 ppm or greater for all other pumps.

(2) If there are indications of liquids dripping from the pump seal, the owner or operator shall follow the procedure specified in either paragraph (b)(2)(i) or (ii) of this section. This requirement does not apply to a pump that was monitored after a previous weekly inspection and the instrument reading was less than the concentration specified in paragraph (b)(1)(i) or (ii) of this section, whichever is applicable.

(i) Monitor the pump within 5 days as specified in §60.485a(b). A leak is detected if the instrument reading measured during monitoring indicates a leak as specified in paragraph (b)(1)(i) or (ii) of this section, whichever is applicable. The leak shall be repaired using the procedures in paragraph (c) of this section.

(ii) Designate the visual indications of liquids dripping as a leak, and repair the leak using either the procedures in paragraph (c) of this section or by eliminating the visual indications of liquids dripping.

(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 §60.482–9a.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected. First attempts at repair include, but are not limited to, the practices described in paragraphs (c)(2)(i) and (ii) of this section, where practicable.

(i) Tightening the packing gland nuts;

(ii) Ensuring that the seal flush is operating at design pressure and temperature.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a) of this section, provided the requirements specified in paragraphs (d)(1) through (6) of this section 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) Equipped 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 §60.482–10a; 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)(i) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(ii) If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the owner or operator shall follow the procedure specified in either paragraph (d)(4)(ii)(A) or (B) of this section prior to the next required inspection.

(A) Monitor the pump within 5 days as specified in §60.485a(b) to determine if there is a leak of VOC in the barrier fluid. If an instrument reading of 2,000 ppm or greater is measured, a leak is detected.

(B) Designate the visual indications of liquids dripping as a leak.

(5)(i) Each sensor as described in paragraph (d)(3) is checked daily or is equipped with an audible alarm.

(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.

(iii) If the sensor indicates failure of the seal system, the barrier fluid system, or both, based on the criterion established in paragraph (d)(5)(ii) of this section, a leak is detected.

(6)(i) When a leak is detected pursuant to paragraph (d)(4)(ii)(A) of this section, it shall be repaired as specified in paragraph (c) of this section.

(ii) A leak detected pursuant to paragraph (d)(5)(iii) of this section shall be repaired within 15 days of detection by eliminating the conditions that activated the sensor.

(iii) A designated leak pursuant to paragraph (d)(4)(ii)(B) of this section shall be repaired within 15 days of detection by eliminating visual indications of liquids dripping.

(e) Any pump that is designated, as described in §60.486a(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), (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 §60.485a(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 §60.482–10a, it is exempt from paragraphs (a) through (e) of this section.

(g) Any pump that is designated, as described in §60.486a(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.

### *§ 60.482-3a 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 §60.482–1a(c) and paragraphs (h), (i), and (j) of this section.

(b) Each compressor seal system as required in paragraph (a) of this section 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 §60.482–10a; 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) of this section 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) of this section, 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 §60.482–9a.

(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 §60.482–10a, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in §60.486a(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) through (h) of this section 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 §60.485a(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 paragraphs (a) through (e) and (h) of this section, 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.

### *§ 60.482-4a 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 §60.485a(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 §60.482–9a.

(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 §60.485a(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 §60.482–10a 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 §60.482–9a.

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

(a) Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system, except as provided in §60.482–1a(c) and paragraph (c) of this section.

(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) Gases displaced during filling of the sample container are not required to be collected or captured.

(2) Containers that are part of a closed-purge system must be covered or closed when not being filled or emptied.

(3) Gases remaining in the tubing or piping between the closed-purge system valve(s) and sample container valve(s) after the valves are closed and the sample container is disconnected are not required to be collected or captured.

(4) Each closed-purge, closed-loop, or closed-vent system shall be designed and operated to meet requirements in either paragraph (b)(4)(i), (ii), (iii), or (iv) of this section.

(i) Return the purged process fluid directly to the process line.

(ii) Collect and recycle the purged process fluid to a process.

(iii) Capture and transport all the purged process fluid to a control device that complies with the requirements of §60.482–10a.

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

(A) 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;

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

(C) 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;

(D) A waste management unit subject to and operated in compliance with the treatment requirements of 40 CFR 61.348(a), provided all waste management units that collect, store, or transport the purged process fluid to the treatment unit are subject to and operated in compliance with the management requirements of 40 CFR 61.343 through 40 CFR 61.347; or

(E) A device used to burn off-specification used oil for energy recovery in accordance with 40 CFR part 279, subpart G, provided the purged process fluid is 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.

### *§ 60.482-6a 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 §60.482–1a(c) and paragraphs (d) and (e) of this section.

(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) of this section 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.

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

(a)(1) Each valve shall be monitored monthly to detect leaks by the methods specified in §60.485a(b) and shall comply with paragraphs (b) through (e) of this section, except as provided in paragraphs (f), (g), and (h) of this section, §60.482–1a(c) and (f), and §§60.483–1a and 60.483–2a.

(2) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for the process unit must be monitored according to paragraphs (a)(2)(i) or (ii), except for a valve that replaces a leaking valve and except as provided in paragraphs (f), (g), and (h) of this section, §60.482–1a(c), and §§60.483–1a and 60.483–2a.

(i) Monitor the valve as in paragraph (a)(1) of this section. The valve must be monitored for the first time within 30 days after the end of its startup period to ensure proper installation.

(ii) If the existing valves in the process unit are monitored in accordance with §60.483–1a or §60.483–2a, count the new valve as leaking when calculating the percentage of valves leaking as described in §60.483–2a(b)(5). If less than 2.0 percent of the valves are leaking for that process unit, the valve must be monitored for the first time during the next scheduled monitoring event for existing valves in the process unit or within 90 days, whichever comes first.

(b) If an instrument reading of 500 ppm or greater is measured, a leak is detected.

(c)(1)(i) 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.

(ii) As an alternative to monitoring all of the valves in the first month of a quarter, an owner or operator may elect to subdivide the process unit into two or three subgroups of valves and monitor each subgroup in a different month during the quarter, provided each subgroup is monitored every 3 months. The owner or operator must keep records of the valves assigned to each subgroup.

(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 §60.482–9a.

(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 §60.486a(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) of this section 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 §60.485a(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 §60.486a(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) of this section 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) of this section, 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 §60.486a(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) of this section 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:

(i) Becomes an affected facility through §60.14 or §60.15 and was constructed on or before January 5, 1981; or

(ii) Has less than 3.0 percent of its total number of valves designated as difficult-to-monitor by the owner or operator.

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

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

(a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps, valves, and connectors in heavy liquid service and pressure relief devices in light liquid or heavy liquid service, 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 §60.485a(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 within 5 calendar days of detection.

(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 §60.482–9a.

(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 §§60.482–2a(c)(2) and 60.482–7a(e).

### *§ 60.482-9a 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. Monitoring to verify repair must occur within 15 days after startup of the process unit.

(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 and connectors 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 §60.482–10a.

(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.

(f) When delay of repair is allowed for a leaking pump, valve, or connector that remains in service, the pump, valve, or connector may be considered to be repaired and no longer subject to delay of repair requirements if two consecutive monthly monitoring instrument readings are below the leak definition.

### *§ 60.482-10a 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 (ppmv), 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 ppmv, 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 (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 (ii) of this section:

(i) Conduct an initial inspection according to the procedures in §60.485a(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 §60.485a(b); and

(ii) Conduct annual inspections according to the procedures in §60.485a(b).

(g) Leaks, as indicated by an instrument reading greater than 500 ppmv 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 (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 (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 (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 §60.486a(c).

(4) For each inspection conducted in accordance with §60.485a(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.

### *§ 60.482-11a Standards: Connectors in gas/vapor service and in light liquid service.*

(a) The owner or operator shall initially monitor all connectors in the process unit for leaks by the later of either 12 months after the compliance date or 12 months after initial startup. If all connectors in the process unit have been monitored for leaks prior to the compliance date, no initial monitoring is required provided either no process changes have been made since the monitoring or the owner or operator can determine that the results of the monitoring, with or without adjustments, reliably demonstrate compliance despite process changes. If required to monitor because of a process change, the owner or operator is required to monitor only those connectors involved in the process change.

(b) Except as allowed in §60.482–1a(c), §60.482–10a, or as specified in paragraph (e) of this section, the owner or operator shall monitor all connectors in gas and vapor and light liquid service as specified in paragraphs (a) and (b)(3) of this section.

(1) The connectors shall be monitored to detect leaks by the method specified in §60.485a(b) and, as applicable, §60.485a(c).

(2) If an instrument reading greater than or equal to 500 ppm is measured, a leak is detected.

(3) The owner or operator shall perform monitoring, subsequent to the initial monitoring required in paragraph (a) of this section, as specified in paragraphs (b)(3)(i) through (iii) of this section, and shall comply with the requirements of paragraphs (b)(3)(iv) and (v) of this section. The required period in which monitoring must be conducted shall be determined from paragraphs (b)(3)(i) through (iii) of this section using the monitoring results from the preceding monitoring period. The percent leaking connectors shall be calculated as specified in paragraph (c) of this section.

(i) If the percent leaking connectors in the process unit was greater than or equal to 0.5 percent, then monitor within 12 months (1 year).

(ii) If the percent leaking connectors in the process unit was greater than or equal to 0.25 percent but less than 0.5 percent, then monitor within 4 years. An owner or operator may comply with the requirements of this paragraph by monitoring at least 40 percent of the connectors within 2 years of the start of the monitoring period, provided all connectors have been monitored by the end of the 4-year monitoring period.

(iii) If the percent leaking connectors in the process unit was less than 0.25 percent, then monitor as provided in paragraph (b)(3)(iii)(A) of this section and either paragraph (b)(3)(iii)(B) or (b)(3)(iii)(C) of this section, as appropriate.

(A) An owner or operator shall monitor at least 50 percent of the connectors within 4 years of the start of the monitoring period.

(B) If the percent of leaking connectors calculated from the monitoring results in paragraph (b)(3)(iii)(A) of this section is greater than or equal to 0.35 percent of the monitored connectors, the owner or operator shall monitor as soon as practical, but within the next 6 months, all connectors that have not yet been monitored during the monitoring period. At the conclusion of monitoring, a new monitoring period shall be started pursuant to paragraph (b)(3) of this section, based on the percent of leaking connectors within the total monitored connectors.

(C) If the percent of leaking connectors calculated from the monitoring results in paragraph (b)(3)(iii)(A) of this section is less than 0.35 percent of the monitored connectors, the owner or operator shall monitor all connectors that have not yet been monitored within 8 years of the start of the monitoring period.

(iv) If, during the monitoring conducted pursuant to paragraphs (b)(3)(i) through (iii) of this section, a connector is found to be leaking, it shall be re-monitored once within 90 days after repair to confirm that it is not leaking.

(v) The owner or operator shall keep a record of the start date and end date of each monitoring period under this section for each process unit.

(c) For use in determining the monitoring frequency, as specified in paragraphs (a) and (b)(3) of this section, the percent leaking connectors as used in paragraphs (a) and (b)(3) of this section shall be calculated by using the following equation:

$\%C_L = C_L / C_t * 100$

Where:

$\%C_L$= Percent of leaking connectors as determined through periodic monitoring required in paragraphs (a) and (b)(3)(i) through (iii) of this section.

$C_L$= Number of connectors measured at 500 ppm or greater, by the method specified in §60.485a(b).

$C_t$= Total number of monitored connectors in the process unit or affected facility.

(d) When a leak is detected pursuant to paragraphs (a) and (b) of this section, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9a. A first attempt at repair as defined in this subpart shall be made no later than 5 calendar days after the leak is detected.

(e) Any connector that is designated, as described in §60.486a(f)(1), as an unsafe-to-monitor connector is exempt from the requirements of paragraphs (a) and (b) of this section if:

(1) The owner or operator of the connector demonstrates that the connector is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraphs (a) and (b) of this section; and

(2) The owner or operator of the connector has a written plan that requires monitoring of the connector 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 (d) of this section if a leak is detected.

(f) *Inaccessible, ceramic, or ceramic-lined connectors* . (1) Any connector that is inaccessible or that is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined), is exempt from the monitoring requirements of paragraphs (a) and (b) of this section, from the leak repair requirements of paragraph (d) of this section, and from the recordkeeping and reporting requirements of §§63.1038 and 63.1039. An inaccessible connector is one that meets any of the provisions specified in paragraphs (f)(1)(i) through (vi) of this section, as applicable:

(i) Buried;

(ii) Insulated in a manner that prevents access to the connector by a monitor probe;

(iii) Obstructed by equipment or piping that prevents access to the connector by a monitor probe;

(iv) Unable to be reached from a wheeled scissor-lift or hydraulic-type scaffold that would allow access to connectors up to 7.6 meters (25 feet) above the ground;

(v) Inaccessible because it would require elevating the monitoring personnel more than 2 meters (7 feet) above a permanent support surface or would require the erection of scaffold; or

(vi) Not able to be accessed at any time in a safe manner to perform monitoring. Unsafe access includes, but is not limited to, the use of a wheeled scissor-lift on unstable or uneven terrain, the use of a motorized man-lift basket in areas where an ignition potential exists, or access would require near proximity to hazards such as electrical lines, or would risk damage to equipment.

(2) If any inaccessible, ceramic, or ceramic-lined connector is observed by visual, audible, olfactory, or other means to be leaking, the visual, audible, olfactory, or other indications of a leak to the atmosphere shall be eliminated as soon as practical.

(g) Except for instrumentation systems and inaccessible, ceramic, or ceramic-lined connectors meeting the provisions of paragraph (f) of this section, identify the connectors subject to the requirements of this subpart. Connectors need not be individually identified if all connectors in a designated area or length of pipe subject to the provisions of this subpart are identified as a group, and the number of connectors subject is indicated.

### *§ 60.483-1a 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 §60.487a(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 §60.482–7a(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 §60.485a(b).

(2) If an instrument reading of 500 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, determined as described in §60.485a(h).

### *§ 60.483-2a 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)a.

(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 §60.482–7a.

(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 §60.482–7a but can again elect to use this section.

(5) The percent of valves leaking shall be determined as described in §60.485a(h).

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

(7) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for a process unit following one of the alternative standards in this section must be monitored in accordance with §60.482–7a(a)(2)(i) or (ii) before the provisions of this section can be applied to that valve.

### *§ 60.484a Equivalence of means of emission limitation.*

(a) Each owner or operator subject to the provisions of this subpart may apply to the Administrator for determination of equivalence for any means of emission limitation that achieves a reduction in emissions of VOC at least equivalent to the reduction in emissions of VOC achieved by the controls required in this subpart.

(b) Determination of equivalence to the equipment, design, and operational requirements of this subpart will be evaluated by the following guidelines:

(1) Each owner or operator applying for an equivalence determination shall be responsible for collecting and verifying test data to demonstrate equivalence of means of emission limitation.

(2) The Administrator will compare test data for demonstrating equivalence of the means of emission limitation to test data for the equipment, design, and operational requirements.

(3) The Administrator may condition the approval of equivalence on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) Determination of equivalence to the required work practices in this subpart will be evaluated by the following guidelines:

(1) Each owner or operator applying for a determination of equivalence shall be responsible for collecting and verifying test data to demonstrate equivalence of an equivalent means of emission limitation.

(2) For each affected facility for which a determination of equivalence is requested, the emission reduction achieved by the required work practice shall be demonstrated.

(3) For each affected facility, for which a determination of equivalence is requested, the emission reduction achieved by the equivalent means of emission limitation shall be demonstrated.

(4) Each owner or operator applying for a determination of equivalence shall commit in writing to work practice(s) that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practice.

(5) The Administrator will compare the demonstrated emission reduction for the equivalent means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in paragraph (c)(4) of this section.

(6) The Administrator may condition the approval of equivalence on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practice.

(d) An owner or operator may offer a unique approach to demonstrate the equivalence of any equivalent means of emission limitation.

(e)(1) After a request for determination of equivalence is received, the Administrator will publish a notice in theFederal Registerand provide the opportunity for public hearing if the Administrator judges that the request may be approved.

(2) After notice and opportunity for public hearing, the Administrator will determine the equivalence of a means of emission limitation and will publish the determination in theFederal Register.

(3) Any equivalent means of emission limitations approved under this section shall constitute a required work practice, equipment, design, or operational standard within the meaning of section 111(h)(1) of the CAA.

(f)(1) Manufacturers of equipment used to control equipment leaks of VOC may apply to the Administrator for determination of equivalence for any equivalent means of emission limitation that achieves a reduction in emissions of VOC achieved by the equipment, design, and operational requirements of this subpart.

(2) The Administrator will make an equivalence determination according to the provisions of paragraphs (b), (c), (d), and (e) of this section.

### *§ 60.485a 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 §§60.482–1a through 60.482–11a, 60.483a, and 60.484a 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 of appendix A–7 of this part. 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 no more than 2,000 ppm greater than the leak definition concentration of the equipment monitored. If the monitoring instrument's design allows for multiple calibration scales, then the lower scale shall be calibrated with a calibration gas that is no higher than 2,000 ppm above the concentration specified as a leak, and the highest scale shall be calibrated with a calibration gas that is approximately equal to 10,000 ppm. If only one scale on an instrument will be used during monitoring, the owner or operator need not calibrate the scales that will not be used during that day's monitoring.

(2) A calibration drift assessment shall be performed, at a minimum, at the end of each monitoring day. Check the instrument using the same calibration gas(es) that were used to calibrate the instrument before use. Follow the procedures specified in Method 21 of appendix A–7 of this part, Section 10.1, except do not adjust the meter readout to correspond to the calibration gas value. Record the instrument reading for each scale used as specified in §60.486a(e)(7). Calculate the average algebraic difference between the three meter readings and the most recent calibration value. Divide this algebraic difference by the initial calibration value and multiply by 100 to express the calibration drift as a percentage. If any calibration drift assessment shows a negative drift of more than 10 percent from the initial calibration value, then all equipment monitored since the last calibration with instrument readings below the appropriate leak definition and above the leak definition multiplied by (100 minus the percent of negative drift/divided by 100) must be re-monitored. If any calibration drift assessment shows a positive drift of more than 10 percent from the initial calibration value, then, at the owner/operator's discretion, all equipment since the last calibration with instrument readings above the appropriate leak definition and below the leak definition multiplied by (100 plus the percent of positive drift/divided by 100) may be re-monitored.

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

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

(2) Method 21 of appendix A–7 of this part 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 a piece of equipment is in light liquid service by showing that all the following conditions apply:

(1) The vapor pressure of one or more of the organic components is greater than 0.3 kPa at 20 °C (1.2 in. $H_2O$ 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 organic components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. $H_2O$ 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 of appendix A–7 of this part 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 $m^4$ /(MJ-sec) (metric units) = 0.087 $ft^4$ /(Btu-sec) (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) = $4.674 \times 10^{-6}$ [(g-mole)(Btu)/(ppm-scf-kcal)] (English units).

$C_i$= Concentration of sample component "i," ppm

$H_i$= 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 of appendix A–6 of this part or ASTM D6420–99 (2004) (where the target compound(s) are those listed in Section 1.1 of ASTM D6420–99, and the target concentration is between 150 parts per billion by volume and 100 ppmv) 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 of appendix A–7 of this part, 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.

(h) The owner or operator shall determine compliance with §60.483–1a or §60.483–2a as follows:

(1) The percent of valves leaking shall be determined using the following equation:

$\%V_L = (V_L / V_T) * 100$

Where:

$\%V_L$= Percent leaking valves.

$V_L$= Number of valves found leaking.

$V_T$= The sum of the total number of valves monitored.

(2) The total number of valves monitored shall include difficult-to-monitor and unsafe-to-monitor valves only during the monitoring period in which those valves are monitored.

(3) The number of valves leaking shall include valves for which repair has been delayed.

(4) Any new valve that is not monitored within 30 days of being placed in service shall be included in the number of valves leaking and the total number of valves monitored for the monitoring period in which the valve is placed in service.

(5) If the process unit has been subdivided in accordance with §60.482–7a(c)(1)(ii), the sum of valves found leaking during a monitoring period includes all subgroups.

(6) The total number of valves monitored does not include a valve monitored to verify repair.

### *§ 60.486a 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.

(3) The owner or operator shall record the information specified in paragraphs (a)(3)(i) through (v) of this section for each monitoring event required by §§60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482–11a, and 60.483–2a.

(i) Monitoring instrument identification.

(ii) Operator identification.

(iii) Equipment identification.

(iv) Date of monitoring.

(v) Instrument reading.

(b) When each leak is detected as specified in §§60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482–11a, and 60.483–2a, 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 §60.482–7a(c) and no leak has been detected during those 2 months.

(3) The identification on a connector may be removed after it has been monitored as specified in §60.482–11a(b)(3)(iv) and no leak has been detected during that monitoring.

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

(c) When each leak is detected as specified in §§60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482–11a, and 60.483–2a, 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, except when indications of liquids dripping from a pump are designated as a leak.

(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) Maximum instrument reading measured by Method 21 of appendix A–7 of this part at the time the leak is successfully repaired or determined to be nonrepairable, except when a pump is repaired by eliminating indications of liquids dripping.

(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 §60.482–10a 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 §60.482–10a(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 §§60.482–2a, 60.482–3a, 60.482–4a, and 60.482–5a 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 §§60.482–2a, 60.482–3a, 60.482–4a, and 60.482–5a.

(e) The following information pertaining to all equipment subject to the requirements in §§60.482–1a to 60.482–11a 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 §§60.482–2a(e), 60.482–3a(i), and 60.482–7a(f).

(ii) The designation of equipment as subject to the requirements of §60.482–2a(e), §60.482–3a(i), or §60.482–7a(f) shall be signed by the owner or operator. Alternatively, the owner or operator may establish a mechanism with their permitting authority that satisfies this requirement.

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

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

(6) A list of identification numbers for equipment that the owner or operator designates as operating in VOC service less than 300 hr/yr in accordance with §60.482–1a(e), a description of the conditions under which the equipment is in VOC service, and rationale supporting the designation that it is in VOC service less than 300 hr/yr.

(7) The date and results of the weekly visual inspection for indications of liquids dripping from pumps in light liquid service.

(8) Records of the information specified in paragraphs (e)(8)(i) through (vi) of this section for monitoring instrument calibrations conducted according to sections 8.1.2 and 10 of Method 21 of appendix A–7 of this part and §60.485a(b).

(i) Date of calibration and initials of operator performing the calibration.

(ii) Calibration gas cylinder identification, certification date, and certified concentration.

(iii) Instrument scale(s) used.

(iv) A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value in accordance with section 10.1 of Method 21 of appendix A–7 of this part.

(v) Results of each calibration drift assessment required by §60.485a(b)(2) (i.e., instrument reading for calibration at end of monitoring day and the calculated percent difference from the initial calibration value).

(vi) If an owner or operator makes their own calibration gas, a description of the procedure used.

(9) The connector monitoring schedule for each process unit as specified in §60.482–11a(b)(3)(v).

(10) Records of each release from a pressure relief device subject to §60.482–4a.

(f) The following information pertaining to all valves subject to the requirements of §60.482–7a(g) and (h), all pumps subject to the requirements of §60.482–2a(g), and all connectors subject to the requirements of §60.482–11a(e) shall be recorded in a log that is kept in a readily accessible location:

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

(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 §60.483–2a:

(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 §§60.482–2a(d)(5) and 60.482–3a(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 §60.480a(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.

### *§ 60.487a Reporting requirements.*

(a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning 6 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 §60.482–7a, excluding those valves designated for no detectable emissions under the provisions of §60.482–7a(f).

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

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

(5) Number of connectors subject to the requirements of §60.482–11a.

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

(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 §60.482–7a(b) or §60.483–2a,

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

(iii) Number of pumps for which leaks were detected as described in §60.482–2a(b), (d)(4)(ii)(A) or (B), or (d)(5)(iii),

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

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

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

(vii) Number of connectors for which leaks were detected as described in §60.482–11a(b)

(viii) Number of connectors for which leaks were not repaired as required in §60.482–11a(d), and

(xi) 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) of this section 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 §§60.483–1a or 60.483–2a 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 CAA, 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.

### *§ 60.488a Reconstruction.*

For the purposes of this subpart:

(a) The cost of the following frequently replaced components of the facility shall not be considered in calculating either the “fixed capital cost of the new components” or the “fixed capital costs that would be required to construct a comparable new facility” under §60.15: Pump seals, nuts and bolts, rupture disks, and packings.

(b) Under §60.15, the “fixed capital cost of new components” includes the fixed capital cost of all depreciable components (except components specified in §60.488a(a)) which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2-year period following the applicability date for the appropriate

subpart. (See the “Applicability and designation of affected facility” section of the appropriate subpart.) For purposes of this paragraph, “commenced” means that an owner or operator has undertaken a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of component replacement.

### *§ 60.489a List of chemicals produced by affected facilities.*

Process units that produce, as intermediates or final products, chemicals listed in §60.489 are covered under this subpart. The applicability date for process units producing one or more of these chemicals is November 8, 2006.

# ATTACHMENT B

**Title 40: Protection of Environment**

**PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES**

**Subpart RRR—Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes**

# New Source Construction and Federally Enforceable State Operating Permit OFFICE OF AIR QUALITY

**Bio-Alternative, LLC**
**11778 South 600 West**
**Covington, Indiana 47932**
**171-25735-00029**

## Title 40: Protection of Environment

## Subpart RRR—Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

**Source:** 58 FR 45962, Aug. 31, 1993, unless otherwise noted.

§ 60.700 Applicability and designation of affected facility.

(a) The provisions of this subpart apply to each affected facility designated in paragraph (b) of this section that is part of a process unit that produces any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate, except as provided in paragraph (c) of this section.

(b) The affected facility is any of the following for which construction, modification, or reconstruction commenced after June 29, 1990:

(1) Each reactor process not discharging its vent stream into a recovery system.

(2) Each combination of a reactor process and the recovery system into which its vent stream is discharged.

(3) Each combination of two or more reactor processes and the common recovery system into which their vent streams are discharged.

(c) Exemptions from the provisions of paragraph (a) of this section are as follows:

(1) Any reactor process that is designed and operated as a batch operation is not an affected facility.

(2) Each affected facility that has a total resource effectiveness (TRE) index value greater than 8.0 is exempt from all provisions of this subpart except for §§60.702(c); 60.704 (d), (e), and (f); and 60.705 (g), (l)(1), (l)(6), and (t).

(3) Each affected facility in a process unit with a total design capacity for all chemicals produced within that unit of less than 1 gigagram per year (1,100 tons per year) is exempt from all provisions of this subpart except for the recordkeeping and reporting requirements in §60.705 (i), (l)(5), and (n).

(4) Each affected facility operated with a vent stream flow rate less than 0.011 scm/min is exempt from all provisions of this subpart except for the test method and procedure and the recordkeeping and reporting requirements in §60.704(g) and §70.705 (h), (l)(4), and (o).

(5) If the vent stream from an affected facility is routed to a distillation unit subject to subpart NNN and has no other releases to the air except for a pressure relief valve, the facility is exempt from all provisions of this subpart except for §60.705(r).

(6) Any reactor process operating as part of a process unit which produces beverage alcohols, or which uses, contains, and produces no VOC is not an affected facility.

(7) Any reactor process that is subject to the provisions of subpart DDD is not an affected facility.

(8) Each affected facility operated with a concentration of total organic compounds (TOC) (less methane and ethane) in the vent stream less than 300 ppmv as measured by Method 18 or a concentration of TOC in the vent stream less than 150 ppmv as measured by Method 25A is exempt from all provisions of this subpart

except for the test method and procedure and the reporting and recordkeeping requirements in §60.704(h) and paragraphs (j), (l)(8), and (p) of §60.705.

(d) *Alternative means of compliance* —(1) *Option to comply with part 65.* Owners or operators of process vents that are subject to this subpart may choose to comply with the provisions of 40 CFR part 65, subpart D, to satisfy the requirements of §§60.702 through 60.705 and 60.708. The provisions of 40 CFR part 65 also satisfy the criteria of paragraphs (c)(2), (4), and (8) of this section. 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 D, 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 process vents. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (d)(2) do not apply to owners or operators of process vents complying with 40 CFR part 65, subpart D, 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 D, must comply with 40 CFR part 65, subpart A.

(3) *Compliance date.* Owners or operators who choose to comply with 40 CFR part 65, subpart D at initial startup shall comply with paragraphs (d)(1) and (2) of this section for each vent stream on and after the date on which the initial performance test is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after the initial startup, whichever date comes first.

(4) *Initial startup notification.* Each owner or operator subject to the provisions of this subpart that chooses to comply with 40 CFR part 65, subpart D, at initial startup shall notify the Administrator of the specific provisions of 40 CFR 65.63(a)(1), (2), or (3), with which the owner or operator has elected to comply. Notification shall be submitted with the notifications of initial startup required by 40 CFR 65.5(b).

(Note: The intent of these standards is to minimize emissions of VOC through the application of best demonstrated technology (BDT). The numerical emission limits in these standards are expressed in terms of TOC, measured as TOC less methane and ethane. This emission limit reflects the performance of BDT.)

[58 FR 45962, Aug. 31, 1993, as amended at 60 FR 58238, Nov. 27, 1995; 65 FR 78279, Dec. 14, 2000]

### *§ 60.701 Definitions.*

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

*Batch operation* means any noncontinuous reactor process that is not characterized by steady-state conditions and in which reactants are not added and products are not removed simultaneously.

*Boiler* means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator.

*By compound* means by individual stream components, not carbon equivalents.

*Car-seal* means a seal that is placed on a device that is used to change the position of a valve (e.g., from opened to closed) in such a way that the position of the valve cannot be changed without breaking the seal.

*Combustion device* means an individual unit of equipment, such as an incinerator, flare, boiler, or process heater, used for combustion of a vent stream discharged from the process vent.

*Continuous recorder* means a data recording device recording an instantaneous data value at least once every 15 minutes.

*Flame zone* means the portion of the combustion chamber in a boiler occupied by the flame envelope.

*Flow indicator* means a device which indicates whether gas flow is present in a line.

*Halogenated vent stream* means any vent stream determined to have a total concentration (by volume) of compounds containing halogens of 20 ppmv (by compound) or greater.

*Incinerator* means an enclosed combustion device that is used for destroying organic compounds. If there is energy recovery, the energy recovery section and the combustion chambers are not of integral design. That is, the energy recovery section and the combustion section are not physically formed into one manufactured or assembled unit but are joined by ducts or connections carrying flue gas.

*Primary fuel* means the fuel fired through a burner or a number of similar burners. The primary fuel provides the principal heat input to the device, and the amount of fuel is sufficient to sustain operation without the addition of other fuels.

*Process heater* means a device that transfers heat liberated by burning fuel directly to process streams or to heat transfer liquids other than water.

*Process unit* means equipment assembled and connected by pipes or ducts to produce, as intermediates or final products, one or more of the chemicals in §60.707. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

*Product* means any compound or chemical listed in §60.707 which is produced for sale as a final product as that chemical, or for use in the production of other chemicals or compounds. By-products, co-products, and intermediates are considered to be products.

*Reactor processes* are unit operations in which one or more chemicals, or reactants other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic compounds are formed.

*Recovery device* means an individual unit of equipment, such as an absorber, carbon adsorber, or condenser, capable of and used for the purpose of recovering chemicals for use, reuse, or sale.

*Recovery system* means an individual recovery device or series of such devices applied to the same vent stream.

*Relief valve* means a valve used only to release an unplanned, nonroutine discharge. A relief valve discharge results from an operator error, a malfunction such as a power failure or equipment failure, or other unexpected cause that requires immediate venting of gas from process equipment in order to avoid safety hazards or equipment damage.

*Secondary fuel* means a fuel fired through a burner other than a primary fuel burner. The secondary fuel may provide supplementary heat in addition to the heat provided by the primary fuel.

*Total organic compounds or TOC* means those compounds measured according to the procedures in §60.704(b)(4). For the purposes of measuring molar composition as required in §60.704(d)(2)(i) and §60.704(d)(2)(ii), hourly emission rate as required in §60.704(d)(5) and §60.704(e), and TOC concentration as required in §60.705(b)(4) and §60.705(f)(4), those compounds which the Administrator has determined do not contribute appreciably to the formation of ozone are to be excluded.

*Total resource effectiveness or TRE index value* means a measure of the supplemental total resource requirement per unit reduction of TOC associated with a vent stream from an affected reactor process facility, based on vent stream flow rate, emission rate of TOC, net heating value, and corrosion properties (whether or not the vent stream contains halogenated compounds), as quantified by the equation given under §60.704(e).

*Vent stream* means any gas stream discharged directly from a reactor process to the atmosphere or indirectly to the atmosphere after diversion through other process equipment. The vent stream excludes relief valve discharges and equipment leaks.

### *§ 60.702 Standards.*

Each owner or operator of any affected facility shall comply with paragraph (a), (b), or (c) of this section for each vent stream on and after the date on which the initial performance test required by §60.8 and §60.704 is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after the initial start-up, whichever date comes first. Each owner or operator shall either:

(a) Reduce emissions of TOC (less methane and ethane) by 98 weight-percent, or to a TOC (less methane and ethane) concentration of 20 ppmv, on a dry basis corrected to 3 percent oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this paragraph, then the vent stream shall be introduced into the flame zone of the boiler or process heater; or

(b) Combust the emissions in a flare that meets the requirements of §60.18; or

(c) Maintain a TRE index value greater than 1.0 without use of a VOC emission control device.

### *§ 60.703 Monitoring of emissions and operations.*

(a) The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit specified under §60.702(a) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

(1) A temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater.

(i) Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox or in the ductwork immediately downstream of the firebox in a position before any substantial heat exchange is encountered.

(ii) Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

(2) A flow indicator that provides a record of vent stream flow diverted from being routed to the incinerator at least once every 15 minutes for each affected facility, except as provided in paragraph (a)(2)(ii) of this section.

(i) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the incinerator, resulting in its emission to the atmosphere.

(ii) Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(b) The owner or operator of an affected facility that uses a flare to seek to comply with §60.702(b) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

(1) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

(2) A flow indicator that provides a record of vent stream flow diverted from being routed to the flare at least once every 15 minutes for each affected facility, except as provided in paragraph (b)(2)(ii) of this section.

(i) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the flare, resulting in its emission to the atmosphere.

(ii) Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(c) The owner or operator of an affected facility that uses a boiler or process heater to seek to comply with §60.702(a) shall install, calibrate, maintain and operate according to the manufacturer's specifications the following equipment:

(1) A flow indicator that provides a record of vent stream flow diverted from being routed to the boiler or process heater at least once every 15 minutes for each affected facility, except as provided in paragraph (c)(1)(ii) of this section.

(i) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the boiler or process heater, resulting in its emission to the atmosphere.

(ii) Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(2) A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater, for boilers or process heaters of less than 44 MW (150 million Btu/hr) design heat input capacity. Any vent stream introduced with primary fuel into a boiler or process heater is exempt from this requirement.

(d) The owner or operator of an affected facility that seeks to demonstrate compliance with the TRE index value limit specified under §60.702(c) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment, unless alternative monitoring procedures or requirements are approved for that facility by the Administrator:

(1) Where an absorber is the final recovery device in the recovery system:

(i) A scrubbing liquid temperature monitoring device having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater, and a specific gravity monitoring device having an accuracy of ±0.02 specific gravity units, each equipped with a continuous recorder; or

(ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.

(2) Where a condenser is the final recovery device in the recovery system:

(i) A condenser exit (product side) temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater; or

(ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.

(3) Where a carbon adsorber is the final recovery device unit in the recovery system:

(i) An integrating steam flow monitoring device having an accuracy of ±10 percent, and a carbon bed temperature monitoring device having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater, both equipped with a continuous recorder; or

(ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.

(e) An owner or operator of an affected facility seeking to demonstrate compliance with the standards specified under §60.702 with a control device other than an incinerator, boiler, process heater, or flare; or a recovery device other than an absorber, condenser, or carbon adsorber, shall provide to the Administrator information describing the operation of the control device or recovery device and the process parameter(s) which would indicate proper operation and maintenance of the device. The Administrator may request further information and will specify appropriate monitoring procedures or requirements.

### *§ 60.704 Test methods and procedures.*

(a) For the purpose of demonstrating compliance with §60.702, all affected facilities shall be run at full operating conditions and flow rates during any performance test.

(b) The following methods in Appendix A to this part, except as provided under §60.8(b), shall be used as reference methods to determine compliance with the emission limit or percent reduction efficiency specified under §60.702(a).

(1) Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

(2) Method 2, 2A, 2C, or 2D, as appropriate, for determination of the gas volumetric flow rates.

(3) The emission rate correction factor, integrated sampling and analysis procedure of Method 3B shall be used to determine the oxygen concentration ($\%O_{2d}$) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples, and the samples shall be taken during the same time that the TOC samples are taken. The TOC concentration corrected to 3 percent $O_2$(Cc) shall be computed using the following equation:

$$C_c = C_{TOC}\frac{17.9}{20.9 - \%O_{2d}}$$

where:

$C_c$=Concentration of TOC corrected to 3 percent $O_2$, dry basis, ppm by volume.

$C_{TOC}$=Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

$\%O_{2d}$=Concentration of $O_2$, dry basis, percent by volume.

(4) Method 18 to determine the concentration of TOC in the control device outlet and the concentration of TOC in the inlet when the reduction efficiency of the control device is to be determined.

(i) The minimum sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately 15-minute intervals.

(ii) The emission reduction (R) of TOC (minus methane and ethane) shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

where:

R=Emission reduction, percent by weight.

$E_i$=Mass rate of TOC entering the control device, kg TOC/hr.

$E_o$=Mass rate of TOC discharged to the atmosphere, kg TOC/hr.

(iii) The mass rates of TOC ($E_i$, $E_o$) shall be computed using the following equations:

$$E_i = K_2 \sum_{j=1}^{n} C_{ij} M_{ij} Q_i$$

$$E_i = K_2 \sum_{j=1}^{n} C_{oj} M_{ij} Q_o$$

where:

$C_{ij}$. $C_{oj}$=Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppm by volume.

$M_{ij}$, $M_{oj}$=Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).

$Q_i$, $Q_o$=Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/hr).

$K_2$=Constant, $2.494 \times 10^{-6}$(l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20 °C.

(iv) The TOC concentration ($C_{TOC}$) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^{n} C_j$$

where:

$C_{TOC}$=Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

$C_j$=Concentration of sample components "j", dry basis, ppm by volume.

n=Number of components in the sample.

(5) The requirement for an initial performance test is waived, in accordance with §60.8(b), for the following:

(i) When a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used to seek compliance with §60.702(a).

(ii) When a vent stream is introduced into a boiler or process heater with the primary fuel.

(iii) The Administrator reserves the option to require testing at such other times as may be required, as provided for in section 114 of the Act.

(6) For purposes of complying with the 98 weight-percent reduction in §60.702(a), if the vent stream entering a boiler or process heater with a design capacity less than 44 MW (150 million Btu/hour) is introduced with the combustion air or as secondary fuel, the weight-percent reduction of TOC (minus methane and ethane) across the combustion device shall be determined by comparing the TOC (minus methane and ethane) in all combusted vent streams, primary fuels, and secondary fuels with the TOC (minus methane and ethane) exiting the combustion device.

(c) When a flare is used to seek to comply with §60.702(b), the flare shall comply with the requirements of §60.18.

(d) The following test methods in Appendix A to this part, except as provided under §60.8(b), shall be used for determining the net heating value of the gas combusted to determine compliance under §60.702(b) and for determining the process vent stream TRE index value to determine compliance under §60.700(c)(2) and §60.702(c).

(1)(i) Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in §60.704 (d)(2) and (d)(3) shall be, except for the situations outlined in paragraph (d)(1)(ii) of this section, prior to the inlet of any control device, prior to any postreactor dilution of the stream with air, and prior to any postreactor introduction of halogenated compounds into the process vent stream. No traverse site selection method is needed for vents smaller than 4 inches in diameter.

(ii) If any gas stream other than the reactor vent stream is normally conducted through the final recovery device:

(A) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which any nonreactor stream or stream from a nonaffected reactor process is introduced.

(B) The efficiency of the final recovery device is determined by measuring the TOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any vent stream and at the outlet of the final recovery device.

(C) This efficiency of the final recovery device shall be applied to the TOC concentration measured prior to the final recovery device and prior to the introduction of any nonreactor stream or stream from a nonaffected reactor process to determine the concentration of TOC in the reactor process vent stream from the final recovery device. This concentration of TOC is then used to perform the calculations outlined in §60.704(d)(4) and (5).

(2) The molar composition of the process vent stream shall be determined as follows:

(i) Method 18 to measure the concentration of TOC including those containing halogens.

(ii) ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as specified in §60.17 of this part) to measure the concentration of carbon monoxide and hydrogen.

(iii) Method 4 to measure the content of water vapor.

(3) The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

(4) The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \sum_{j=1}^{n} C_j H_j \quad 1 - B_{ws}$$

where:

$H_T$=Net heating value of the sample, MJ/scm, where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C, as in the definition of $Q_s$(vent stream flow rate).

$K_1$=Constant, $1.740 \times 10^{-7}$(l/ppm) (g-mole/scm) (MJ/kcal), where standard temperature for (g-mole/scm) is 20 °C.

$C_j$=Concentration on a dry basis of compound j in ppm, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as specified in §60.17 of this part) as indicated in §60.704(d)(2).

$H_j$=Net heat of combustion of compound j, kcal/g-mole, based on combustion at 25 °C and 760 mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382–76 or 88 or D4809–95 (incorporation by reference as specified in §60.17 of this part) if published values are not available or cannot be calculated.

$B_{ws}$=Water vapor content of the vent stream, proportion by volume.

(5) The emission rate of TOC in the vent stream shall be calculated using the following equation:

$$E_{TOC} = K_2 \sum_{j=1}^{n} C_j M_j Q_s$$

where:

$E_{TOC}$=Emission rate of TOC in the sample, kg/hr.

$K_2$=Constant, $2.494 \times 10^{-6}$(l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20 °C.

$C_j$=Concentration on a dry basis of compound j in ppm as measured by Method 18 as indicated in §60.704(d)(2).

$M_j$=Molecular weight of sample j, g/g-mole.

$Q_s$=Vent stream flow rate (dscm/min) at a temperature of 20 °C.

(6) The total vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.

(e) For purposes of complying with §60.700(c)(2) and §60.702(c), the owner or operator of a facility affected by this subpart shall calculate the TRE index value of the vent stream using the equation for incineration in paragraph (e)(1) of this section for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in (e)(1) of this section and the flare equation in (e)(2) of this section and selecting the lower of the two values.

(1) The equation for calculating the TRE index value of a vent stream controlled by an incinerator is as follows:

$$TRE = \frac{1}{E_{TOC}}\left[a+b(Q_s)^{0.88}+c(Q_s)+d(Q_s)(H_T)+e(Q_s)^{0.88}(H_T)^{0.88}+f(Y_s)^{0.5}\right]$$

(i) Where for a vent stream flow rate (scm/min) at a standard temperature of 20 °C that is greater than or equal to 14.2 scm/min:

TRE=TRE index value.

$Q_s$=Vent stream flow rate (scm/min) at a standard temperature of 20 °C.

$H_T$=Vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C as in the definition of $Q_s$.

$Y_s$=$Q_s$for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_s=(Q_s)(H_T)/3.6$.

$E_{TOC}$=Hourly emissions of TOC reported in kg/hr.

a, b, c, d, e, and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.

**Table 1—Total Resource Effectiveness Coefficients for Vent Streams Controlled by an Incinerator Subject to the New Source Performance Standards for Reactor Processes**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| DESIGN CATEGORY A1. FOR HALOGENATED PROCESS VENT STREAMS, IF 0≤NET HEATING VALUE (MJ/scm)≤3.5: *$Q_s$= Vent Stream Flow Rate (scm/min)* | | | | | | |
| 14.2≤$Q_s$≤18.8 | 19.18370 | 0.27580 | 0.75762 | −0.13064 | 0 | 0.01025 |
| 18.8<$Q_s$≤699 | 20.00563 | 0.27580 | 0.30387 | −0.13064 | 0 | 0.01025 |
| 699<$Q_s$≤1,400 | 39.87022 | 0.29973 | 0.30387 | −0.13064 | 0 | 0.01449 |
| 1,400<$Q_s$≤2,100 | 59.73481 | 0.31467 | 0.30387 | −0.13064 | 0 | 0.01775 |
| 2,100<$Q_s$≤2,800 | 79.59941 | 0.32572 | 0.30387 | −0.13064 | 0 | 0.02049 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2,800<$Q_s$≤3,500 | 99.46400 | 0.33456 | 0.30387 | −0.13064 | 0 | 0.02291 |
| DESIGN CATEGORY A2. FOR HALOGENATED PROCESS VENT STREAMS, IF NET HEATING VALUE (MJ/scm)>3.5: $Q_s$= *Vent Stream Flow Rate (scm/min)* | | | | | | |
| 14.2<$Q_s$≤18.8 | 18.84466 | 0.26742 | −0.20044 | 0 | 0 | 0.01025 |
| 18.8<$Q_s$≤699 | 19.66658 | 0.26742 | −0.25332 | 0 | 0 | 0.01025 |
| 699<$Q_s$≤1,400 | 39.19213 | 0.29062 | −0.25332 | 0 | 0 | 0.01449 |
| 1,400<$Q_s$≤2,100 | 58.71768 | 0.30511 | −0.25332 | 0 | 0 | 0.01775 |
| 2,100<$Q_s$≤2,800 | 78.24323 | 0.31582 | −0 25332 | 0 | 0 | 0.02049 |
| 2,800<$Q_s$≤3,500 | 97.76879 | 0.32439 | −0.25332 | 0 | 0 | 0.02291 |
| DESIGN CATEGORY B. FOR NONHALOGENATED PROCESS VENT STREAMS, IF 0≤NET HEATING VALUE (MJ/scm)≤0.48: $Q_s$= *Vent Stream Flow Rate (scm/min)* | | | | | | |
| 14.2≤$Q_s$≤1,340 | 8.54245 | 0.10555 | 0.09030 | −0.17109 | 0 | 0.01025 |
| 1,340<$Q_s$≤2,690 | 16.94386 | 0.11470 | 0.09030 | −0.17109 | 0 | 0.01449 |
| 2,690<$Q_s$≤4,040 | 25.34528 | 0.12042 | 0.09030 | −0.17109 | 0 | 0.01775 |
| DESIGN CATEGORY C. FOR NONHALOGENATED PROCESS VENT STREAMS, IF 0.48<NET HEATING VALUE (MJ/scm)≤1.9: $Q_s$= *Vent Stream Flow Rate (scm/min)* | | | | | | |
| 14.2≤$Q_s$≤1,340 | 9.25233 | 0.06105 | 0.31937 | −0.16181 | 0 | 0.01025 |
| 1,340<$Q_s$≤2,690 | 18.36363 | 0.06635 | 0.31937 | −0.16181 | 0 | 0.01449 |
| 2,690<$Q_s$≤4,040 | 27.47492 | 0.06965 | 0.31937 | −0.16181 | 0 | 0.01775 |
| DESIGN CATEGORY D. FOR NONHALOGENATED PROCESS VENT STREAMS, IF 1.9<NET HEATING VALUE (MJ/scm)≤3.6: $Q_s$= *Vent Stream Flow Rate (scm/min)* | | | | | | |
| 14.2≤$Q_s$≤1,180 | 6.67868 | 0.06943 | 0.02582 | 0 | 0 | 0.01025 |
| 1,180<$Q_s$≤2,370 | 13.21633 | 0.07546 | 0.02582 | 0 | 0 | 0.01449 |
| 2,370<$Q_s$≤3,550 | 19.75398 | 0.07922 | 0.02582 | 0 | 0 | 0.01755 |
| DESIGN CATEGORY E. FOR NONHALOGENATED PROCESS VENT STREAMS, IF NET HEATING VALUE (MJ/scm)>3.6: $Y_s$= *Dilution Flow Rate (scm/min)=*($Q_s$) ($H_T$)/3.6 | | | | | | |
| 14.2≤$Y_s$≤1,180 | 6.67868 | 0 | 0 | −0.00707 | 0.02220 | 0.01025 |
| 1,180<$Y_s$≤2,370 | 13.21633 | 0 | 0 | −0.00707 | 0.02412 | 0.01449 |
| 2,370<$Y_s$≤3,550 | 19.75398 | 0 | 0 | −0.00707 | 0.02533 | 0.01755 |

(ii) For a vent stream flow rate (scm/min) at a standard temperature of 20 °C that is less than 14.2 scm/min:

TRE=TRE index value.

$Q_s$=14.2 scm/min.

$H_T$=(FLOW)(HVAL)/14.2

where the following inputs are used:

FLOW=Vent stream flow rate (scm/min), at a standard temperature of 20 °C.

HVAL=Vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C as in definition of $Q_s$.

$Y_s$=14.2 scm/min for all vent streams except for Category E vent streams, where $Y_s=(14.2)(H_T)/3.6$.

$E_{TOC}$=Hourly emissions of TOC reported in kg/hr.

a, b, c, d, e, and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.

(2) The equation for calculating the TRE index value of a vent stream controlled by a flare is as follows:

$$TRE = \frac{1}{E_{TOC}}\left[a(Q_s)+b(Q_s)^{0.8}+c(Q_s)(H_T)+d(E_{TOC})+e\right]$$

where:

TRE=TRE index value.

$E_{TOC}$=Hourly emission rate of TOC reported in kg/hr.

$Q_s$=Vent stream flow rate (scm/min) at a standard temperature of 20 °C.

$H_T$=Vent stream net heating value (MJ/scm) where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C as in the definition of $Q_s$.

a, b, c, d, and e are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 2.

**Table 2—Total Resource Effectiveness Coefficients for Vent Streams Controlled by a Flare Subject to the New Source Performance Standards for Reactor Processes**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| $H_T$<11.2 MJ/scm | 2.25 | 0.288 | −0.193 | −0.0051 | 2.08 |
| $H_T$≥11.2 MJ/scm | 0.309 | 0.0619 | −0.0043 | −0.0034 | 2.08 |

(f) Each owner or operator of an affected facility seeking to comply with §60.700(c)(2) or §60.702(c) shall recalculate the TRE index value for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineering estimates of the effects of the change on the recovery system.

(1) Where the recalculated TRE index value is less than or equal to 1.0, the owner or operator shall notify the Administrator within 1 week of the recalculation and shall conduct a performance test according to the methods and procedures required by §60.704 in order to determine compliance with §60.702 (a) or (b).

Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

(2) Where the recalculated TRE index value is less than or equal to 8.0 but greater than 1.0, the owner or operator shall conduct a performance test in accordance with §60.8 and §60.704 and shall comply with §60.703, §60.704 and §60.705. Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

(g) Any owner or operator subject to the provisions of this subpart seeking to demonstrate compliance with §60.700(c)(4) shall use Method 2, 2A, 2C, or 2D of appendix A to 40 CFR part 60, as appropriate, for determination of volumetric flow rate.

(h) Each owner or operator seeking to demonstrate that a reactor process vent stream has a TOC concentration for compliance with the low concentration exemption in §60.700(c)(8) shall conduct an initial test to measure TOC concentration.

(1) The sampling site shall be selected as specified in paragraph (d)(1)(i) of this section.

(2) Method 18 or Method 25A of part 60, appendix A shall be used to measure concentration.

(3) Where Method 18 is used to qualify for the low concentration exclusion in §60.700(c)(8), the procedures in §60.704(b)(4) (i) and (iv) shall be used to measure TOC concentration, and the procedures of §60.704(b)(3) shall be used to correct the TOC concentration to 3 percent oxygen. To qualify for the exclusion, the results must demonstrate that the concentration of TOC, corrected to 3 percent oxygen, is below 300 ppm by volume.

(4) Where Method 25A is used, the following procedures shall be used to calculate ppm by volume TOC concentration, corrected to 3 percent oxygen:

(i) Method 25A shall be used only if a single organic compound is greater than 50 percent of total TOC, by volume, in the reactor process vent stream. This compound shall be the principal organic compound.

(ii) The principal organic compound may be determined by either process knowledge or test data collected using an appropriate EPA Reference Method. Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry, or previous test results provided the results are still relevant to the current reactor process vent stream conditions.

(iii) The principal organic compound shall be used as the calibration gas for Method 25A.

(iv) The span value for Method 25A shall be 300 ppmv.

(v) Use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

(vi) The owner or operator shall demonstrate that the concentration of TOC including methane and ethane measured by Method 25A, corrected to 3 percent oxygen, is below 150 ppm by volume to qualify for the low concentration exclusion in §60.700(c)(8).

(vii) The concentration of TOC shall be corrected to 3 percent oxygen using the procedures and equation in paragraph (b)(3) of this section.

[58 FR 45962, Aug. 31, 1993, as amended at 60 FR 58238, Nov. 27, 1995; 65 FR 61778, Oct. 17, 2000]

### *§ 60.705 Reporting and recordkeeping requirements.*

(a) Each owner or operator subject to §60.702 shall notify the Administrator of the specific provisions of §60.702 (§60.702 (a), (b), or (c)) with which the owner or operator has elected to comply. Notification shall be submitted with the notification of initial start-up required by §60.7(a)(3). If an owner or operator elects at a later date to use an alternative provision of §60.702 with which he or she will comply, then the Administrator shall be notified by the owner or operator 90 days before implementing a change and, upon implementing the change, a performance test shall be performed as specified by §60.704 no later than 180 days from initial start-up.

(b) Each owner or operator subject to the provisions of this subpart shall keep an up-to-date, readily accessible record of the following data measured during each performance test, and also include the following data in the report of the initial performance test required under §60.8. Where a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used or where the reactor process vent stream is introduced as the primary fuel to any size boiler or process heater to comply with §60.702(a), a report containing performance test data need not be submitted, but a report containing the information in §60.705(b)(2)(i) is required. The same data specified in this section shall be submitted in the reports of all subsequently required performance tests where either the emission control efficiency of a combustion device, outlet concentration of TOC, or the TRE index value of a vent stream from a recovery system is determined.

(1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(a) through use of either a thermal or catalytic incinerator:

(i) The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period of the performance testing, and

(ii) The percent reduction of TOC determined as specified in §60.704(b) achieved by the incinerator, or the concentration of TOC (ppmv, by compound) determined as specified in §60.704(b) at the outlet of the control device on a dry basis corrected to 3 percent oxygen.

(2) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(a) through use of a boiler or process heater:

(i) A description of the location at which the vent stream is introduced into the boiler or process heater, and

(ii) The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period of the performance testing.

(3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(b) through use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.

(4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.702(c):

(i) Where an absorber is the final recovery device in the recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the Administrator), and average exit temperature, of the absorbing liquid measured at least every 15 minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted); or

(ii) Where a condenser is the final recovery device in the recovery system, the average exit (product side) temperature measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is routed and constituted normally; or

(iii) Where a carbon adsorber is the final recovery device in the recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the performance test (full carbon bed cycle), temperature of the carbon bed after regeneration [and within 15 minutes of completion of any cooling cycle(s)], and duration of the carbon bed steaming cycle (all measured while the vent stream is routed and constituted normally); or

(iv) As an alternative to §60.705(b)(4) (i), (ii) or (iii), the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser, or carbon adsorber, measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.

(v) All measurements and calculations performed to determine the TRE index value of the vent stream.

(c) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under §60.703 (a) and (c) as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Administrator may at any time require a report of these data. Where a combustion device is used to comply with §60.702(a), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

(1) For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the average combustion temperature during the most recent performance test at which compliance with §60.702(a) was determined.

(2) For catalytic incinerators, all 3-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28 °C (50 °F) below the average temperature of the vent stream during the most recent performance test at which compliance with §60.702(a) was determined. The owner or operator also shall record all 3-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80 percent of the average temperature difference of the bed during the most recent performance test at which compliance with §60.702(a) was determined.

(3) All 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the average combustion temperature during the most recent performance test at which compliance with §60.702(a) was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million Btu/hr) where the vent stream is introduced with the combustion air or as a secondary fuel.

(4) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under §60.702(a).

(d) Each owner or operator subject to the provisions of this subpart shall keep records of the following:

(1) Up-to-date, readily accessible continuous records of the flow indication specified under §60.703(a)(2)(i), §60.703(b)(2)(i) and §60.703(c)(1)(i), as well as up-to-date, readily accessible records of all periods and the duration when the vent stream is diverted from the control device.

(2) Where a seal mechanism is used to comply with §60.703(a)(2)(ii), §60.703(b)(2)(ii), and §60.703(c)(1)(ii), a record of continuous flow is not required. In such cases, the owner or operator shall keep up-to-date, readily accessible records of all monthly visual inspections of the seals as well as readily accessible records of all periods and the duration when the seal mechanism is broken, the bypass line valve position has changed, the serial number of the broken car-seal has changed, or when the key for a lock-and-key type configuration has been checked out.

(e) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the flare pilot flame monitoring specified under §60.703(b), as well as up-to-date, readily accessible records of all periods of operations in which the pilot flame is absent.

(f) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under §60.703(d), as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Administrator may at any time require a report of these data. Where an owner or operator seeks to comply with §60.702(c), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

(1) Where an absorber is the final recovery device in a recovery system, and where an organic compound monitoring device is not used:

(i) All 3-hour periods of operation during which the average absorbing liquid temperature was more than 11 °C (20 °F) above the average absorbing liquid temperature during the most recent performance test, or

(ii) All 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above, or more than 0.1 unit below, the average absorbing liquid specific gravity during the most recent performance test (unless monitoring of an alternative parameter, which is a measure of the degree of absorbing liquid saturation, is approved by the Administrator, in which case he will define appropriate parameter boundaries and periods of operation during which they are exceeded).

(2) Where a condenser is the final recovery device in a system, and where an organic compound monitoring device is not used, all 3-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6 °C (11 °F) above the average exit (product side) operating temperature during the most recent performance test.

(3) Where a carbon adsorber is the final recovery device in a system, and where an organic compound monitoring device is not used:

(i) All carbon bed regeneration cycles during which the total mass steam flow was more than 10 percent below the total mass steam flow during the most recent performance test, or

(ii) All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration (and after completion of any cooling cycle(s)) was more than 10 percent or 5 °C greater, whichever is less stringent, than the carbon bed temperature (in degrees Celsius) during the most recent performance test.

(4) Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and where an organic compound monitoring device is used, all 3-hour periods of operation during which the average organic compound concentration level or reading of organic compounds in the exhaust gases is more than 20 percent greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent performance test.

(g) Each owner or operator of an affected facility subject to the provisions of this subpart and seeking to demonstrate compliance with §60.702(c) shall keep up-to-date, readily accessible records of:

(1) Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal or addition of recovery equipment or reactors;

(2) Any recalculation of the TRE index value performed pursuant to §60.704(f); and

(3) The results of any performance test performed pursuant to the methods and procedures required by §60.704(d).

(h) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the flow rate cutoff in §60.700(c)(4) shall keep up-to-date, readily accessible records to indicate that the vent stream flow rate is less than 0.011 scm/min and of any change in equipment or process operation that increases the operating vent stream flow rate, including a measurement of the new vent stream flow rate.

(i) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the design production capacity provision in §60.700(c)(3) shall keep up-to-date, readily accessible records of any change in equipment or process operation that increases the design production capacity of the process unit in which the affected facility is located.

(j) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the low concentration exemption in §60.700(c)(8) shall keep up-to-date, readily accessible records of any change in equipment or process operation that increases the concentration of the vent stream of the affected facility.

(k) Each owner or operator subject to the provisions of this subpart is exempt from the quarterly reporting requirements contained in §60.7(c) of the General Provisions.

(l) Each owner or operator that seeks to comply with the requirements of this subpart by complying with the requirements of §60.700 (c)(2), (c)(3), or (c)(4) or §60.702 shall submit to the Administrator semiannual reports of the following recorded information. The initial report shall be submitted within 6 months after the initial start-up date.

(1) Exceedances of monitored parameters recorded under §60.705 (c), (f), and (g).

(2) All periods and duration recorded under §60.705(d) when the vent stream is diverted from the control device to the atmosphere.

(3) All periods recorded under §60.705(f) in which the pilot flame of the flare was absent.

(4) Any change in equipment or process operation that increases the operating vent stream flow rate above the low flow exemption level in §60.700(c)(4), including a measurement of the new vent stream flow rate, as recorded under §60.705(i). These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed within the same time period to verify the recalculated flow value and to obtain the vent stream characteristics of heating value and $E_{TOC}$. The performance test is subject to the requirements of §60.8 of the General Provisions. Unless the facility qualifies for an exemption under any of the exemption provisions listed in §60.700(c), except for the total resource effectiveness index greater than 8.0 exemption in §60.700(c)(2), the facility must begin compliance with the requirements set forth in §60.702.

(5) Any change in equipment or process operation, as recorded under paragraph (i) of this section, that increases the design production capacity above the low capacity exemption level in §60.700(c)(3) and the new capacity resulting from the change for the reactor process unit containing the affected facility. These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed within the same time period to obtain the vent stream flow rate, heating value, and $E_{TOC}$. The performance test is subject to the requirements of §60.8. The facility must begin compliance with the requirements set forth in §60.702 or §60.700(d). If the facility chooses to comply with §60.702, the facility may qualify for an exemption under §60.700(c)(2), (4), or (8).

(6) Any recalculation of the TRE index value, as recorded under §60.705(g).

(7) All periods recorded under §60.705(d) in which the seal mechanism is broken or the by-pass line valve position has changed. A record of the serial number of the car-seal or a record to show that the key to unlock the bypass line valve was checked out must be maintained to demonstrate the period, the duration, and frequency in which the bypass line was operated.

(8) Any change in equipment or process operation that increases the vent stream concentration above the low concentration exemption level in §60.700(c)(8), including a measurement of the new vent stream concentration, as recorded under §60.705(j). These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. If the vent stream concentration is above 300 ppmv as

measured using Method 18 or above 150 ppmv as measured using Method 25A, a performance test must be completed within the same time period to obtain the vent stream flow rate, heating value, and $E_{TOC}$. The performance test is subject to the requirements of §60.8 of the General Provisions. Unless the facility qualifies for an exemption under any of the exemption provisions listed in §60.700(c), except for the TRE index greater than 8.0 exemption in §60.700(c)(2), the facility must begin compliance with the requirements set forth in §60.702.

(m) The requirements of §60.705(l) 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 §60.705(l), provided that they comply with the requirements established by the State.

(n) Each owner or operator that seeks to demonstrate compliance with §60.700(c)(3) must submit to the Administrator an initial report detailing the design production capacity of the process unit.

(o) Each owner or operator that seeks to demonstrate compliance with §60.700(c)(4) must submit to the Administrator an initial report including a flow rate measurement using the test methods specified in §60.704.

(p) Each owner or operator that seeks to demonstrate compliance with §60.700(c)(8) must submit to the Administrator an initial report including a concentration measurement using the test method specified in §60.704.

(q) The Administrator will specify appropriate reporting and recordkeeping requirements where the owner or operator of an affected facility complies with the standards specified under §60.702 other than as provided under §60.703 (a), (b), (c), and (d).

(r) Each owner or operator whose reactor process vent stream is routed to a distillation unit subject to subpart NNN and who seeks to demonstrate compliance with §60.700(c)(5) shall submit to the Administrator a process design description as part of the initial report. This process design description must be retained for the life of the process. No other records or reports would be required unless process changes are made.

(s) Each owner or operator who seeks to demonstrate compliance with §60.702 (a) or (b) using a control device must maintain on file a schematic diagram of the affected vent streams, collection system(s), fuel systems, control devices, and bypass systems as part of the initial report. This schematic diagram must be retained for the life of the system.

(t) Each owner or operator that seeks to demonstrate compliance with §60.700(c)(2) must maintain a record of the initial test for determining the total resource effectiveness index and the results of the initial total resource effectiveness index calculation.

[58 FR 45962, Aug. 31, 1993, as amended at 60 FR 58238, Nov. 27, 1995; 65 FR 78279, Dec. 14, 2000]

### *§ 60.706 Reconstruction.*

(a) For purposes of this subpart “fixed capital cost of the new components,” as used in §60.15, includes the fixed capital cost of all depreciable components which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2-year period following June 29, 1990. For purposes of this paragraph, “commenced” means that an owner or operator has undertaken a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of component replacement.

(b) [Reserved]

### *§ 60.707 Chemicals affected by subpart RRR.*

| Chemical | CAS No.[1] |
|---|---|
| Acetaldehyde | 75–07–0 |
| Acetic acid | 64–19–7 |
| Acetic anhydride | 108–24–7 |
| Acetone | 67–64–1 |
| Acetone cyanohydrin | 75–86–5 |
| Acetylene | 74–86–2 |
| Acrylic acid | 79–10–7 |
| Acrylonitrile | 107–13–1 |
| Adipic acid | 124–04–9 |
| Adiponitrile | 111–69–3 |
| Alcohols, C–11 or lower, mixtures | |
| Alcohols, C–12 or higher, mixtures | |
| Alcohols, C–12 or higher, unmixed | |
| Allyl chloride | 107–05–1 |
| Amylene | 513–35–9 |
| Amylenes, mixed | |
| Aniline | 62–53–3 |
| Benzene | 71–43–2 |
| Benzenesulfonic acid | 98–11–3 |
| Benzenesulfonic acid $C_{10–16}$-alkyl derivatives, sodium salts | 68081–81–2 |
| Benzyl chloride | 100–44–7 |
| Bisphenol A | 80–05–7 |
| Brometone | 76–08–4 |
| 1,3-Butadiene | 106–99–0 |
| Butadiene and butene fractions | |
| n-Butane | 106–97–8 |
| 1,4-Butanediol | 110–63–4 |
| Butanes, mixed | |
| 1-Butene | 106–98–9 |
| 2-Butene | 25167–67–3 |
| Butenes, mixed | |
| n-Butyl acetate | 123–86–4 |

| | |
|---|---|
| Butyl acrylate | 141–32–2 |
| n-Butyl alcohol | 71–36–3 |
| sec-Butyl alcohol | 78–92–2 |
| tert-Butyl alcohol | 75–65–0 |
| Butylbenzyl phthalate | 85–68–7 |
| tert-Butyl hydroperoxide | 75–91–2 |
| 2-Butyne-1,4-diol | 110–65–6 |
| Butyraldehyde | 123–72–8 |
| Butyric anhydride | 106–31–0 |
| Caprolactam | 105–60–2 |
| Carbon disulfide | 75–15–0 |
| Carbon tetrachloride | 56–23–5 |
| Chloroacetic acid | 79–11–8 |
| Chlorobenzene | 108–90–7 |
| Chlorodifluoromethane | 75–45–6 |
| Chloroform | 67–66–3 |
| p-Chloronitrobenzene | 100–00–5 |
| Citric acid | 77–92–9 |
| Cumene | 98–82–8 |
| Cumene hydroperoxide | 80–15–9 |
| Cyanuric chloride | 108–77–0 |
| Cyclohexane | 110–82–7 |
| Cyclohexane, oxidized | 68512–15–2 |
| Cyclohexanol | 108–93–0 |
| Cyclohexanone | 108–94–1 |
| Cyclohexanone oxime | 100–64–1 |
| Cyclohexene | 110–83–8 |
| Cyclopropane | 75–19–4 |
| Diacetone alcohol | 123–42–2 |
| 1,4-Dichlorobutene | 110–57–6 |
| 3,4-Dichloro-1-butene | 64037–54–3 |
| Dichlorodifluoromethane | 75–71–8 |
| Dichlorodimethylsilane | 75–78–5 |

| | |
|---|---|
| Dichlorofluoromethane | 75–43–4 |
| Diethanolamine | 111–42–2 |
| Diethylbenzene | 25340–17–4 |
| Diethylene glycol | 111–46–6 |
| Di-isodecyl phthalate | 26761–40–0 |
| Dimethyl terephthalate | 120–61–6 |
| 2,4-(and 2,6)-dinitrotoluene | 121–14–2 |
| | 606–20–2 |
| Dioctyl phthalate | 117–81–7 |
| Dodecene | 25378–22–7 |
| Dodecylbenzene, nonlinear | |
| Dodecylbenzenesulfonic acid | 27176–87–0 |
| Dodecylbenzenesulfonic acid, sodium salt | 25155–30–0 |
| Epichlorohydrin | 106–89–8 |
| Ethanol | 64–17–5 |
| Ethanolamine | 141–43–5 |
| Ethyl acetate | 141–78–6 |
| Ethyl acrylate | 140–88–5 |
| Ethylbenzene | 100–41–4 |
| Ethyl chloride | 75–00–3 |
| Ethylene | 74–85–1 |
| Ethylene dibromide | 106–93–4 |
| Ethylene dichloride | 107–06–2 |
| Ethylene glycol | 107–21–1 |
| Ethylene glycol monobutyl ether | 111–76–2 |
| Ethylene glycol monoethyl ether acetate | 111–15–9 |
| Ethylene glycol monomethyl ether | 109–86–4 |
| Ethylene oxide | 75–21–8 |
| 2-Ethylhexyl alcohol | 104–76–7 |
| (2-Ethylhexyl) amine | 104–75–6 |
| 6-Ethyl-1,2,3,4-tetrahydro 9,10-anthracenedione | 15547–17–8 |
| Formaldehyde | 50–00–0 |
| Glycerol | 56–81–5 |

| | |
|---|---|
| n-Heptane | 142–82–5 |
| Heptenes (mixed) | |
| Hexamethylene diamine | 124–09–4 |
| Hexamethylene diamine adipate | 3323–53–3 |
| Hexamethylenetetramine | 100–97–0 |
| Hexane | 110–54–3 |
| Isobutane | 75–28–5 |
| Isobutanol | 78–83–1 |
| Isobutylene | 115–11–7 |
| Isobutyraldehyde | 78–84–2 |
| Isopentane | 78–78–4 |
| Isoprene | 78–79–5 |
| Isopropanol | 67–63–0 |
| Ketene | 463–51–4 |
| Linear alcohols, ethoxylated, mixed | |
| Linear alcohols, ethoxylated, and sulfated, sodium salt, mixed | |
| Linear alcohols, sulfated, sodium salt, mixed | |
| Linear alkylbenzene | 123–01–3 |
| Maleic anhydride | 108–31–6 |
| Mesityl oxide | 141–79–7 |
| Methanol | 67–56–1 |
| Methylamine | 74–39–5 |
| ar-Methylbenzenediamine | 25376–45–8 |
| Methyl chloride | 74–87–3 |
| Methylene chloride | 75–09–2 |
| Methyl ethyl ketone | 78–93–3 |
| Methyl isobutyl ketone | 108–10–1 |
| Methyl methacrylate | 80–62–6 |
| 1-Methyl-2-pyrrolidone | 872–50–4 |
| Methyl tert-butyl ether | |
| Naphthalene | 91–20–3 |
| Nitrobenzene | 98–95–3 |
| 1-Nonene | 27215–95–8 |

| | |
|---|---|
| Nonyl alcohol | 143–08–8 |
| Nonylphenol | 25154–52–3 |
| Nonylphenol, ethoxylated | 9016–45–9 |
| Octene | 25377–83–7 |
| Oil-soluble petroleum sulfonate, calcium salt | |
| Pentaerythritol | 115–77–5 |
| 3-Pentenenitrile | 4635–87–4 |
| Pentenes, mixed | 109–67–1 |
| Perchloroethylene | 127–18–4 |
| Phenol | 108–95–2 |
| 1-Phenylethyl hydroperoxide | 3071–32–7 |
| Phenylpropane | 103–65–1 |
| Phosgene | 75–44–5 |
| Phthalic anhydride | 85–44–9 |
| Propane | 74–98–6 |
| Propionaldehyde | 123–38–6 |
| Propyl alcohol | 71–23–8 |
| Propylene | 115–07–1 |
| Propylene glycol | 57–55–6 |
| Propylene oxide | 75–56–9 |
| Sorbitol | 50–70–4 |
| Styrene | 100–42–5 |
| Terephthalic acid | 100–21–0 |
| Tetraethyl lead | 78–00–2 |
| Tetrahydrofuran | 109–99–9 |
| Tetra (methyl-ethyl) lead | |
| Tetramethyl lead | 75–74–1 |
| Toluene | 108–88–3 |
| Toluene-2,4-diamine | 95–80–7 |
| Toluene-2,4-(and, 2,6)-diisocyanate (80/20 mixture) | 26471–62–5 |
| 1,1,1-Trichloroethane | 71–55–6 |
| 1,1,2-Trichloroethane | 79–00–5 |
| Trichloroethylene | 79–01–6 |

| | |
|---|---|
| Trichlorofluoromethane | 75–69–4 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76–13–1 |
| Triethanolamine | 102–71–6 |
| Triethylene glycol | 112–27–6 |
| Vinyl acetate | 108–05–4 |
| Vinyl chloride | 75–01–4 |
| Vinylidene chloride | 75–35–4 |
| m-Xylene | 108–38–3 |
| o-Xylene | 95–47–6 |
| p-Xylene | 106–42–3 |
| Xylenes (mixed) | 1330–20–7 |

[1]CAS numbers refer to the Chemical Abstracts Registry numbers assigned to specific chemicals, isomers, or mixtures of chemicals. Some isomers or mixtures that are covered by the standards do not have CAS numbers assigned to them. The standards apply to all of the chemicals listed, whether CAS numbers have been assigned or not.

[58 FR 45962, Aug. 31, 1993, as amended at 60 FR 58238, Nov. 27, 1995]

### *§ 60.708 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: §60.703(e).

# Indiana Department of Environmental Management
Office of Air Quality

## Technical Support Document (TSD) for a New Source Construction and Federally Enforceable State Operating Permit

### Source Background and Description

| | |
|---|---|
| Source Name: | Bio-Alternative LLC |
| Source Location: | 11778 South, 600 West, Covington, Indiana 47932 |
| County: | Warren |
| SIC Code: | 2869 |
| Permit No.: | 171-25735-00029 |
| Permit Reviewer: | ERG/BL |

The Office of Air Quality (OAQ) has reviewed the FESOP application from Bio-Alternative LLC relating to the construction and operation of a biodiesel refining production plant. Bio-Alternative, LLC plans to construct and operate a biodiesel refining production plant to produce biodiesel through a chemical process called trans-esterification, whereby glycerin is separated from fat or vegetable oil. This process generates two products: methyl esters (the chemical name for biodiesel, the primary product) and glycerin, a by-product the company plans to sell.

### History

On December 19, 2007, Bio-Alternative LLC submitted an application to the OAQ requesting approval to construct and operate a biodiesel refining production plant.

### New Emission Units and Pollution Control Equipment

One (1) biodiesel production process, permitted to construct in 2008, with a maximum production capacity of 18.8 MMgal of biodiesel per year.

(a) One (1) product recovery operation, permitted to construct in 2008, is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. The recovery operation includes a series of two (2) vessels, a Methylester Evaporator / Vacuum Condenser, identified as PV-301 / ES-602. Unrecoverable gases are exhausted to an enclosed flare on stack EP-1. The following storage vessels and the production processes are incorporated into the vapor recovery system:

(1) One (1) Vacuum Condenser Receiver Tank, identified as PV-602, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(2) One (1) Final Reactant Receiver Tank, identified as PV-603, with a capacity of 100 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(3) One (1) Vegetable Oil Tank, identified as TK-106, with a capacity of 50,000 gallons (maximum annual throughput 18,800,000 gallons), and permitted to construct in 2008.

(4) Twelve (12) Finished Methyl Esters Tanks, identified as TK-107 through TK-118, each with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(5) One (1) Reaction Blend Tank, identified as TK-201, with a capacity of 4,500 gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR this is considered a reactor process unit. This process unit is subject to 40 CFR 63, Subpart RRR.

(6) Two (2) Reaction Mix Tanks (Reactant and Methyl Esters), identified as TK-203 and TK-204, each with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008. Under 40 CFR 63, Subpart RRR these are considered a reactor process unit. These process units are subject to 40 CFR 63, Subpart RRR.

(7) One (1) Rework Tank (Vegetable Oil), identified as TK-207, with a capacity of 4,500 gallons (maximum annual throughput 1,000 gallons), and permitted to construct in 2008.

(8) One (1) Light Phase Receiver Tank (Reactant and Methyl Esters), identified as TK-211, with a capacity of 4,500 gallons (maximum annual throughput 18,810,000 gallons), and permitted to construct in 2008.

(9) Two (2) Heavy Phase Storage Tanks (Reactant and Glycerin), identified as TK-212 and TK-214, each with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(10) One (1) Heavy Phase Receiver Tank (Reactant and Glycerin), identified as TK-213, with a capacity of 15 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(11) One (1) ME Day Tank (Methyl Esters), identified as TK-305, with a capacity of 4,500 gallons (maximum annual throughput 18,400,000 gallons), and permitted to construct in 2008.

(12) One (1) Evaporated Heavy Phase Tank (Glycerin), identified as TK-306, with a capacity of 4,500 gallons (maximum annual throughput 500,000 gallons), and permitted to construct in 2008.

(13) One (1) Chiller Package, identified as H-725, permitted to construct in 2008, and used to recover reactant and to cool product. The chiller package includes one (1) Chilled Water Tank, identified as TK-720, with a capacity of 3,100 gallons.

(14) One (1) Recovered Reactant Tank, identified as TK-102, with a capacity of 4,500 gallons (maximum annual throughput 149,000 gallons), and permitted to construct in 2008.

(15) Two (2) Fresh Reactant Tanks, identified as TK-103 and TK-104, each with a capacity of 30,000 gallons (maximum annual throughput 406,000 gallons), and permitted to construct in 2008.

(16) One (1) Economizer, identified as ES-302, and permitted to construct in 2008.

(17) One (1) Product Cooler, identified as ES-204, and permitted to construct in 2008.

(18) One (1) Reactant Condenser, identified as ES-602, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(19) One (1) Final Condenser, identified as ES-603, and permitted to construct in 2008. Under 40 CFR 60, Subpart NNN, this is considered a device in which distillation occurs. This condenser is subject to 40 CFR 63, Subpart NNN.

(b) One (1) Quatro Mixer Pump, identified as MX-106, with a max capacity of 10 gallons per minute, and permitted to construct in 2008.

(c) Equipment leak losses of VOC from pumps in light liquid service, compressors, pressure relief devices in gas/vapor, sampling connection systems, open-ended valves or lines, valves in gas/vapor service and in light liquid service, pumps and valves in heavy liquid service, pressure relief devises in light liquid or heavy liquid service and connectors, closed vent systems and control devices. Under 40 CFR 60, Subpart VVa, equipment leak losses are affected facilities in VOC service.

(d) One (1) Dry Catalyst Feeder, with a maximum capacity of 160 pounds of catalyst per hour, permitted to construct in 2008, and equipped with a sock/sleeve for particulate control. The feeder includes a 3 cubic foot storage bin.

(e) One (1) biodiesel and glycerin truck loadout process, permitted to construct in 2008. Trucks shall be filled by a submerged fill pipe loading process.

(f) One (1) vegetable oil and reactant truck receiving process, permitted to construct in 2008.

(g) One (1) Natural Gas-Fired Package Boiler, identified as H-710, permitted to construct in 2008, and with a heat input capacity of 9.90 MMBtu/hr. Steam from the boiler is transferred to the Evaporator Heater, identified as ES-303.

**Insignificant Activities**

(a) Closed loop heating and cooling systems.

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

**Existing Approvals**

There have been no previous approvals issued to this source.

**Enforcement Issue**

There are no enforcement actions pending.

**Emission Calculations**

See Appendix A of this document for detailed emission calculations.

**County Attainment Status**

The source is located in Warren County

| Pollutant | Status |
|---|---|
| $PM_{10}$ | Attainment |
| $PM_{2.5}$ | Attainment |
| $SO_2$ | Attainment |
| NOx | Attainment |
| 8-hour Ozone | Attainment |
| CO | Attainment |
| Lead | Attainment |

(a) Ozone Standards

(1) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.

(2) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Warren County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) PM2.5
Warren County has been classified as attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM2.5 emissions. Therefore, until the U.S. EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions.

(c) Other Criteria Pollutants
Warren County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(d) Since this source is classified as a chemical processing plant, it is considered one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).

(e) Fugitive Emissions
Since this type of operation is a chemical plant, it belongs to one of the twenty-eight (28) listed source categories under 326 IAC 2-2; therefore, fugitive emissions are counted toward the determination of PSD applicability.

**Unrestricted Potential Emissions**

This table reflects the unrestricted potential emissions of the source.

| Pollutant | tons/year |
|---|---|
| PM | 2.16 |
| $PM_{10}$ | 0.73 |
| $SO_2$ | 0.03 |
| VOC | 272 |
| CO | 3.87 |
| $NO_x$ | 4.43 |

| HAPs | tons/year |
|---|---|
| Methanol | 32.5 |
| **Total** | **34.1** |

(a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of VOC is greater than 100 tons per year. The source is subject to the provisions of 326 IAC 2-7. However, the source has agreed to limit their VOC emissions to less than Title V levels; therefore the source will be issued a FESOP.

This source is also subject to the provisions of 326 IAC 2-5.1-3 and is required to obtain a New Source Construction Permit prior to construction. Therefore, IDEM, OAQ will issue this source a New Source Construction and Federally Enforceable State Operating Permit which is a combined construction and operating permit.

(b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of all other criteria pollutants are less than 100 tons per year.

(c) 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. However, the source has agreed to limit their single HAP emissions and total HAP emissions below Title V limits. Therefore, the source will be issued a FESOP.

Since this type of operation is a chemical plant it belongs to one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1), fugitive emissions are counted toward the determination of Part 70 applicability.

**Actual Emissions**

Since this is a new source, no actual emission data is available.

**Potential to Emit After Issuance**

The source has elected to operate under a FESOP. 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.

| | Potential To Emit (tons/year) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Process/ Emission Unit** | **PM** | **$PM_{10}$** | **$SO_2$** | **VOC** | **CO** | **$NO_x$** | **HAPs** |
| Product Recovery Operation Flare, Process Gas * | - | - | - | 4.90 | 0.28 | 0.05 | 0.52 |
| Flare, Supplemental Fuel | 0.004 | 0.004 | - | 0.005 | 0.02 | 0.12 | - |
| Package Boiler (H-710) | 0.08 | 0.32 | 0.03 | 0.23 | 3.57 | 4.25 | 0.08 |
| Product Truck Loadout ** | - | - | - | 1.38 | - | - | 0.49 |
| Dry Catalyst Feeder | 0.02 | 0.01 | - | - | - | - | - |
| Fugitive, Storage Tanks | - | - | - | 15.9 | - | - | - |
| Fugitive, Equipment Leaks | - | - | - | 9.90 | - | - | - |
| Fugitive, Paved Roads | 2.07 | 0.40 | - | - | - | - | - |
| **Total Emissions** | **2.17** | **0.74** | **0.03** | **32.3** | **3.87** | **4.43** | **8.81** |

* The product recovery operation is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. Unrecoverable gases are exhausted from the recovery system to an enclosed flare on stack EP-1. These units are subject to BACT requirements pursunat to 326 IAC 8-1-6.
** Emissions from the receiving of raw material are accounted for in working and breathing losses of storage tanks.

(a) This stationary source is not major for PSD because the emissions of each criteria pollutant are less than one hundred (<100) tons per year, and it is one of the twenty-eight (28) listed source categories.

(b) Fugitive Emissions
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2, fugitive emissions are counted toward the determination of PSD applicability.

**Federal Rule Applicability**

(a) The requirements of the New Source Performance Standard (NSPS) for Small Industrial-Commercial-Institutional Steam generating Units (40 CFR Part 60, Subpart Dc), which is incorporated by reference as 326 IAC 12 are not included in this permit for the 9.90 MMBtu per hour package boiler (H-710) because this boiler has a maximum heat input capacity less than 10 MMBtu per hour.

(b) The requirements of the New Source Performance Standard (NSPS) for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (40 CFR Part 60, Subpart Kb), which is incorporated by reference as 326 IAC 12 are included in this permit for the fresh reactant storage tanks (TK-103 and TK-104). The fresh reactant storage tanks (TK-103 and TK-104) have a capacity greater than 75 cubic meters (19,813 gallons) and less than 151 cubic meters (39,890 gallons); store a liquid with a maximum true vapor pressure greater than 15.0 kPa; and the construction of the facility will commence after July 23, 1984.

A copy of the complete text of 40 CFR 60, Subpart Kb is included as an attachement to the permit. The fresh reactant storage tanks (TK-103 and TK-104) are subject to the following portions of Subpart Kb:

(1) 40 CFR 60.110b
(2) 40 CFR 60.111b
(3) 40 CFR 60.116b(a), (c), (d), (e)

The following tanks each have a capacity of less than 75 cubic meters (19,813 gallons); therefore, the requirements of 40 CFR 60 Subpart Kb are not included for these storage tanks: PV-602, PV-603, TK-107 through 118, TK-201, TK-203, TK-204, TK-207, TK-211 through TK-214, TK-305, TK-306, TK-720, and TK-102.

The vegetable oil storage tank (TK-106) has a capacity of greater than 75 cubic meters (19,813 gallons), less than 151 cubic meters (39,890 gallons), and stores a liquid with a maximum true vapor pressure less than 15.0 kPa; therefore, the requirements of 40 CFR 60 Subpart Kb are not included for tank TK-106.

(c) The requirements of the New Source Performance Standard (NSPS) for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006 (40 CFR Part 60, Subpart VVa) are included in this permit for pumps and valves, pressure relief devices, sampling connection systems, open-ended valves or lines, closed vent systems and control devices associated with the synthetic organic chemicals manufacturing and the construction of this equipment will commence after November 7, 2006. The biodiesel facility is a synthetic organic chemical manufacturing industry, because it produces glycerol, which is listed in 40 CFR 60.489a.

A copy of the complete text of 40 CFR 60, Subpart VVa is included as an attachment to the permit. Equipment associated with the synthetic organic chemicals manufacturing is subject to the following portions of Subpart VVa.

(1) 40 CFR 60.480a
(2) 40 CFR 60.481a
(3) 40 CFR 60.482-1a
(4) 40 CFR 60.482-2a
(5) 40 CFR 60.482-3a
(6) 40 CFR 60.482-4a
(7) 40 CFR 60.482-5a
(8) 40 CFR 60.482-6a
(9) 40 CFR 60.482-7a
(10) 40 CFR 60.482-8a
(11) 40 CFR 60.482-9a
(12) 40 CFR 60.482-10a
(13) 40 CFR 60.482.11a
(14) 40 CFR 60.483-1a
(15) 40 CFR 60.483-2a
(16) 40 CFR 60.484a
(17) 40 CFR 60.485a
(18) 40 CFR 60.486a
(19) 40 CFR 60.487a
(20) 40 CFR 60.489a

The Vegetable Oil Tank (TK-106) and Chilled Water Tank (TK-720) and the related equipment are not associated with the synthetic organic chemicals manufacturing.

(d) The requirements of the New Source Performance Standard (NSPS) for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (40 CFR Part 60, Subpart NNN), which is incorporated by reference as 326 IAC 12 are not included in this permit for the distillation operations. The evaporator is a distillation unit under 40 CFR 60.661. Although glycerin will be produced by the biodiesel plant as a co-product with biodiesel and is a listed chemical under 40 CFR 60.667, it is not present in the distillation unit.

(e) The requirements of the New Source Performance Standard for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes (40 CFR Part 60, Subpart RRR), which is incorporated by reference as 326 IAC 12 are included in this permit for reactors TK-201, TK-203, and 204 processes.

A copy of the complete text of 40 CFR 60, Subpart RRR is included as an attachement to the permit. The Reaction Blend and Mix Tanks (TK-201, TK-203, and 204) are subject to the following portions of Subpart RRR:

(1) 40 CFR 60.700
(2) 40 CFR 60.701
(3) 40 CFR 60.702(b)
(4) 40 CFR 60.703(b)
(5) 40 CFR 60.704(a), (c) and (d)
(6) 40 CFR 60.705(a), (d), (e), (k), (q), (r), (s),
(7) 40 CFR 60.706
(8) 40 CFR 60.707

(f) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in this permit.

(1) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories: Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) and Other Processes Subject to the Negotiated Regulation for Equipment Leaks (40 CFR 63, Subpart F, G, H and I), are not included in this permit for this source because this source has accepted limits that make it a minor source of hazardous air pollutants.

(2) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Organic Liquids Distribution (Non-Gasoline), (40 CFR 63, Subpart EEEE), are not included in the permit for this source because this source has accepted limits that make it a minor source of hazardous air pollutants.

(3) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Solvent Extraction for Vegetable Oil Production (40 CFR 63, Subpart GGGG), are not included in the permit for this source because this source has accepted limits that make it a minor source of hazardous air pollutants.

**State Rule Applicability - Entire Source**

326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) and 326 IAC 2-8 (FESOP)

Bio-Alternative, LLC is permitted to construct in 2008. The source is one (1) of the twenty-eight (28) source categories as defined in 326 IAC 2-2-1. Although the source has the potential to emit (PTE) of VOC in excess of two hundred fifty (250) tons per year and the PTE of Methanol (a Hazardous Air Pollutant (HAP)) in excess of ten (10) tons per year the source has agreed to limit VOC and Methanol to less than one hundred (100) and ten (10) tons per year, respectively. By limiting the VOC emissions to less than 100 tons per year, the construction of this new souce will not trigger PSD review. The VOC and HAP limits will render the requirements of 326 IAC 2-2 and 326 IAC 2-7 (Part 70 Program) are not applicable. The Permittee shall comply with the following limits:

(a) The VOC emissions from the enclosed flare system shall not exceed 1.12 pounds per hour.

(b) The Methanol emissions from the enclosed flare system shall not exceed 0.12 pounds per hour.

Combined with the VOC and HAP emissions from the other emission units at this source, the VOC, single HAP, and a combination of HAP emissions from the entire source are limited to less than one hundred (100), less than ten (10), and less than twenty-five (25) tons per year, respectivly. Therefore, the requirements of 326 IAC 2-2 and 326 IAC 2-7 (Part 70 Program) are not applicable.

326 IAC 2-6-5 (Emission Reporting)

Pursuant to 326 IAC 2-6-1, this source is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake or Porter County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, only the additional information requests in 326 IAC 2-6 apply to this source.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The potential to emit of HAPs from the operation of this stationary biodiesel production plant shall be limited to less than ten (10) tons per year of a single HAP and less than twenty-five (25) tons per year of a combination of HAPs (see discussion of 326 IAC 2-8 (FESOP) limits above). Therefore, the provisions of 326 IAC 2-4.1 do not apply.

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 Exemptions), opacity shall meet the following, unless otherwise stated in the 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)

The source is subject to 326 IAC 6-4 (Fugitive Dust Emissions) because the source maintains paved roads and parking lots with public access. 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).

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)

This source is not located in any of the areas listed in 326 IAC 6-5-1. The fugitive particulate emissions from the paved roads and parking lots are negligible. Pursuant to 326 IAC 6-5-7(d), this source is not subject to the requirements of 326 IAC 6-5.

**State Rule Applicability – Condenser and Enclosed Flare**

326 IAC 8-1-6 (New Facilities; General Reduction Requirement)

The potential to emit VOC from the biodiesel production process is greater than twenty-five (25) tons per year. Therefore, the provisions of 326 IAC 8-1-6 apply. Based on the BACT analyses submitted by the source (see Appendix B), IDEM, OAQ has determined BACT to be the following requirements:

(a) The reactant recovery condenser and enclosed flare system shall operate at all times that the biodiesel production processes are in operation.

(b) The overall efficiency for the reactant recovery condenser and enclosed flare system (including the capture efficiency and destruction efficiency) shall be at least 98%.

(c) The VOC emissions from the enclosed flare system shall not exceed 1.12 pounds per hour.

(d) The presence of a pilot flame shall be verified by using a thermocouple or a flame sensor, or an equivalent device, and the result shall be recorded once per day, when the biodiesel production processes are in operation.

(e) The Permittee shall maintain a log of pilot flame inspections.

The potential to emit VOC from the loading racks is less than 25 tons per year. Therefore, the loading racks are not subject to the requirements of 326 IAC 8-1-6.

326 IAC 8-6 (Organic Solvent Emission Limitations)

This rule applies to sources commencing operation after October 7, 1974 and prior to January 1, 1980, located anywhere in the state, with potential VOC emissions of 100 tons per year or more, and not regulated by any other provision of Article 8. This source will be constructed after January 1, 1980 and therefore not subject to the requirements of 326 IAC 8-6.

326 IAC 8-7 (Specific VOC Reduction Requirements for Lake, Porter, Clark and Floyd Counties)

Bio-Alternative, LLC is not subject to the provisions of 326 IAC 8-7 because this source will not be located in Lake, Porter, Clark or Floyd Counties.

**State Rule Applicability – Boiler (H-710), VOL Storage Tanks, and Catalyst Feeder**

326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating)

The construction of the Natural Gas-Fired Package Boiler (H-710) will commence after September 21, 1983. Pursuant to 326 IAC 6-2-4, the total particulate emissions from the boiler shall not exceed 0.6 pound per million Btu of heat input (lbs/MMBtu). The total heat input capacity for the source is less than 10 MMBtu/hr.

326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

The natural gas-fired package boiler (H-710) does not have potential sulfur dioxide emissions equal to or greater than twenty five (25) tons per year or ten (10) pounds per hour. Therefore, the requirements of 326 IAC 7 do not apply.

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2(e)(2) (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the dry catalyst feeder shall be limited to less than 0.551 pounds per hour when operating at a maximum process weight less than 100 pounds per hour.

326 IAC 8-1-6 (Best Available Control Technology (BACT))

The natural gas-fired package boiler (H-710), the Volatile Organic Liquid (VOL) storage tanks (PV-602, PV-603, TK-107 through TK-118, TK-201, TK-203, TK-204, TK-207, TK-211, TK-212, TK-214, TK-213, TK-305, TK-306, TK-102, TK-103 and TK-104), and the Dry catalyst feeder have potential to emit VOC less than twenty five (25) tons per year. Therefore, the requirements of 326 IAC 8-1-6 do not apply.

326 IAC 8-9-1 (Volatile Organic Liquid Storage Vessels)

Bio-Alternative, LLC is not subject to the provisions of 326 IAC 8-9 because it is not located in Clark, Floyd, Lake or Porter County. The source will be located in Clinton County.

**Testing Requirements**

The Permittee shall perform HAP (methanol) and VOC testing, for the condenser and enclosed flare system within 60 days after achieving the maximum production, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. The VOC testing shall include testing of the emission rate, capture efficiency, and destruction efficiency. 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 Determination and Monitoring Requirements**

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a 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 Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

If the Compliance Determination Requirements 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 following compliance monitoring conditions are applicable to the condenser and enclosed flare system installed on the biodiesel production process, as specified below:

   (a) The Permittee shall monitor the presence of a flare pilot flame using a thermocouple, flame sensor, or an equivalent device to detect the presence of a flame when the biodiesel production processes are in operation.

   (b) Visible emission notations of the enclosed flare system stack exhaust (identified as EP-1) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

   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. 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.

   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.

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.

(c) A continuous monitoring system shall be calibrated, maintained, and operated on the condensor for measuring operating temperature and flow rate. 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. Unless operated under conditions, for which the Section C - Response to Excursions or Exceedances specifies otherwise, from the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the condenser at or above ten (10) degrees Fahrenheit and at a flow rate above five (5) gallons per minute.

These monitoring conditions are necessary because the condenser and enclosed flare system must operate properly to ensure compliance with the provisions of 326 IAC 2-8 (FESOP), 326 IAC 2-2 (PSD), and 326 IAC 8-1-6 (BACT).

The compliance monitoring requirements applicable to this source are as follows:

| Control | Parameter | Frequency | Range | Excursions and Exceedances |
|---|---|---|---|---|
| Enclosed flare system | Presence of a flame | Daily | Normal-Abnormal | Response Steps |
| | Visible Emissions | Daily | Normal-Abnormal | |

These monitoring conditions are necessary because the enclosed flare system installed on the biodiesel production process must operate properly to ensure compliance with 326 IAC 2-8 (FESOP), 326 IAC 2-2 (PSD), and 326 IAC 8-1-6 (BACT).

**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 application for the purposes of this review was received on December 19, 2007.

**Conclusion**

The operation of this biodiesel refining plant shall be subject to the conditions of the attached New Source Review and FESOP No. 171-25735-00029.

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| | Potential To Emit (tons/year) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Process/emission unit | PM | PM-10 | $SO_2$ | VOC | CO | NOx | Single HAP (methanol) | Combined HAPs |
| Product Recovery Operation Flare, Process Gas * | - | - | - | 245 | 0.28 | 0.05 | 25.8 | 25.8 |
| Flare, Supplemental Fuel | 4.11E-03 | 4.11E-03 | 0 | 4.93E-03 | 0.02 | 0.12 | - | - |
| Package Boiler (H-710) | 0.08 | 0.32 | 0.03 | 0.23 | 3.57 | 4.25 | - | 0.08 |
| Product Truck Loadout ** | - | - | - | 1.38 | - | - | - | 0.49 |
| Dry Catalyst Feeder | 0.02 | 0.01 | - | - | - | - | - | - |
| Fugitive, Storage Tanks | - | - | - | 15.9 | - | - | 6.64 | 7.72 |
| Fugitive, Equipment Leaks | - | - | - | 9.90 | - | - | - | - |
| Fugitive, Paved Roads | 2.07 | 0.40 | - | - | - | - | - | - |
| **Total** | **2.17** | **0.74** | **0.03** | **272** | **3.87** | **4.43** | **32.5** | **34.1** |

| | Potential to Emit After Issuance (tons/year) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Process/emission unit | PM | PM-10 | $SO_2$ | VOC | CO | NOx | Single HAP (methanol) | Combined HAPs |
| Product Recovery Operation Flare, Process Gas * | - | - | - | 4.90 | 0.28 | 0.05 | 0.52 | 0.52 |
| Flare, Supplemental Fuel | 4.11E-03 | 4.11E-03 | 0 | 4.93E-03 | 0.02 | 0.12 | - | - |
| Package Boiler (H-710) | 0.08 | 0.32 | 0.03 | 0.23 | 3.57 | 4.25 | - | 0.08 |
| Product Truck Loadout ** | - | - | - | 1.38 | - | - | - | 0.49 |
| Dry Catalyst Feeder | 0.02 | 0.01 | - | - | - | - | - | - |
| Fugitive, Storage Tanks | - | - | - | 15.9 | - | - | 6.64 | 7.72 |
| Fugitive, Equipment Leaks | - | - | - | 9.90 | - | - | - | - |
| Fugitive, Paved Roads | 2.07 | 0.40 | - | - | - | - | - | - |
| **Total** | **2.17** | **0.74** | **0.03** | **32.3** | **3.87** | **4.43** | **7.16** | **8.81** |

* The product recovery operation is used to recover, separate, and purify products. Waste gasses from the production process and storage vessels are collected and routed to the recovery operation. Unrecoverable gases are exhausted from the recovery system to an enclosed flare on stack EP-1. These units are subject to BACT requirements pursunat to 326 IAC 8-
** Emissions from the receiving of raw material are accounted for in working and breathing losses of storage tanks.

**Appendix A: Emission Calculations**
**Flare, Combustion of Process Gas**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

Process Gas Flow Rate
(cfm)
22.0

| | Pollutant | | |
|---|---|---|---|
| | CO | NOx | VOC |
| Emission Factor (lb/MMBtu) | 0.37 | 0.068 | 0.14 |
| Potential to Emit (tons/yr) | 0.28 | 0.05 | 0.11 |

Heat value of waste process gas 130 Btu per cubic foot

Emission Factors are from AP-42 Chapter 13.5 (Industrial Flares), Table 13.5-1 (September 1991).

**Methodology**
Potential to Emit (tons/yr) = Flow Rate (cfm) x Heat Value (Btu/cf) x Emission Factor (lb/MMBtu) x 60 min/1 hr x 8,760 hrs/1 yr x 1 MMBtu/ 1x10+6 Btu x 1 ton/2,000 lbs

**Biodiesel Production Process**

| | PTE of VOC Before Control (Inlet) (tons/yr) | PTE of HAP Before Control (Inlet) (tons/yr) | Control Efficiency % | PTE of VOC After Control (Outlet) (tons/yr) | PTE of VOC After Control (Outlet) (lbs/hr) | PTE of Methanol After Control (Outlet) (tons/yr) | PTE of Methanol After Control (Outlet) (lbs/hr) |
|---|---|---|---|---|---|---|---|
| Biodiesel Production Process | 245 | 25.8 | 98.0% | 4.90 | 1.12 | 0.52 | 0.12 |

The chemical tanks and production process exhaust to the reactant recovery condenser. After the reactant is recovered, remaining air stream is vented to the enclosed flare system. The VOC and HAP emission rates are estimated by the source and is based on 18,000,000 gallons of production per year. The VOC emission rate s more conservative that the AP-42 emission estimate.

The Permittee will perform stack testing to verify these emission rates.

**Methodology**
VOC Emissions (Inlet) (tons/yr) x (1 - Control Efficiency %) x 1 yr/8,760 hrs x 2000 lbs/1 ton

**Appendix A: Emission Calculations**
**Flare, Combustion of Supplemental Fuel (Butane or Propane)**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| Heat Input Capacity (MMBtu/hr) | Potential Throughput (kgals/yr) |
|---|---|
| 0.17 | 16.4 |

$SO_2$ Emission factor = 0.10 x S
S = Sulfur Content = 0 grains/100ft^3

| | Pollutant | | | | | |
|---|---|---|---|---|---|---|
| | PM * | PM10 * | SO2 | NOx | VOC ** | CO |
| Emission Factor (lb/kgal) | 0.5 | 0.5 | 0 *(0.10S)* | 15.0 | 0.6 | 2.1 |
| Potential to Emit (tons/yr) | 4.11E-03 | 4.11E-03 | 0 | 0.12 | 4.93E-03 | 0.02 |

* PM emission factor is filterable PM only. PM10 emission factor is assumed to be the same as PM based on a footnote in AP-42 Chapter 1.5, Table 1.5-1.

**The VOC value given as Total Organic Hydrocarbon (TOC).

1 gallon of LPG has a heating value of 94,000 Btu

1 gallon of propane has a heating value of 91,500 Btu (use this to convert emission factors to an energy basis for propane)

Because the flare has the capability of combusting either butane or propane emissions were calcuated using the worst case fuel. Butane is the worst case supplemental fuel.

Emission Factors are from AP-42 Chapter 1.5 (Liquified Petroleum Gas Combustion), Table 1.5-1, SCC #1-03-010-01, 1-03-010-02 (Supplement B, October 1996).

**Methodology**

Potential Throughput (kgals/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal/1,000 gal x 1 gal/0.0915 MMBtu

Potential to Emit (tons/yr) = Potential Throughput (kgals/yr) x Emission Factor (lb/kgal) x 1 ton/2,000 lbs

**Appendix A: Emission Calculations**
**Natural Gas Boiler and Heater Emissions**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| Heat Input Capacity (MMBtu/hr) | Potential Throughput (MMCF/yr) |
|---|---|
| 9.90 | 85 |

| | Pollutant | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM* | PM10* | $SO_2$ | NOx ** | VOC | CO | HAPs |
| Emission Factor (lb/MMCF) | 1.9 | 7.6 | 0.6 | 100 | 5.5 | 84.0 | 1.89 |
| Potential to Emit (tons/yr) | 0.08 | 0.32 | 0.03 | 4.25 | 0.23 | 3.57 | 0.08 |

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM combined.
**Emission Factors for Uncontrolled NOx = 100 lb/MMCF

All emission factors are based on normal firing.

Emission Factors are from AP-42, Chapter 1.4 (Natural Gas Combustion), Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D, July 1998).

**Methodology**
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Potential to Emit (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF) x 1 ton/2,000 lbs

**Appendix A: Emission Calculations**
**Unloading and Loadout Emission Estimates**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

**1. Emission Factors: AP-42**

The biodiesel production processes produces bio-diesel and glycerin. All products are shipped offsite by truck. Trucks will be filled by a submerged fill pipe loading process. Resulting loadout emissions are uncontrolled. Emissions from the receiving of raw material are accounted for in working and breathing losses of storage tanks on page 7.

Final Products:
1) Bio-diesel will be shipped offsite by truck. Calculations assume that trucks were previously used to carry diesel (No. 2 fuel oil) prior to filling with bio-diesel.

2) Glycerin will be shipped offsite by truck. Calculations assume that these trucks are in dedicated service (i.e., the type of cargo previously transported was also glycerin)

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck loading rack 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) (see AP-42, Table 7.1-2)
M = molecular weight of vapors
T = temperature of the bulk liquid loaded (degree R)

| | S | P (psia) | M (lbs/mole lbs) | T (degree R) | L (lbs/kgal) |
|---|---|---|---|---|---|
| **Liquid Outputs** | | | | | |
| Previous Liquid - Diesel | 0.6 | 0.007 | 130 | 520 | 0.01 |
| Bio-diesel | 0.6 | 0.039 | 292 | 520 | 0.16 |
| Previous Liquid - Glycerin | 0.6 | 0.019 | 92.1 | 520 | 0.03 |
| Glycerin | 0.6 | 0.019 | 92.1 | 520 | 0.03 |

| | Max. Throughput (kgals/yr) | PTE of VOC (lbs/yr) | PTE of VOC (tons/yr) |
|---|---|---|---|
| **Liquid Outputs** | | | |
| Previous Liquid - Diesel | 15,749 | 191 | 0.10 |
| Bio-diesel | 15,749 | 2,559 | 1.28 |
| Previous Liquid - Glycerin | 273 | 6.99 | 3.49E-03 |
| Glycerin | 273 | 6.99 | 3.49E-03 |
| Total | | 2,764 | 1.38 |

**3. Potential to Emit HAPs:**

| HAP | HAP Fraction* | PTE of HAP (tons/yr) |
|---|---|---|
| Naphthalene | 33.9% | 0.47 |
| Dibenzofuran | 1.64% | 0.02 |
| **Total** | **35.5%** | **0.49** |

* This is the HAP fraction for diesel composition (Speciate Profile No. 4673).

**Methodology**
PTE of VOC (tons/yr) = loading loss (lbs/kgal) x Max. Throughput (kgals/yr) x 1 ton/ 2,000 lbs
PTE of HAP (tons/yr) = PTE of VOC (tons/yr) x HAP %

**Appendix A: Emission Calculations**
**Dry Catalyst Feeder**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| Max. Dry Catalyst Throughput (lbs/hr) | Max. Dry Catalyst Throughput (tons/yr) |
|---|---|
| 138 | 605 |

| | Pollutant | |
|---|---|---|
| | PM* | PM10* |
| Emission Factor (lb/ton) | 0.061 | 0.034 |
| Potential to Emit (tons/yr) | 0.02 | 0.01 |

The dry catalyst has characteristic similar to dry grain.
Emission Factors are from AP-42, Chapter 9.9.1 (Grain Elevators & Processes ), Table 9.9.1-1, SCC 3-02-005-30 (May 2003).

**Methodology**
Potential Throughput (tons/yr) = Max Dry Catalyst Throughput (lbs/hr) x 8,760 hrs/yr x 1 ton/2,000 lbs
Potential to Emit (tons/yr) = Max. Dry Catalyst Throughput (tons/yr) x Emission Factor (lb/ton) x 1 ton/2,000 lbs

**Appendix A: Emission Calculations**
**Storage Tank Emissions**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| | | | | | Worst Case Single HAP | | Total HAP | |
|---|---|---|---|---|---|---|---|---|
| **Tank ID** | **Description** | **Capacity (gallons)** | **PTE of VOC (lbs/yr)** | **PTE of VOC (tons/yr)** | **PTE of Methanol (lbs/yr)** | **PTE of Methanol (tons/yr)** | **PTE of Combined HAPs (lbs/yr)** | **PTE of Combined HAPs (tons/yr)** |
| PV-602 | Vac. Condenser Receiver Tank | 100 | 97.6 | 0.05 | 40.9 | 0.02 | 47.5 | 0.02 |
| PV-603 | Final Reactor Receiver Tank | 100 | 97.6 | 0.05 | 40.9 | 0.02 | 47.5 | 0.02 |
| TK-106 | Vegetable Oil Storage | 50,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tweleve tanks (TK-107 through 118) | Finished Methylesters Tanks | 4,500 | 0 | 0 | 0 | 0 | 0 | 0 |
| TK-201 | Reaction Blend Tank | 4,500 | 711 | 0.36 | 297 | 0.15 | 346 | 0.17 |
| TK-203 | Reaction Mix Tank | 4,500 | 10,069 | 5.03 | 4,213 | 2.11 | 4,898 | 2.45 |
| TK-204 | Reaction Mix Tank | 4,500 | 10,069 | 5.03 | 4,213 | 2.11 | 4,898 | 2.45 |
| TK-207 | Rework Tank (Vegetable Oil) | 4,500 | 0 | 0 | 0 | 0 | 0 | 0 |
| TK-211 | Light Phase Receiver Tank | 4,500 | 10,069 | 5.03 | 4,213 | 2.11 | 4,898 | 2.45 |
| TK-212 | Heavy Phase Storage Tank | 4,500 | 0.04 | 2.00E-05 | 0 | 0 | 0 | 0 |
| TK-213 | Heavy Phase Receiver Tank | 15 | 0.01 | 5.00E-06 | 0 | 0 | 0 | 0 |
| TK-214 | Heavy Phase Storage Tank | 4,500 | 0.04 | 2.00E-05 | 0 | 0 | 0 | 0 |
| TK-305 | ME Day Tank | 4,500 | 0 | 0 | 0 | 0 | 0 | 0 |
| TK-306 | Evaporated Heavy Phase Tank | 4,500 | 0 | 0 | 0 | 0 | 0 | 0 |
| TK-720 | Chilled Water Tank | 3,100 | 0 | 0 | 0 | 0 | 0 | 0 |
| TK-102 | Recovered Reactant Storage Tank | 4,500 | 523 | 0.26 | 219 | 0.11 | 254 | 0.13 |
| TK-103 | Fresh Reactant Storage Tank | 30,000 | 50.4 | 0.03 | 21.1 | 0.01 | 24.5 | 0.01 |
| TK-104 | Fresh Reactant Storage Tank | 30,000 | 50.4 | 0.03 | 21.1 | 0.01 | 24.5 | 0.01 |
| **Total** | | | 31,736 | **15.9** | 13,279 | **6.64** | 15,437 | **7.72** |

Emissions were calculated using EPA's Tanks 4.0.

Vapor pressure for methly esters and biodiesel fuels is documented in a peer reviewed journal: Fuel. Vol. 84, page 943-950, "Vapor pressure and normal boiling point predictions for pure methyl esters and biodiesel fuels."

**Appendix A: Emission Calculations**
**Fugitive Equipment Leak Emission Estimates**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

| Equipment Type | Service | Emission Factor (kg/hr/source) | Weight Fraction of VOC % | Number of pieces | PTE of VOC (kg/hr) | PTE of VOC (lb/hr) | PTE of VOC (tons/yr) |
|---|---|---|---|---|---|---|---|
| Valves | gas | 0.00597 | 1.00 | 14 | 0.08 | 0.18 | 0.81 |
| Valves | gas | 0.00597 | 0.83 | 6 | 0.03 | 0.07 | 0.29 |
| Valves | gas | 0.00597 | 0.05 | 2 | 5.97E-04 | 0.00 | 0.01 |
| Valves | light liquid | 0.00403 | 1.00 | 53 | 0.21 | 0.47 | 2.06 |
| Valves | light liquid | 0.00403 | 0.15 | 23 | 1.39E-02 | 0.03 | 0.13 |
| Valves | heavy liquid | 0.00023 | 1.30E-03 | 77 | 2.30E-05 | 0.00 | 0.00 |
| Valves | heavy liquid | 0.00023 | 0.07 | 5 | 8.05E-05 | 0.00 | 0.00 |
| Valves | heavy liquid | 0.00023 | 0.09 | 16 | 3.31E-04 | 0.00 | 0.00 |
| Valves | heavy liquid | 0.00023 | 0.14 | 21 | 6.76E-04 | 0.00 | 0.01 |
| Pump seals | light liquid | 0.0199 | 1.00 | 8 | 0.16 | 0.35 | 1.53 |
| Pump seals | light liquid | 0.0199 | 0.23 | 2 | 9.15E-03 | 0.02 | 0.09 |
| Pump seals | heavy liquid | 0.00862 | 1.30E-03 | 5 | 5.60E-05 | 0.00 | 0.00 |
| Pump seals | heavy liquid | 0.00862 | 0.11 | 1 | 9.48E-04 | 0.00 | 0.01 |
| Pump seals | heavy liquid | 0.00862 | 0.14 | 2 | 2.41E-03 | 0.01 | 0.02 |
| Vacuum pump/compressor | gas | 0.228 | 0.83 | 1 | 0.19 | 0.42 | 1.82 |
| Connectors | all | 0.00183 | 1.30E-03 | 131 | 3.12E-04 | 0.00 | 0.00 |
| Connectors | all | 0.00183 | 3.00E-03 | 24 | 1.32E-04 | 0.00 | 0.00 |
| Connectors | all | 0.00183 | 0.03 | 10 | 5.49E-04 | 0.00 | 0.01 |
| Connectors | all | 0.00183 | 0.05 | 7 | 6.41E-04 | 0.00 | 0.01 |
| Connectors | all | 0.00183 | 0.07 | 10 | 1.28E-03 | 0.00 | 0.01 |
| Connectors | all | 0.00183 | 0.09 | 43 | 0.01 | 0.02 | 0.07 |
| Connectors | all | 0.00183 | 0.13 | 9 | 2.14E-03 | 0.00 | 0.02 |
| Connectors | all | 0.00183 | 0.14 | 55 | 0.01 | 0.03 | 0.14 |
| Connectors | all | 0.00183 | 0.23 | 45 | 0.02 | 0.04 | 0.18 |
| Connectors | all | 0.00183 | 0.83 | 13 | 0.02 | 0.04 | 0.19 |
| Connectors | all | 0.00183 | 1.00 | 116 | 0.21 | 0.47 | 2.05 |
| Sample ports | all | 0.015 | 1.30E-03 | 5 | 9.75E-05 | 0.00 | 0.00 |
| Sample ports | all | 0.015 | 0.09 | 2 | 2.70E-03 | 0.01 | 0.03 |
| Sample ports | all | 0.015 | 0.14 | 5 | 0.01 | 0.02 | 0.10 |
| Sample ports | all | 0.015 | 0.23 | 1 | 3.45E-03 | 0.01 | 0.03 |
| Sample ports | all | 0.015 | 1.00 | 2 | 0.03 | 0.07 | 0.29 |
| | | | | TOTAL | 1.03 | 2.26 | 9.90 |

Emission estimates are based upon EPA emission factors originally contained in Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017). Values used below are taken from Chapter 5 of Alternative Method for Estimating Fugitive Emissions

**Methodology**
PTE of VOC (kg/hr) = Emission Factor (kg/hr/source) x Weight Fraction of VOC (%) x Number of pieces
PTE of VOC (tons/yr) = PTE of VOC (kg/hr) x 8,760 hrs/1 yr x 1,000 g/1 kg x 1 lb/453 g x 1 ton/ 2,000 lbs

**Appendix A: Emission Calculations**
**Fugitive Equipment Leak Emission Estimates**

**Company Name:** Bio-Alternative, LLC
**Address:** 11778 S. 600 W., Covington, Indiana 47932
**FESOP:** F171-25735-00029
**Reviewer:** ERG/BL
**Date:** January 24, 2008

**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 ($g/m^2$) = | 0.6 ($g/m^2$) (AP-42, Table 13.2.1-3) |
| w = | mean vehicle weight (tons) = | 29.6 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 | 110 |

PM Emission Factor = **1.07** lbs/mile

PM10 Emission Factor = **0.21** lbs/mile

**2. Potential to Emit (PTE) of PM/PM10 Before Control from Paved Roads:**

| Vehicle Type | Ave Weight of Vehicles * (tons) | Traffic Component (%) | Component Vehicle Weight (tons) | Required Materials (trucks/yr) | Required Materials * (trucks/day) | Vehicle Mile Traveled (VMT) (miles/yr) | PTE of PM (tons/yr) | PTE of PM10 (tons/yr) |
|---|---|---|---|---|---|---|---|---|
| VEG. OIL | 46 | 40.9% | 18.7 | 1,643 | 4.50 | 1,577 | 0.85 | 0.17 |
| REACTANT | 41 | 8.1% | 3.35 | 326 | 0.89 | 313 | 0.17 | 0.03 |
| CAUSTIC | 13 | 1.1% | 0.15 | 46 | 0.13 | 44 | 0.02 | 0.00 |
| ME'S | 44 | 49.0% | 21.72 | 1,969 | 5.39 | 1,890 | 1.01 | 0.20 |
| GLYCERIN | 64 | 0.85% | 0.54 | 34 | 0.09 | 33 | 0.02 | 0.00 |
| **Total** | | **100%** | **44.4** | | | **3,857** | **2.07** | **0.40** |

* This information is provided by the source.

Round Trip Distance (mile/trip) = 0.96

**Methodology**

Vehicle Mile Traveled (miles/yr) = Required Materials (trucks/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 (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors (lbs/mile) x 1 ton/2000 lbs

# Technical Support Document - Appendix B
# Best Available Control Technology (BACT) Determinations

**Source Background and Description**

| | |
|---|---|
| Source Name: | Bio-Alternative, LLC |
| Source Location: | 11778 South, 600 West, Covington, Indiana 47932 |
| County: | Warren |
| SIC Code: | 2869 |
| Operating Permit No.: | 171-25735-00029 |
| Permit Reviewer: | ERG/BL |

The Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) has performed the following Best Available Control Technology (BACT) review for a biodiesel 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 biodiesel production plant is subject to the requirements of 326 IAC 8-1-6:

IDEM, OAQ conducts BACT analyses in accordance with the *"Top-Down" Best Available Control Technology* process, 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 biodiesel production plant is provided below. This BACT determination is based on the following information:

(a) The BACT analysis information submitted by Bio-Alternative, LLC on December 19, 2007;
(b) The EPA RACT/BACT/LAER (RBLC) Clearinghouse; and
(c) State and local air quality permits.

**Introduction:**

Bio-Alternative, LLC plans to construct and operate a biodiesel refining production plant to produce biodiesel through a chemical process called trans-esterification, whereby glycerin is separated from fat or vegetable oil. This process generates two products: methyl esters (the chemical name for biodiesel, the primary product) and glycerin, a by-product the company plans to sell. The potential VOC emissions from this activity are estimated to be greater than twenty-five (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, Bio-Alternative, LLC is required to control the VOC emissions with BACT, pursuant to 326 IAC 8-1-6.

**Step 1 – Identify Control Options**

The following six (6) control technologies can be used to control VOC emissions.

1. **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 condenser normally provides VOC control efficiency of 90% up to 98%.

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. However, other solvents may be used dependent upon the components of the waste stream. A wet scrubber normally provides VOC control efficiency of 70% up to 99%.

3. **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. Adsorption is rapid and removes most of the VOC in the stream. Eventually, the adsorbent becomes saturated with the vapors and the system's efficiency drops. 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 absorbate (solvent) is recovered for reuse or disposal. Non-regenerative systems require the removal of the adsorbent and replacement with fresh or previously regenerated carbon.

4. **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 applications. 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%.

5. **Catalytic Oxidizer**
   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 95%. However, steps must be taken to ensure complete combustion. Common types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese, and nickel. These catalysts are typically deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic.

**6. 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. Typically a supplemental fuel, such as natural gas or propane, 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. A properly designed thermal oxidizer can handle almost all solvent mixtures (except for fluorinated or chlorinated solvents) and concentrations. In addition to the energy penalty associated with thermal oxidizers, additional NOx emissions are generated from the combustion of the supplemental fuel. A thermal oxidizer normally provides a VOC destruction efficiency of at least 98%.

**Step 2 – Eliminate Technically Infeasible Control Options**

After reviewing the above technologies, IDEM, OAQ has determined that all the control options mentioned above are technically feasible for this source.

**Step 3 – Rank Remaining Control Technologies by Control Effectiveness**

IDEM, OAQ has ranked the technically feasible control technologies and combinations of control technologies as follows:

| Control Technology | Control Efficiency (%) |
|---|---|
| Condenser with Scrubber | 95% - 99% |
| Condenser with Flare | 98% |
| Condenser with Oxidizer | 98% |
| Condenser with Incinerator | 98% |
| Thermal Oxidizer | 98% |
| Catalytic Oxidizer | 98% |
| Flare | 98% |
| Condenser | 90% - 98% |
| Scrubber | 70% - 98% |
| Evaporator / Condenser | 96% |
| Carbon Adsorption | 90% |

**Step 4 – Evaluate the Most Effective Controls and Document Results**

A search of EPA's RACT/BACT/LAER Clearinghouse (RBLC) and Indiana Air Permits identified the following similar sources. The identified sources are presented below in descending order; the highest control efficiency is present first:

| Plant | PBLD ID or Permit # | Date Issued and State | Facility | BACT Determination |
|---|---|---|---|---|
| Louis Dreyfus Agricultural Industries LLC - Claypool | T085-21297-00102 | 1/24/2006 (IN) | Soybean oil and biodiesel<br><br>Methylester evaporator / vacuum condenser | Condenser with Scrubber;<br>99% control efficiency for loading<br>95% during upset operations<br>VOC emissions < 9.3 lbs/hr. |
| ** Bio-Alternative, LLC* | *F171-25735-00029* | *Proposed (IN)* | *Biodiesel refining production* | *Condenser with Flare;*<br>*98% control efficiency*<br>*VOC emissions < 1.12 lbs/hr.* |
| Indiana Clean Energy, LLC | F023-22833-00040 | 12/15/2006 (IN) | Biodiesel<br><br>Methylester evaporator / vacuum condenser | Condenser with Flare;<br>98% control efficiency<br>VOC emissions < 2.32 lbs/hr. |
| Chinook Bioproducts, LLC | F021-24517-00058 | 11/14/07 (IN) | Ethanol plant<br><br>Germ, Fiber, and Corn Protein Concentrate Dryers | Thermal Oxidizer;<br>98% control efficiency.<br>VOC emissions < 4.68 lbs/hr. |
| AVOCA, LLC | 01819T28 | 07/29/2004 (NC) | Plant Nutrient and Botanical Extraction | Evaporator / Condenser;<br>96% control efficiency;<br>VOC emissions < 9.1 lbs/hr |
| Dome Petrochemical, LLC | PSD-TX-1007 | 05/23/2001 (TX) | Petrochemical Plant | Condenser with Oxidizer;<br>No efficiency specified;<br>VOC emissions < 25.9 lbs/hr |
| Formosa Plastics Corp | PSD-TX-760 (M5) | 02/10/00 (TX) | Ethylene glycol Plant | Condenser with Incinerator;<br>Incinerator temp >1600F;<br>No efficiency specified;<br>VOC emissions < 0.8 lbs/hr. |
| Sunoco, Inc. | 07-00500 | 11/16/2004 (OH) | Refinery | Thermal Oxidizer (PSD-BACT);<br>No efficiency specified;<br>VOC emissions < 6.11 lbs/hr. |
| Minnesota Soybean Processors | 10500053-003 | 5/14/2004 (MN) | Animal feed and Biodiesel | No control;<br>No efficiency specified;<br>VOC emissions < 619 tons/yr |

* Bio-Alternative, LLC, has opted to use a condenser and an enclosed flare system as the most effective control technology. The condenser will not only be used to control methanol emissions, it will also enable Bio-Alternative, LLC to collect and recycle the reactant used in the process. IDEM has determined that the use of a condenser and enclosed flare system that achieves a 98% control efficiency represents BACT for this type of operation, which is comparable with the existing BACT specified for the majority of sources listed above.

IDEM is aware that certain pollution control vendors have guaranteed control efficiencies of 99% to control similar processes for other proposed biodiesel refining production plants (for example Louis Dreyfus Agricultural T 085-21297-00102, issued January 24, 2006). 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 condenser with scrubber, a condenser with a flare, a condenser with an oxidizer, and a condenser with an incinerator are each capable of achieving the same level of control.

**Step 5 – Select BACT**

Since the condenser and enclosed flare system will achieve a 98% overall control efficiency and enclosed flares have been used to control VOC emissions from other similar plants, Bio-Alternative LLC has proposed to use a reactant recovery condenser (PV-301 / ES-602) in combination with an enclosed flare system to control the VOC emissions from the biodiesel production processes. Pursuant to 326 IAC 8-1-6, IDEM, OAQ has determined that the following requirements represent BACT for the biodiesel production processes at this source:

(a) The reactant recovery condenser and enclosed flare system shall operate at all times that the biodiesel production processes are in operation.

(b) The overall efficiency for the reactant recovery condenser and enclosed flare system (including the capture efficiency and destruction efficiency) shall be at least 98%.

(c) The VOC emissions from the enclosed flare system shall not exceed 1.12 pounds per hour.

(d) The presence of a pilot flame shall be verified by using a thermocouple or a flame sensor, or an equivalent device, and the result shall be recorded once per day, when the biodiesel production processes are in operation.

(e) The Permittee shall maintain a log of pilot flame inspections.