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

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

December 14, 2004

TO: Interested Parties / Applicant

RE: American Chemical Service, Inc. / 089-20338-00020

FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

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 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

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

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

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

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

Enclosures
FN-REGIS.dot 9/16/03

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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(800) 451-6027
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December 14, 2004

Thomas Froman
American Chemical Service, Inc.
P.O. Box 190
Griffith, IN 46319

Re: Registered Construction and Operation Status,
089-20338-00020

Dear Mr. Froman:

American Chemical Service, Inc was issued a Registration on October 7, 1998 for a stationary epoxodized vegetable oil manufacturing plant located at 420 South Colfax Avenue, Griffith, Indiana 46319. On November 3, 2004, the Office of Air Quality (OAQ) received a letter and application from American Chemical Service, Inc requesting that the permit be updated to identify several emission units that will be modified in the year 2005 in order to manufacture a new product at the plant. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following stationary epoxidized vegetable oil (EVO), brominated vegetable oil (BVO), and polyol manufacturing plant, located at 420 South Colfax Avenue, Griffith, Indiana 46319, is classified as registered:

Batch EVO Process

(a) Two (2) thin film condensate receivers, designated as Units 6001 and 6022, each respectively constructed in 1973 and 1988. Unit 6001 is not currently being used. Unit 6022 has a maximum volume of 5,500 gallons, a maximum process weight capacity of 1553 pounds per hour, and exhausts to pipe vent 6022-V;

(b) One (1) raw material storage tank for storage of soybean oil, designated as Unit 6002, constructed in 1993, with a maximum volume of 36,720 gallons, a maximum process weight capacity of 999 pounds per hour, and exhausting to pipe vent 6002-V. Unit 6002 is also utilized in the BVO process at maximum process weight capacity of 46 pounds per hour;

(c) Two (2) raw material storage tanks for storage of 70% hydrogen peroxide, designated as Units 6003A and 6003B, each constructed in 1973, and each having a maximum volume of 8,000 gallons, a maximum process weight capacity of 464 pounds per hour, and exhausting to pipe vents 6003A-V and 6003B-V, respectively;

(d) One (1) raw material storage tank for storage of 50% sodium hydroxide, designated as Unit 6004, constructed in 1973, and having a maximum volume of 5,964 gallons, a maximum process weight capacity of 50 pounds per hour, and exhausting to pipe vent 6004-V;

(e) One (1) raw material storage tank for storage of toluene, designated as Unit 6005, constructed in 1973, and having a maximum volume of 8,460 gallons, a maximum process weight capacity of 1497 pounds per hour, and exhausting to pipe vent 6005-V;

(f) Two (2) EVO storage tanks, designated as Units 6006 and 6026, each respectively constructed in 1973 and 1998, having a maximum volume of 17,000 and 34,825 gallons, a maximum process weight capacity of 432 and 865 pounds per hour, and exhausting to pipe vents 6006-V and 6026-V;

(g) One (1) raw material storage tank for storage of linseed oil, designated as Unit 6007, constructed in 1973, and having a maximum volume of 27,000 gallons, a maximum process weight capacity of 999 pounds per hour, and exhausting to pipe vent 6007-V;

(h) One (1) thin film condensate receiver, designated as Unit 6008, constructed in 1973, with a maximum volume of 10,500 gallons, a maximum process weight capacity of 298 pounds per hour, and exhausting to pipe vent 6008-V;

(i) One (1) wash water oxidation vessel, designated as Unit 6009, constructed in 1973, having a maximum volume of 18,500 gallons, a maximum process weight capacity of 3521 pounds per hour, and exhausting to pipe vent 6009-V;

(j) One (1) water neutralization process vessel, designated as Unit 6010, constructed in 1973, modified in April 2005, with a maximum volume of 11,000 gallons, a maximum process weight capacity of 38 pounds per hour, and exhausting to pipe vent 6010-V;

(k) One (1) wash water separation vessel, designated as Unit 6011, constructed in 1973, having a maximum volume of 18,000 gallons, a maximum process weight capacity of 3522 pounds per hour, and exhausting to pipe vent 6011-V;

(l) One (1) process separation vessel, designated as Unit 6013, constructed in 1973, having a maximum volume of 6,300 gallons, a maximum process weight capacity of 47 pounds per hour, and exhausting to pipe vent 6013-V;

(m) One (1) process separation vessel, designated as Unit 6018, constructed in 1981, modified in April 2005, with a maximum volume of 11,000 gallons, a maximum process weight capacity of 47 pounds per hour, and exhausting to pipe vent 6018-V;

(n) Two (2) wash water neutralization vessels, designated as Units 6023 and 6024, each respectively constructed in 1988 and 1973, having a maximum volume of 11,800 and 11,800 gallons, a maximum process weight capacity of 1719 and 1719 pounds per hour, and exhausting to pipe vents 6023-V and 6024-V;

(o) One (1) raw material storage tank for storage of 95% formic acid, designated as Unit 6025, constructed in 1999, and having a maximum volume of 6,460 gallons, a maximum process weight capacity of 64 pounds per hour, and exhausting to pipe vent 6025-V;

(p) One (1) EVO recycle vessel, designated as Unit 6027, constructed in 1973, having a maximum volume of 1,500 gallons, a maximum process weight capacity of 40 pounds per hour, and exhausting to pipe vent 6027-V;

(q) One (1) wash water draining tank, designated as Unit 6028, constructed in 1973, having a maximum volume of 18,000 gallons, a maximum process weight capacity of 3521 pounds per hour, and exhausting to pipe vent 6028-V;

(r) One (1) storage tank for storage of EVO, designated as Unit 6029, constructed in 1998, with a maximum volume of 34,825 gallons, a maximum process weight capacity of 865 pounds per hour, and exhausting to pipe vent 6029-V;

(s) One (1) EVO recycle vessel, designated as Unit 6031, constructed in 1972, modified in April 2005, with a maximum volume of 2,450 gallons, a maximum process weight capacity of 40 pounds per hour, and exhausting to pipe vent 6031-V;

(t) One (1) fractionation column, designated as Unit 7000, constructed in 1973, having a maximum volume of 5,500 gallons, a maximum process weight capacity of 12 pounds per hour, and exhausting to pipe vent 7000-V. Unit 7000 is also utilized in the BVO process at a maximum process weight capacity of 23 pounds per hour;

(u) Two (2) EVO process wash vessels, designated as Units C-1 and C-3X, each respectively constructed in 1988 and 1973, having a maximum volume of 5,610 and 4,860 gallons, a maximum process weight capacity of 3581 and 3581 pounds per hour, and exhausting to pipe vents C-1-V and C-3X-V;

(v) One (1) reactor charge vessel (95% formic acid), designated as Unit C-2, constructed in 1973, and having a maximum volume of 58 gallons, a maximum process weight capacity of 73 pounds per hour, and exhausting to pipe vent C-2-V;

(w) Two (2) process mix vessels, designated as Units C-4 and C-19, each constructed in 1973, each respectively having a maximum volume of 600 and 310 gallons, a maximum process weight capacity of 323 and 12 pounds per hour, and exhausting to pipe vents C-4-V and C-19-V;

(x) Two (2) thin film feed vessels, designated as Units C-5 and C-55, each constructed in 1973, having a maximum volume of 3,650 gallons, a maximum process weight capacity of 1828 pounds per hour, and exhausting to pipe vents C-5-V and C-55-V, respectively;

(y) Two (2) thin film receivers, designated as Units C-6 and C-11, each constructed in 1973, each respectively having a maximum volume of 3,650 and 2,650 gallons, a maximum process weight capacity of 1297 and 865 pounds per hour, and exhausting to pipe vents C-6-V and C-11-V;

(z) One (1) safety water deluge tank, designated as Unit C-12, constructed in 1973, having a maximum volume of 1,275 gallons, and exhausting to pipe vent C-12-V;

(aa) One (1) secondary separation vessel, designated as Unit C-13, constructed in 1973, having a maximum volume of 1,000 gallons, a maximum process weight capacity of 277 pounds per hour, and exhausting to pipe vent C-13-V;

(bb) Two (2) batch reactors, designated as Units C-17 and C-18, each respectively constructed in 1973 and 1988, having a maximum volume of 5,000 and 5,000 gallons, a maximum process weight capacity of 4497 and 4549 pounds per hour, and exhausting to pipe vents C-17-V and C-18-V;

(cc) One (1) reactor charge vessel (70% hydrogen peroxide), designated as Unit C-20, constructed in 1973, and having a maximum volume of 750 gallons, a maximum process weight capacity of 928 pounds per hour, and exhausting to pipe vent C-20-V;

(dd) Two (2) thin film evaporators, designated as Units E-1 and E-2, each respectively constructed in 1973 and 1999, having a maximum process weight capacity of 3656 and 1379 pounds per hour, and exhausting to pipe vents E-1-V and E-2-V. Unit E-1 is also utilized in the BVO process at a maximum process weight capacity of 254 pounds per hour;

Batch BVO Process

(ee) One (1) raw material storage tank for storage of bromine, designated as Unit 6000, constructed in 2004, with a maximum volume of 2,276 gallons, a maximum process weight capacity of 91 pounds per hour, and exhausting to pipe vent 6000-V;

(ff) One (1) raw material storage tank for storage of soybean oil, designated as Unit 6012, constructed in 1976, with a maximum volume of 10,000 gallons, a maximum process weight capacity of 108 pounds per hour, and exhausting to pipe vent 6012-V;

(gg) One (1) raw material storage tank for storage of hexane, designated as Unit 6016, constructed in 1976, with a maximum volume of 11,200 gallons, a maximum process weight capacity of 23 pounds per hour, and exhausting to pipe vent 6016-V;

(hh) One (1) thin film condensate receiver, designated as Units 6017, constructed in 1976, having a maximum volume of 11,200 gallons, a maximum process weight capacity of 55 pounds per hour, and exhausting to pipe vent 6017-V;

(ii) One (1) separation vessel, designated as Units 6019, constructed in 1976, having a maximum volume of 5,500 gallons, a maximum process weight capacity of 316 pounds per hour, and exhausting to pipe vent 6019-V;

(jj) One (1) open top tank for treatment of hexane-contaminated waste water, designated as Units 6020, constructed in 1976, having a maximum volume of 1,000 gallons, and a maximum process weight capacity of 128 pounds per hour;

(kk) One (1) bromine scrubber, designated as Unit 6100, constructed in 1983, with a maximum volume of 950 gallons, a maximum process weight capacity of 0.8 pounds per hour, and exhausting to pipe vent 6100-V;

(ll) One (1) process wash vessel, designated as Units C-3, constructed in 1973, having a maximum volume of 4,860 gallons, a maximum process weight capacity of 289 pounds per hour, and exhausting to pipe vent C-3-V;

(mm) One (1) batch reactor, designated as Units C-10, constructed in 1976, having a maximum volume of 750 gallons, a maximum process weight capacity of 316 pounds per hour, and exhausting to pipe vent C-10-V;

Batch Polyol Process

(nn) One (1) storage tank for storage of methanol-contaminated waste water, designated as Unit 351, constructed in 1972, with a maximum volume of 15,200 gallons, a maximum process weight capacity of 123 pounds per hour, and exhausting to pipe vent 351-V;

(oo) One (1) batch pot distillation vessel, designated as Unit V-500, constructed in 1980, with a maximum volume of 6,300 gallons, a maximum process weight capacity of 3067 pounds per hour, and exhausting to pipe vents V-500-V1 and V-500-V2;

(pp) Two (2) product storage tanks for storage of polyol, designated as Units 501 and 502, each constructed in 1991, having a maximum volume of 36,720 gallons, a maximum process weight capacity of 1101 pounds per hour, and exhausting to pipe vents 501-V and 502-V, respectively;

(qq) Two (2) raw material storage tanks for storage of EVO, designated as Units 504 and 506, each respectively constructed in 1975 and 1992, and having a maximum volume of

33,840 and 36,720 gallons, a maximum process weight capacity of 510 and 510 pounds per hour, and exhausting to pipe vents 504-V and 506-V;

(rr) One (1) raw material storage tank for storage of methanol, designated as Unit 505, constructed in 1972, modified in April 2005, with a maximum volume of 14,900 gallons, a maximum process weight capacity of 25 pounds per hour, and exhausting to pipe vent 505-V;

(ss) One (1) distillation receiver, designated as Units R-500, constructed in 1980, having a maximum volume of 1,370 gallons, a maximum process weight capacity of 123 pounds per hour, and exhausting to pipe vent R-500-V;

(tt) One (1) distillation receiver, designated as Unit R-401, constructed in 1972, modified in April 2005, having a maximum volume of 5,400 gallons, a maximum process weight capacity of 729 pounds per hour, and exhausting to pipe vents R-401-V;

(uu) One (1) recycle vessel, designated as Unit V-300, constructed in 1972, modified in April 2005, with a maximum volume of 13,052 gallons, a maximum process weight capacity of 1221 pounds per hour, and exhausting to pipe vent V-300-V;

(vv) One (1) batch polyol reactor, designated as Unit V-600, constructed in 1980, modified in April 2005, with a maximum volume of 8,000 gallons, a maximum process weight capacity of 4322 pounds per hour, and exhausting to pipe vent V-600-V;

Combustion Related Sources

(ww) Two (2) natural gas-fired steam boilers, designated as Units B-100 and B-200, each respectively installed in 1972 and 1955, and rated at 10 MMBtu/hr and 6 MMBtu/hr. Unit B-100 can also use fuel oil no. 2 as emergency backup.;

(xx) Two (2) natural gas-fired process hot oil heaters for heating of chemicals in reactors, designated as Units H-100 and H-200, each respectively constructed in 1972 and 1980, and rated at 5 MMBtu/hr and 5 MMBtu/hr;

(yy) One (1) natural gas fired emergency generator, designated as Unit G-100, constructed in 1979, operated at less than 500 hours per year, rated at 0.81 MMBtu/hr, and exhausting to stack G-100-V;

(zz) One (1) fuel oil no. 2 fired emergency generator, designated as Unit G-200, constructed in 1973, operated at less than 500 hours per year, rated at 2.47 MMBtu/hr, and exhausting to stack G-200-V;

(aaa) Two (2) above ground horizontal storage tanks for storage of fuel oil no. 2, designated at Units 405 and 406, each constructed in 1978, with a maximum volume of 9,000 gallons, used to provide an emergency back-up fuel source for steam boiler B-100. Unit 405 is also used to provide fuel oil no. 2 for annual test run purposes. Unit 406 is not currently storing any material, but may potentially store fuel oil no. 2 in the future.

Idle Process Equipment

The source also includes the following emission units that are not currently used (denoted as “idle equipment”). The source has stated that there are no plans of using these units and that there are no potential emissions from these units. The source has agreed to a restriction on the use of this idle equipment, such that any change or modification to the idle equipment that may increase

the potential to emit of Volatile Organic Compounds (VOCs) or hazardous air pollutants (HAPs) shall require prior approval from the Office of Air Quality.

Unit ID	Previous Process	Previous Function	Construction Date	Maximum Volume (gallons)
H-5200	Additive Manufacturing	Fume Incinerator	1978	
V-400	Additive Manufacturing	Fuel Additive Reactor	1972	6,450
R-400	Additive Manufacturing	Reactor Overhead Receiver	1972	
V-202	Additive Manufacturing	Raw Material Storage	1972	13,350
V-101	Additive Manufacturing	Scrubber Vessel	1978	4,140
V-100	Additive Manufacturing	Oil Additive Reactor	1972	6,450
R-100	Additive Manufacturing	Reactor Overhead Receiver	1972	
301	Additive Manufacturing	Raw Material Storage	1972	33,840
302	Additive Manufacturing	Raw Material Storage	1972	33,840
305	Additive Manufacturing	Raw Material Storage	1972	18,630
350	Additive Manufacturing	Waste Water Storage	1972	17,060
352	Additive Manufacturing	Raw Material Storage	1972	14,900
353	Additive Manufacturing	Product or Intermediate Storage	1972	20,200
354	Additive Manufacturing	Product or Intermediate Storage	1972	24,530
355	Additive Manufacturing	Product or Intermediate Storage	1972	24,530
503	Additive Manufacturing	Product Storage	1975	33,840
5106	Additive Manufacturing	Reactor Pre-Charge Vessel	1991	7,200
5500	Additive Manufacturing	Raw Material Storage	1972	12,000
5505	Additive Manufacturing	Raw Material Storage	1972	10,000
5506	Additive Manufacturing	Raw Material Storage	1972	13,000
102	Additive Blending	Raw Material Storage	1975 est.	5,000
103	Additive Blending	Raw Material Storage	1975 est.	5,000
801	Additive Blending	Blend Vessel	1971	8,675
802	Additive Blending	Blend Vessel	1971	17,880
803	Additive Blending	Blend Vessel	1971	8,675
804	Additive Blending	Blend Vessel	1971	12,166
805	Additive Blending	Blend Vessel	1991	24,000
847	Additive Blending	Product Storage	1980	36,720
848	Additive Blending	Raw Material Storage	1980	36,720
850	Additive Blending	Raw Material Storage	1989	18,009
851	Additive Blending	Raw Material Storage	1972	18,009
852	Additive Blending	Product Storage	1971 est.	18,000
853	Additive Blending	Raw Material Storage	1980	36,720
854	Additive Blending	Product Storage	1980	36,720
855	Additive Blending	Raw Material Storage	1992	36,720
856	Additive Blending	Product Storage	1994	22,173
857	Additive Blending	Product Storage	1998	35,000
859	Additive Blending	Product Storage	1975 est.	13,465
861	Additive Blending	Product Storage	1975 est.	13,465
V-11	Other	Batch Reactor	1975 est.	1,500
V-24	Other	Batch Reactor	1975 est.	3,000

The following conditions shall be applicable:

(a) Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction), the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1 shall meet the following requirements:

(1) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) or appointed representative upon request.

(2) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(3) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(4) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

(b) 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:

(1) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period unless otherwise specified in 326 IAC 6-1-10.1.

(2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period 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) Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source 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.

(d) Any change or modification to the idle equipment that may increase the potential to emit of Volatile Organic Compounds (VOCs) or hazardous air pollutants (HAPs) shall require prior approval from the Office of Air Quality.

(e) Pursuant to 326 IAC 8-9 (Volatile Organic Compounds; Volatile Organic Liquid Storage Vessels), each of the volatile organic liquid storage vessels (Units 351, 405, 406, 501, 502, 504, 505, 506, 6002, 6005, 6006, 6007, 6012, 6016, 6020, 6025, 6026, 6029) is subject to the following recordkeeping requirements of 326 IAC 8-9-6(a) and (b), since

they each are located in Lake County and have storage capacity less than thirty-nine thousand (39,000) gallons:

(1) The owner or operator of each vessel shall maintain records for the life of the vessel for the following information:

(A) The vessel identification number.

(B) The vessel dimensions.

(C) The vessel capacity.

(D) A description of the emission control equipment for each vessel described in 326 IAC 8-9-4(a) and 4(b), if applicable, or a schedule for installation of emission control equipment on vessels described in 326 IAC 8-9-4(a) and 4(b), if applicable, with a certification that the emission control equipment meets the applicable standards.

(2) A report containing the information described in (a) shall be submitted to IDEM, OAQ.

(f) Pursuant to 326 IAC 12 and 40 CFR 60.116b(b) (promulgated on July 1, 2002), the Permittee shall keep readily accessible records of the following for the life time of the source for Units 501, 502, 505, 506, 6002, and 6026:

(1) The dimension of the storage vessel; and

(2) An analysis showing the capacity of the storage vessel.

(g) Pursuant to 326 IAC 6-2-2(b) (Particulate Emission Limitations for Sources of Indirect Heating), the two (2) natural gas-fired steam boilers (B-100 and B-200), each have particulate matter emission limitations of 0.56 lb/mmBtu.

(h) Pursuant to 326 IAC 6-2-2(c) (Particulate Emission Limitations for Sources of Indirect Heating), the two (2) natural gas-fired process hot oil heaters (H-100 and H-200), each have particulate matter emission limitations of 0.52 lb/mmBtu.

This registration is a revised registration issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source. If you have any questions on this matter, please contact Nathan C. Bell, c/o

OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, at 317-234-3350 or at 1-800-451-6027 (ext 43350).

Sincerely,

Original signed by

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

NCB
cc: File - Lake County
Lake County Health Department
Air Compliance - Rick Massoels
Northwest Regional Office
Permit Tracking
Compliance Data Section
Administrative and Development

Registration
Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	**American Chemical Service, Inc**
Address:	**420 South Colfax Avenue**
City:	**Griffith, Indiana 46319**
Authorized individual:	**Thomas Froman**
Phone #:	**219-924-4370**
Registration #:	**089-20338-00020**

I hereby certify that American Chemical Service, Inc is still in operation and is in compliance with the requirements of Registration 089-20338-00020.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Registration Revision

Source Background and Description

Source Name:	**American Chemical Service, Inc.**
Source Location:	**420 South Colfax Avenue, Griffith, Indiana 46319**
County:	**Lake County**
SIC Code:	**2869 (Manufacturing of Industrial Chemicals, Not Elsewhere Classified)**
Exemption No.:	**089-20338-00020**
Permit Reviewer:	**Nathan C. Bell**

On November 3, 2004, the Office of Air Quality (OAQ) received a letter and application from American Chemical Service, Inc, relating to the operation of several emission units of a stationary epoxidized vegetable oil (EVO), brominated vegetable oil (BVO), and polyol manufacturing plant. The source requested that the permit be updated to identify emission units to be used in a new polyol manufacturing process, as well as, to indicate a change in potential emissions. The source anticipates that some of the emission units (Process Vessel Units 6010, 6018, 6031, V-300, V-500, V-600, and R-401; and Storage Tank Unit T-505) to be used in the polyol process will be modified in a way that increases the emission of volatile organic compounds (VOCs) to the atmosphere, and, therefore, will meet the definition of a process modification as defined by 40 CFR 60.14.

New Emission Units and Pollution Control Equipment

There are no new facilities proposed or currently operating at this source during this review process.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

Batch EVO Process

(a) Two (2) thin film condensate receivers, designated as Units 6001 and 6022, each respectively constructed in 1973 and 1988. Unit 6001 is not currently being used. Unit 6022 has a maximum volume of 5,500 gallons, a maximum process weight capacity of 1553 pounds per hour, and exhausts to pipe vent 6022-V;

(b) One (1) raw material storage tank for storage of soybean oil, designated as Unit 6002, constructed in 1993, with a maximum volume of 36,720 gallons, a maximum process weight capacity of 999 pounds per hour, and exhausting to pipe vent 6002-V. Unit 6002 is also utilized in the BVO process at maximum process weight capacity of 46 pounds per hour;

(c) Two (2) raw material storage tanks for storage of 70% hydrogen peroxide, designated as Units 6003A and 6003B, each constructed in 1973, and each having a maximum volume of 8,000 gallons, a maximum process weight capacity of 464 pounds per hour, and exhausting to pipe vents 6003A-V and 6003B-V, respectively;

(d) One (1) raw material storage tank for storage of 50% sodium hydroxide, designated as Unit 6004, constructed in 1973, and having a maximum volume of 5,964 gallons, a maximum process weight capacity of 50 pounds per hour, and exhausting to pipe vent 6004-V;

(e) One (1) raw material storage tank for storage of toluene, designated as Unit 6005, constructed in 1973, and having a maximum volume of 8,460 gallons, a maximum process weight capacity of 1497 pounds per hour, and exhausting to pipe vent 6005-V;

(f) Two (2) EVO storage tanks, designated as Units 6006 and 6026, each respectively constructed in 1973 and 1998, having a maximum volume of 17,000 and 34,825 gallons, a maximum process weight capacity of 432 and 865 pounds per hour, and exhausting to pipe vents 6006-V and 6026-V;

(g) One (1) raw material storage tank for storage of linseed oil, designated as Unit 6007, constructed in 1973, and having a maximum volume of 27,000 gallons, a maximum process weight capacity of 999 pounds per hour, and exhausting to pipe vent 6007-V;

(h) One (1) thin film condensate receiver, designated as Unit 6008, constructed in 1973, with a maximum volume of 10,500 gallons, a maximum process weight capacity of 298 pounds per hour, and exhausting to pipe vent 6008-V;

(i) One (1) wash water oxidation vessel, designated as Unit 6009, constructed in 1973, having a maximum volume of 18,500 gallons, a maximum process weight capacity of 3521 pounds per hour, and exhausting to pipe vent 6009-V;

(j) One (1) water neutralization process vessel, designated as Unit 6010, constructed in 1973, modified in April 2005, with a maximum volume of 11,000 gallons, a maximum process weight capacity of 38 pounds per hour, and exhausting to pipe vent 6010-V;

(k) One (1) wash water separation vessel, designated as Unit 6011, constructed in 1973, having a maximum volume of 18,000 gallons, a maximum process weight capacity of 3522 pounds per hour, and exhausting to pipe vent 6011-V;

(l) One (1) process separation vessel, designated as Unit 6013, constructed in 1973, having a maximum volume of 6,300 gallons, a maximum process weight capacity of 47 pounds per hour, and exhausting to pipe vent 6013-V;

(m) One (1) process separation vessel, designated as Unit 6018, constructed in 1981, modified in April 2005, with a maximum volume of 11,000 gallons, a maximum process weight capacity of 47 pounds per hour, and exhausting to pipe vent 6018-V;

(n) Two (2) wash water neutralization vessels, designated as Units 6023 and 6024, each respectively constructed in 1988 and 1973, having a maximum volume of 11,800 and 11,800 gallons, a maximum process weight capacity of 1719 and 1719 pounds per hour, and exhausting to pipe vents 6023-V and 6024-V;

(o) One (1) raw material storage tank for storage of 95% formic acid, designated as Unit 6025, constructed in 1999, and having a maximum volume of 6,460 gallons, a maximum process weight capacity of 64 pounds per hour, and exhausting to pipe vent 6025-V;

(p) One (1) EVO recycle vessel, designated as Unit 6027, constructed in 1973, having a maximum volume of 1,500 gallons, a maximum process weight capacity of 40 pounds per hour, and exhausting to pipe vent 6027-V;

(q) One (1) wash water draining tank, designated as Unit 6028, constructed in 1973, having a maximum volume of 18,000 gallons, a maximum process weight capacity of 3521 pounds per hour, and exhausting to pipe vent 6028-V;

(r) One (1) storage tank for storage of EVO, designated as Unit 6029, constructed in 1998, with a maximum volume of 34,825 gallons, a maximum process weight capacity of 865 pounds per hour, and exhausting to pipe vent 6029-V;

(s) One (1) EVO recycle vessel, designated as Unit 6031, constructed in 1972, modified in April 2005, with a maximum volume of 2,450 gallons, a maximum process weight capacity of 40 pounds per hour, and exhausting to pipe vent 6031-V;

(t) One (1) fractionation column, designated as Unit 7000, constructed in 1973, having a maximum volume of 5,500 gallons, a maximum process weight capacity of 12 pounds per hour, and exhausting to pipe vent 7000-V. Unit 7000 is also utilized in the BVO process at a maximum process weight capacity of 23 pounds per hour;

(u) Two (2) EVO process wash vessels, designated as Units C-1 and C-3X, each respectively constructed in 1988 and 1973, having a maximum volume of 5,610 and 4,860 gallons, a maximum process weight capacity of 3581 and 3581 pounds per hour, and exhausting to pipe vents C-1-V and C-3X-V;

(v) One (1) reactor charge vessel (95% formic acid), designated as Unit C-2, constructed in 1973, and having a maximum volume of 58 gallons, a maximum process weight capacity of 73 pounds per hour, and exhausting to pipe vent C-2-V;

(w) Two (2) process mix vessels, designated as Units C-4 and C-19, each constructed in 1973, each respectively having a maximum volume of 600 and 310 gallons, a maximum process weight capacity of 323 and 12 pounds per hour, and exhausting to pipe vents C-4-V and C-19-V;

(x) Two (2) thin film feed vessels, designated as Units C-5 and C-55, each constructed in 1973, having a maximum volume of 3,650 gallons, a maximum process weight capacity of 1828 pounds per hour, and exhausting to pipe vents C-5-V and C-55-V, respectively;

(y) Two (2) thin film receivers, designated as Units C-6 and C-11, each constructed in 1973, each respectively having a maximum volume of 3,650 and 2,650 gallons, a maximum process weight capacity of 1297 and 865 pounds per hour, and exhausting to pipe vents C-6-V and C-11-V;

(z) One (1) safety water deluge tank, designated as Unit C-12, constructed in 1973, having a maximum volume of 1,275 gallons, and exhausting to pipe vent C-12-V;

(aa) One (1) secondary separation vessel, designated as Unit C-13, constructed in 1973, having a maximum volume of 1,000 gallons, a maximum process weight capacity of 277 pounds per hour, and exhausting to pipe vent C-13-V;

(bb) Two (2) batch reactors, designated as Units C-17 and C-18, each respectively constructed in 1973 and 1988, having a maximum volume of 5,000 and 5,000 gallons, a maximum process weight capacity of 4497 and 4549 pounds per hour, and exhausting to pipe vents C-17-V and C-18-V;

(cc) One (1) reactor charge vessel (70% hydrogen peroxide), designated as Unit C-20, constructed in 1973, and having a maximum volume of 750 gallons, a maximum process weight capacity of 928 pounds per hour, and exhausting to pipe vent C-20-V;

(dd) Two (2) thin film evaporators, designated as Units E-1 and E-2, each respectively constructed in 1973 and 1999, having a maximum process weight capacity of 3656 and 1379 pounds per hour, and exhausting to pipe vents E-1-V and E-2-V. Unit E-1 is also utilized in the BVO process at a maximum process weight capacity of 254 pounds per hour;

Batch BVO Process

(ee) One (1) raw material storage tank for storage of bromine, designated as Unit 6000, constructed in 2004, with a maximum volume of 2,276 gallons, a maximum process weight capacity of 91 pounds per hour, and exhausting to pipe vent 6000-V;

(ff) One (1) raw material storage tank for storage of soybean oil, designated as Unit 6012, constructed in 1976, with a maximum volume of 10,000 gallons, a maximum process weight capacity of 108 pounds per hour, and exhausting to pipe vent 6012-V;

(gg) One (1) raw material storage tank for storage of hexane, designated as Unit 6016, constructed in 1976, with a maximum volume of 11,200 gallons, a maximum process weight capacity of 23 pounds per hour, and exhausting to pipe vent 6016-V;

(hh) One (1) thin film condensate receiver, designated as Units 6017, constructed in 1976, having a maximum volume of 11,200 gallons, a maximum process weight capacity of 55 pounds per hour, and exhausting to pipe vent 6017-V;

(ii) One (1) separation vessel, designated as Units 6019, constructed in 1976, having a maximum volume of 5,500 gallons, a maximum process weight capacity of 316 pounds per hour, and exhausting to pipe vent 6019-V;

(jj) One (1) open top tank for treatment of hexane-contaminated waste water, designated as Units 6020, constructed in 1976, having a maximum volume of 1,000 gallons, and a maximum process weight capacity of 128 pounds per hour;

(kk) One (1) bromine scrubber, designated as Unit 6100, constructed in 1983, with a maximum volume of 950 gallons, a maximum process weight capacity of 0.8 pounds per hour, and exhausting to pipe vent 6100-V;

(ll) One (1) process wash vessel, designated as Units C-3, constructed in 1973, having a maximum volume of 4,860 gallons, a maximum process weight capacity of 289 pounds per hour, and exhausting to pipe vent C-3-V;

(mm) One (1) batch reactor, designated as Units C-10, constructed in 1976, having a maximum volume of 750 gallons, a maximum process weight capacity of 316 pounds per hour, and exhausting to pipe vent C-10-V;

Batch Polyol Process

(nn) One (1) storage tank for storage of methanol-contaminated waste water, designated as Unit 351, constructed in 1972, with a maximum volume of 15,200 gallons, a maximum process weight capacity of 123 pounds per hour, and exhausting to pipe vent 351-V;

(oo) One (1) batch pot distillation vessel, designated as Unit V-500, constructed in 1980, with a maximum volume of 6,300 gallons, a maximum process weight capacity of 3067 pounds per hour, and exhausting to pipe vents V-500-V1 and V-500-V2;

(pp) Two (2) product storage tanks for storage of polyol, designated as Units 501 and 502, each constructed in 1991, having a maximum volume of 36,720 gallons, a maximum process weight capacity of 1101 pounds per hour, and exhausting to pipe vents 501-V and 502-V, respectively;

(qq) Two (2) raw material storage tanks for storage of EVO, designated as Units 504 and 506, each respectively constructed in 1975 and 1992, and having a maximum volume of 33,840 and 36,720 gallons, a maximum process weight capacity of 510 and 510 pounds per hour, and exhausting to pipe vents 504-V and 506-V;

(rr) One (1) raw material storage tank for storage of methanol, designated as Unit 505, constructed in 1972, modified in April 2005, with a maximum volume of 14,900 gallons, a maximum process weight capacity of 25 pounds per hour, and exhausting to pipe vent 505-V;

(ss) One (1) distillation receiver, designated as Units R-500, constructed in 1980, having a maximum volume of 1,370 gallons, a maximum process weight capacity of 123 pounds per hour, and exhausting to pipe vent R-500-V;

(tt) One (1) distillation receiver, designated as Unit R-401, constructed in 1972, modified in April 2005, having a maximum volume of 5,400 gallons, a maximum process weight capacity of 729 pounds per hour, and exhausting to pipe vents R-401-V;

(uu) One (1) recycle vessel, designated as Unit V-300, constructed in 1972, modified in April 2005, with a maximum volume of 13,052 gallons, a maximum process weight capacity of 1221 pounds per hour, and exhausting to pipe vent V-300-V;

(vv) One (1) batch polyol reactor, designated as Unit V-600, constructed in 1980, modified in April 2005, with a maximum volume of 8,000 gallons, a maximum process weight capacity of 4322 pounds per hour, and exhausting to pipe vent V-600-V;

Combustion Related Sources

(ww) Two (2) natural gas-fired steam boilers, designated as Units B-100 and B-200, each respectively installed in 1972 and 1955, and rated at 10 MMBtu/hr and 6 MMBtu/hr. Unit B-100 can also use fuel oil no. 2 as emergency backup.;

(xx) Two (2) natural gas-fired process hot oil heaters for heating of chemicals in reactors, designated as Units H-100 and H-200, each respectively constructed in 1972 and 1980, and rated at 5 MMBtu/hr and 5 MMBtu/hr;

(yy) One (1) natural gas fired emergency generator, designated as Unit G-100, constructed in 1979, operated at less than 500 hours per year, rated at 0.81 MMBtu/hr, and exhausting to stack G-100-V;

(zz) One (1) fuel oil no. 2 fired emergency generator, designated as Unit G-200, constructed in 1973, operated at less than 500 hours per year, rated at 2.47 MMBtu/hr, and exhausting to stack G-200-V;

(aaa) Two (2) above ground horizontal storage tanks for storage of fuel oil no. 2, designated at Units 405 and 406, each constructed in 1978, with a maximum volume of 9,000 gallons, used to provide an emergency back-up fuel source for steam boiler B-100. Unit 405 is also used to provide fuel oil no. 2 for annual test run purposes. Unit 406 is not currently storing any material, but may potentially store fuel oil no. 2 in the future.

Additional Process Equipment

The source also includes the following emission units that are not currently used (denoted as “idle equipment”). The source has stated that there are no plans of using these units and that there are no potential emissions from these units. The source has agreed to a restriction on the use of this idle equipment, such that any change or modification to the idle equipment that may increase the potential to emit of Volatile Organic Compounds (VOCs) or hazardous air pollutants (HAPs) shall require prior approval from the Office of Air Quality.

Unit ID	Previous Process	Previous Function	Construction Date	Maximum Volume (gallons)
H-5200	Additive Manufacturing	Fume Incinerator	1978	
V-400	Additive Manufacturing	Fuel Additive Reactor	1972	6,450
R-400	Additive Manufacturing	Reactor Overhead Receiver	1972	
V-202	Additive Manufacturing	Raw Material Storage	1972	13,350
V-101	Additive Manufacturing	Scrubber Vessel	1978	4,140
V-100	Additive Manufacturing	Oil Additive Reactor	1972	6,450
R-100	Additive Manufacturing	Reactor Overhead Receiver	1972	
301	Additive Manufacturing	Raw Material Storage	1972	33,840
302	Additive Manufacturing	Raw Material Storage	1972	33,840
305	Additive Manufacturing	Raw Material Storage	1972	18,630

Unit ID	Previous Process	Previous Function	Construction Date	Maximum Volume (gallons)
350	Additive Manufacturing	Waste Water Storage	1972	17,060
352	Additive Manufacturing	Raw Material Storage	1972	14,900
353	Additive Manufacturing	Product or Intermediate Storage	1972	20,200
354	Additive Manufacturing	Product or Intermediate Storage	1972	24,530
355	Additive Manufacturing	Product or Intermediate Storage	1972	24,530
503	Additive Manufacturing	Product Storage	1975	33,840
5106	Additive Manufacturing	Reactor Pre-Charge Vessel	1991	7,200
5500	Additive Manufacturing	Raw Material Storage	1972	12,000
5505	Additive Manufacturing	Raw Material Storage	1972	10,000
5506	Additive Manufacturing	Raw Material Storage	1972	13,000
102	Additive Blending	Raw Material Storage	1975 est.	5,000
103	Additive Blending	Raw Material Storage	1975 est.	5,000
801	Additive Blending	Blend Vessel	1971	8,675
802	Additive Blending	Blend Vessel	1971	17,880
803	Additive Blending	Blend Vessel	1971	8,675
804	Additive Blending	Blend Vessel	1971	12,166
805	Additive Blending	Blend Vessel	1991	24,000
847	Additive Blending	Product Storage	1980	36,720
848	Additive Blending	Raw Material Storage	1980	36,720
850	Additive Blending	Raw Material Storage	1989	18,009
851	Additive Blending	Raw Material Storage	1972	18,009
852	Additive Blending	Product Storage	1971 est.	18,000
853	Additive Blending	Raw Material Storage	1980	36,720
854	Additive Blending	Product Storage	1980	36,720
855	Additive Blending	Raw Material Storage	1992	36,720
856	Additive Blending	Product Storage	1994	22,173
857	Additive Blending	Product Storage	1998	35,000
859	Additive Blending	Product Storage	1975 est.	13,465
861	Additive Blending	Product Storage	1975 est.	13,465
V-11	Other	Batch Reactor	1975 est.	1,500
V-24	Other	Batch Reactor	1975 est.	3,000

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

(a) Construction/Operating Permit No. 45-01-82-0271, issued April 17, 1978;

(b) Construction/Operating Permit No. 45-01-82-0272, issued May 11, 1978;

(c) Registration, issued November 1, 1979;

(d) Amendment to Permit No. 45-01-82-0271, issued October 24, 1980

(e) Registration 2360-0020, issued November 16, 1981, replacing Permit No. 45-01-82-0271;

(f) Registration for construction/operation of 21 MMBtu/hr steam generating waste oil burner, issued April 15, 1982;

(g) Registration CP 089-9979-00020, issued October 7, 1998;

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

A complete application for the purposes of this review was received on November 3, 2004. Additional information was provided by email by the source on November 24, 2004, November 30, 2004, December 1, 2004, and December 6, 2004.

Unless otherwise stated, information used in this review was derived from the application and additional information provided by the applicant.

Stack Summary

Pipe Vent ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (^{o}F)
6002-V	Batch EVO and Batch BVO	41.0	0.333	12.0	65
6003A-V	Batch EVO	9.0	0.167	8.0	49
6003B-V	Batch EVO	9.0	0.167	8.0	49
6004-V	Batch EVO	10.0	0.167	12.0	70
6005-V	Batch EVO	11.0	0.167	12.0	54
6006-V	Batch EVO	23.0	0.167	5.3	90
6007-V	Batch EVO	5.0	0.25	12.0	48
6008-V	Batch EVO	19.0	0.167	0.5	55
6009-V	Batch EVO	7.0	0.167	6.7	130
6010-V	Batch EVO	19.0	0.167	5.3	90
6011-V	Batch EVO	27.0	0.167	6.7	70
6013-V	Batch EVO	23.0	0.167	3.3	70
6018-V	Batch EVO	24.0	0.167	3.3	70
6022-V	Batch EVO	18.0	0.167	0.5	55
6023-V	Batch EVO	19.0	0.167	4.0	90
6024-V	Batch EVO	27.0	0.167	13.4	120
6025-V	Batch EVO	23.0	0.167	12.0	70
6026-V	Batch EVO	46.0	0.167	5.3	90
6027-V	Batch EVO	10.0	0.167	2.7	65
6028-V	Batch EVO	30.0	0.167	6.7	130
6029-V	Batch EVO	46.0	0.25	5.3	90
6031-V	Batch EVO	10.0	0.167	2.7	65
7000-V	Batch EVO and Batch BVO	40.0	0.167	3.3	60
C-11-V	Batch EVO	19.0	0.167	1.1	200
C-12-V	Batch EVO	---	0.167	NA	70
C-13-V	Batch EVO	4.0	0.167	3.3	110
C-17-V	Batch EVO	2.0	0.167	16.0	40
C-18-V	Batch EVO	2.0	0.167	17.4	40
C-19-V	Batch EVO	---	0.167	4.0	60
C-1-V	Batch EVO	4.0	0.167	12.0	40
C-20-V	Batch EVO	---	0.167	8.0	49
C-2-V	Batch EVO	6.0	0.167	0.7	70
C-3X-V	Batch EVO	4.0	0.167	12.0	40
C-4-V	Batch EVO	9.5	0.167	8.0	60
C-55-V	Batch EVO	4.0	0.167	8.0	40

Pipe Vent ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (^oF)
C-5-V	Batch EVO	4.0	0.167	8.0	40
C-6-V	Batch EVO	19.0	0.167	1.1	200
E-1-V	Batch EVO and Batch BVO	4.0	0.167	0.87	50
E-2-V	Batch EVO	4.0	0.167	2.0	50
6000-V	Batch BVO	4.0	0.04	2.3	60
6012-V	Batch BVO	22.0	0.167	12	65
6016-V	Batch BVO	24.0	0.167	4.0	55
6017-V	Batch BVO	24.0	0.167	0.4	55
6019-V	Batch BVO	16.0	0.167	12.0	65
6100-V	Batch BVO	12.0	0.167	2.3	60
C-10-V	Batch BVO	4.0	0.167	12.0	80
C-3-V	Batch BVO	36.0	0.167	6.7	90
351-V	Batch Polyol	25.0	0.167	4.0	70
501-V	Batch Polyol	41.0	0.33	16.7	130
502-V	Batch Polyol	41.0	0.33	16.7	130
504-V	Batch Polyol	41.0	0.33	9.4	155
505-V	Batch Polyol	24.0	0.167	12.0	57
506-V	Batch Polyol	41.0	0.33	9.4	155
R-401-V	Batch Polyol	22.0	0.167	0.5	54
R-500-V	Batch Polyol	18.0	0.167	0.3	60
V-300-V	Batch Polyol	32.0	0.167	3.7	120
V-500-V1	Batch Polyol	32.0	0.25	8.3	40
V-500-V2	Batch Polyol	32.0	0.25	14.0	40
V-600-V	Batch Polyol	32.0	0.33	12.0	60

Emission Calculations

The potential to emit (PTE) calculations for each of the chemical process equipment (e.g., tanks, vessels, reactors, receivers, etc.) was provided by the source in the permit application. The source calculated the PTE using the Environmental Protection Agency's (EPA) TANKS Version 4.0 program. The calculations were verified by IDEM, OAQ using the EPA's TANKS Version 4.09b program.

See Appendix A of this TSD for detailed emissions calculations for each of the natural gas combustion emission units (Appendix A, pages 1 through 6).

Potential To Emit Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit (PTE) is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	Potential To Emit (tons/year)
PM	5.1
PM-10	5.2
SO_2	22.6
NO_x	13.4
VOC	12.1
CO	9.6

Hazardous Air Pollutant (HAP)	Potential To Emit (tons/year)
Propionaldehyde	0.15
Methanol	3.2
Benzene	2.4E-04
Dichlorobenzene	1.4E-04
Formaldehyde	8.6E-03
n-Hexane	2.0
Toluene	6.2
Arsenic	1.8E-04
Beryllium	1.3E-04
Lead	4.3E-04
Cadmium	2.1E-04
Chromium	2.3E-04
Manganese	2.9E-04
Mercury	1.3E-04
Nickel	2.8E-04
Selenium	6.7E-04
Worst Single HAP	6.2
Combined HAPs	11.5

(a) The PTE (as defined in 326 IAC 2-1.1-1(16)) of regulated criteria pollutants are less than twenty-five (25) tons per year, but the PTE of particulate matter (PM or PM-10) is greater than five (5) tons per year and/or the PTE of any other regulated criteria pollutants is greater than ten (10) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.5. A registration will be issued.

(b) The PTE (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

County Attainment Status

The source is located in Lake County.

Pollutant	Status
PM-10	attainment
SO_2	primary nonattainment
NO_2	unclassifiable
1-hour Ozone	severe nonattainment
8-hour Ozone	moderate nonattainment
CO	maintenance attainment
Lead	attainment

(a) 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.

(1) On January 28, 1996 in 40 CFR 52.777(i), the U.S. EPA granted a waiver of the requirements of Section 182(f) of the CAA for Lake and Porter Counties, including the lower NOx threshold for nonattainment new source review. Therefore, VOC emissions alone are considered when evaluating the rule applicability relating to the 1-hour ozone standard. Lake County has been designated as nonattainment in Indiana for the 1-hour ozone standard. Therefore, VOC emissions were reviewed pursuant to the requirements

for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.

(2) VOC and NOx emissions are considered when evaluating the rule applicability relating to the 8-hour ozone standard. Lake County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for nonattainment new source review.

(b) Lake County has been classified as attainment in Indiana for PM-10, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.

(c) Lake County has been classified as nonattainment in Indiana for SO_2. Therefore, SO_2 emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.

(d) Fugitive Emissions
This source manufactures industrial chemicals under the Standard Industrial Classification (IC) Code of 2869, which is considered as a Chemical Process Plant source category as listed under 326 IAC 2-2 or 2-3. Therefore, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are counted toward determination of PSD and Emission Offset applicability.

Source Status

New Source PSD Definition (emissions after thermal oxidation pollution controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	5.1
PM-10	5.2
SO_2	22.6
NO_x	13.4
VOC	12.1
CO	9.6
Worst Single HAP	6.2
Combined HAPs	11.5

(a) This source manufactures industrial chemicals under the Standard Industrial Classification (IC) Code of 2869, which is considered as a Chemical Process Plant source category as listed under 326 IAC 2-2. This source is not a major PSD stationary source as defined by 326 IAC 2-2-1(gg), because no attainment regulated pollutant is emitted at a rate of 100 tons per year or greater. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

(b) This source, located in Lake County, is not a major stationary source of VOCs as defined by 326 IAC 2-3-1(aa), because VOC is not emitted at a rate of 25 tons per year or greater. This source is not a major source of SO_2 as defined by 326 IAC 2-3-1(aa), because SO_2 is not emitted at a rate of 100 tons per year or greater. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)
This new source is not subject to the Part 70 Permit requirements because the PTE of:
(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

Federal Rule Applicability

(a) The requirement applicability of 326 IAC 12 or 40 CFR 60, Subpart K (60.110 through 60.113), Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978, to storage vessels constructed during this period at this source is as follows:

(1) The requirements of 326 IAC 12 or 40 CFR 60, Subpart K are not applicable to storage vessel Units 504, 6003A, 6003B, 6004, 6006, 6007, 6012, 6016, 6020, and C-12, because each of the storage vessels does not store petroleum liquids as defined by 40 CFR 60.111(b).

(2) The requirements of 326 IAC 12 or 40 CFR 60, Subpart K are not applicable to storage vessel Units 504, 6003A, 6003B, 6004, 6005, 6006, 6007, 6012, 6016, 6020, and C-12, because each of the storage vessels has a storage capacity less than forty thousand (40,000) gallons.

(b) The requirement applicability of 326 IAC 12 or 40 CFR 60, Subpart Ka (60.110a through 60.115a), Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984, to storage vessels constructed during this period at this source is as follows:

(1) The requirements of 326 IAC 12 or 40 CFR 60, Subpart Ka are not applicable to storage vessel Units 405 and 406, because each of the storage vessels is intended to store fuel oil no. 2, which is not a petroleum liquid as defined by 40 CFR 60.111a(b), and each of the storage vessels has a storage capacity less than forty thousand (40,000) gallons.

(c) The requirement applicability of 40 CFR 60, Subpart Kb (60.110b through 60.117b), Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (promulgated on October 15, 2003), to storage vessels constructed during this period at this source is as follows:

(1) The requirements of 40 CFR 60, Subpart Kb are not applicable to storage vessel Unit 6000, because it does not store volatile organic liquids (VOL) as defined by 40 CFR 60.111b.

(2) The requirements of 40 CFR 60, Subpart Kb are not applicable to storage vessel Units 6000, 6025, and 505, because each of the storage vessels has a storage capacity less than seventy-five (75) cubic meters (m3) (19,813 gallons).

(3) The requirements of 40 CFR 60, Subpart Kb are not applicable to storage vessel Units 501, 502, 506, 6002, 6026, and 6029, because the storage vessels, which each have a storage capacity greater than or equal to seventy-five (75) m3 (19,813 gallons), but less than one hundred fifty-one (151) m3 (39,890 gallons), do not store a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa (112.5 millimeters of mercury (mmHg)).

Note: The recent revisions to 40 CFR 60, Subpart Kb promulgated on October 15, 2003 do not apply to these storage tanks, because 326 IAC 12 and 326 IAC 1-1-3 specifically state that the July 1, 2002 version of 40 CFR 60, Subpart Kb are applicable to storage tanks in Indiana. Therefore, the October 15, 2003 revisions will only apply to storage tanks in Indiana after the state has revised 326 IAC 1-1-3 (see the State Rule Applicability section for Storage Tanks)

(d) Pursuant to 40 CFR 60.481, this source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart VV (60.480 through 60.489), Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, because this source does not

have process units that produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.489.

(e) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart III (60.610 through 60.617), Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes, because this source does not produce any of the compounds or chemicals listed in 40 CFR 60.617 (as a product, co-product, by-product, or intermediate) for sale as a final product as that chemical, or for use in the production of other chemicals or compounds.

(f) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart NNN (60.660 through 60.668), Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations, because this source does not produce any of the compounds or chemicals listed in 40 CFR 60.667 (as a product, co-product, by-product, or intermediate) for sale as a final product as that chemical, or for use in the production of other chemicals or compounds.

(g) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart RRR (60.700 through 60.708), Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes, because this source does not produce any of the compounds or chemicals listed in 40 CFR 60.707 (as a product, co-product, by-product, or intermediate) for sale as a final product as that chemical, or for use in the production of other chemicals or compounds.

(h) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart DDD (60.560 through 60.566), Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry, because this source does not manufacture polypropylene, polyethylene, polystyrene, or poly (ethylene terephthalate) as defined in 40 CFR 60.561.

(i) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart D (60.40 through 60.46), Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971, because each of the fossil-fuel-fired (including natural gas, petroleum, and coal) steam generating units at this source has a heat input rate less than 250 million Btu per hour (MMBtu/hr).

(j) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart Da (60.40a through 60.49a), Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978, because each of the fossil-fuel-fired (including natural gas, petroleum, and coal either alone or in combination with any other fuel) steam generating units at this source has a heat input rate less than 250 million Btu per hour (MMBtu/hr) and this source does not produce steam for the purpose of generating and supplying electrical power to any utility power distribution system for sale.

(k) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart Db (60.40b through 60.49b), Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, because each of the steam generating units at this source has a heat input rate less than 100 million Btu per hour (MMBtu/hr).

(l) This source is not subject to the requirements of 326 IAC 12 or 40 CFR 60, Subpart Dc (60.40c through 60.48c), Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, because each of the steam generating units at this source has a heat input rate less than or equal to 10 million Btu per hour (MMBtu/hr).

(m) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in the permit for this source.

(n) This source is not subject to the following NESHAPs, because this source is not a major source of HAPs.

(1) 40 CFR 63 Subpart F (63.100 through 63.107), NESHAPs From the Synthetic Organic Chemical Manufacturing Industry (326 IAC 20-11-1)

(2) 40 CFR 63 Subpart G (63.110 through 63.153), NESHAPs From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater (326 IAC 20-11-1)

(3) 40 CFR 63 Subpart H (63.160 through 63.183), NESHAPs: Organic Hazardous Air Pollutants for Equipment Leaks (326 IAC 20-11-1)

(4) 40 CFR 63 Subpart I (63.190 through 63.193), NESHAPs: Certain Processes Subject to the Negotiated Regulation for Equipment Leaks (326 IAC 20-12-1)

(o) This source is not subject to the requirements of 40 CFR 63, Subpart FFFF (60.2430 through 60.2550), NESHAP for Miscellaneous Organic Chemical Manufacturing, because this source is not a major source of HAPs.

(p) This source is not subject to the requirements of 40 CFR 63, Subpart PPP (60.1420 through 60.1439), NESHAP for Polyether Polyols Production, because this source does not manufacture a polyether polyol.

(q) This source is not subject to the requirements of 40 CFR 63, Subpart GGGG (60.2830 through 60.2872), NESHAP for Solvent Extraction for Vegetable Oil Production, because this source does not produce crude vegetable oil and/or meal products.

(r) This source is not subject to the requirements of 40 CFR 63, Subpart ZZZZ (60.6580 through 60.6675), NESHAP for Stationary Reciprocating Internal Combustion Engines, because this source is not located at and is not part of a major source of HAPs and the emergency generators (G-100 and G-200) at this source have a site-rating of less than or equal to 500 brake horsepower.

(s) The boilers and oil heaters are not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. The boilers and oil heaters are part of the affected source for the small gaseous fuel subcategory, as defined by 40 CFR 63.7575, because they each have a rated capacity of less than or equal to 10 million British thermal units per hour heat input. However, pursuant to 40 CFR 63.7506(c), there are no applicable requirements from 40 CFR 63, Subpart DDDDD and 40 CFR, Subpart A for the affected source for the small gaseous fuel subcategory. In addition the boilers and heaters are not subject to the requirements of 40 CFR 63 Subpart DDDDD, because this source is not located at and is not part of a major source of HAPs.

(t) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) included in the permit for this source.

State Rule Applicability - Entire Source

326 IAC 1-6-2 (Records; Notice of Malfunction)

Pursuant to 326 IAC 1-6-2, the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1 shall meet the following requirements:

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable

emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

This source manufactures industrial chemicals under the Standard Industrial Classification (IC) Code of 2869, which is considered as a Chemical Process Plant source category as listed under 326 IAC 2-2. This source is not a major PSD stationary source as defined by 326 IAC 2-2-1(gg), because no attainment regulated pollutant is emitted at a rate of 100 tons per year or greater. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

326 IAC 2-3 (Emission Offset)

This source, located in Lake County, which is classified as severe nonattainment for 1-hour ozone and moderate nonattainment for 8-hour ozone, is not a major source of VOCs as defined by 326 IAC 2-3-1(aa), because VOC is not emitted at a rate of 25 tons per year or greater. This source, which is also classified as primary nonattainment for SO_2, is not a major source of SO_2 as defined by 326 IAC 2-3-1(aa), because SO_2 is not emitted at a rate of 100 tons per year or greater. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

326 IAC 2-6 (Emission Reporting)

This source is located in Lake County and the potential to emit of VOC and NOx are less than twenty five (25) tons per year and that of all other criteria pollutants are less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

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

The requirements of 326 IAC 2-4.1 are not applicable to this source, since the potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year.

326 IAC 5-1 (Opacity Limitations)

This source is located in the portion of Lake County noted in 326 IAC 5-1-1(c)(4). 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 twenty percent (20%) in any one (1) six (6) minute averaging period unless otherwise specified in 326 IAC 6-1-10.1.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period 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 6-1 (Nonattainment Area Limitations)

The requirements of 326 IAC 6-1 are not applicable to this source, since the source does not have the potential to emit greater than 100 tons per year of particulate matter, or actual emissions of greater than 10 tons per year of particulate matter, is not one of the Lake County sources listed in 326 IAC 6-1-10.1 or 326 IAC 6-1-10.2 or 326 IAC 6-1-11.1(a)(2), and does not have the potential to emit greater than 5 tons per year of fugitive particulate matter into the atmosphere in Lake County.

326 IAC 6-4 (Fugitive Dust Emissions Limitations)

Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source 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.

326 IAC 8-7-2 (Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)

The potential to emit of VOCs at this source, located in Lake County, is less than the applicability threshold of 25 tons per year. Therefore, 326 IAC 8-7-2 does not apply.

State Rule Applicability - Individual Facilities

326 IAC 8-1-6 (Volatile Organic Compounds; General Reduction Requirements for New Facilities)

The requirements of 326 IAC 8-1-6 are not applicable, since each of the emission units at this source does not have the potential to emit greater than twenty-five (25) tons of VOCs per year.

326 IAC 8-6 (Volatile Organic Compounds; Organic Solvent Emission Limitations)

The requirements of 326 IAC 8-6 are not applicable, since this source, which existed in Lake County prior to January 1, 1980, does not have the potential to emit VOCs at levels equal to or greater than one hundred (100) tons per year.

326 IAC 8-7 (Volatile Organic Compounds; Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)

The requirements of 326 IAC 8-7 are not applicable, since this source, which is located in Lake County and does not include coating facilities, does not have the potential to emit VOCs at levels equal to or greater than twenty-five (25) tons per year.

State Rule Applicability - Storage Vessels

326 IAC 8-4-3 (Volatile Organic Compounds; Petroleum Liquid Storage Facilities)

Each of the storage vessels is not subject to the requirements of 326 IAC 8-4-3, because each storage vessel, has storage capacity less than thirty-nine thousand (39,000) gallons.

326 IAC 8-9 (Volatile Organic Compounds; Volatile Organic Liquid Storage Vessels)

Each of the volatile organic liquid storage vessels (Units 351, 405, 406, 501, 502, 504, 505, 506, 6002, 6005, 6006, 6007, 6012, 6016, 6020, 6025, 6026, 6029) is subject to the following recordkeeping requirements of 326 IAC 8-9-6(a) and (b), since they each are located in Lake County and have storage capacity less than thirty-nine thousand (39,000) gallons:

(a) The owner or operator of each vessel shall maintain records for the life of the vessel for the following information:

(1) The vessel identification number.

(2) The vessel dimensions.

(3) The vessel capacity.

(4) A description of the emission control equipment for each vessel described in 326 IAC 8-9-4(a) and 4(b), if applicable, or a schedule for installation of emission control equipment on vessels described in 326 IAC 8-9-4(a) and 4(b), if applicable, with a certification that the emission control equipment meets the applicable standards.

(b) A report containing the information described in (a) shall be submitted to IDEM, OAQ.

All other process equipment at this source is not is subject to the requirements of 326 IAC 8-9, since they are not considered vessels as defined by 326 IAC 8-9-3(9) or they do not store volatile organic liquid as defined by 326 IAC 8-9-3(10).

326 IAC 12 (New Source Performance Standards)

Pursuant to 326 IAC 12 and 326 IAC 1-1-3, storage tanks which store organic liquids must be reviewed pursuant to the July 1, 2002 version of 40 CFR Part 60, Subpart Kb (60.110b through 60.117b), Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (promulgated on July 1, 2002). The 326 IAC 12 requirement applicability of the storage vessels constructed during this period at this source is as follows:

(a) The requirements of 40 CFR 60, Subpart Kb (promulgated on July 1, 2002) are not applicable to storage vessel Unit 6000, because each of the storage vessels does not store volatile organic liquids (VOL) as defined by 40 CFR 60.111b.

(b) The requirements of 40 CFR 60, Subpart Kb (promulgated on July 1, 2002) are not applicable to storage vessel Units 6000 and 6025, because each of the storage vessels has a storage capacity less than forty (40) cubic meters (m3) (10,567 gallons).

(c) The requirements of 40 CFR 60.116b(b) (promulgated on July 1, 2002) **are** applicable to storage vessel Unit 505, because it stores volatile organic liquids (VOL) as defined by 40 CFR 60.111b and has a storage capacity greater than or equal to forty (40) cubic meters (m3) (10,567 gallons), but less than seventy-five (75) cubic meters (19,813 gallons).

Pursuant to 40 CFR 60.116b(b) (promulgated on July 1, 2002), the Permittee shall keep readily accessible records of the following for the life time of the source for Unit 505:

(1) The dimension of the storage vessel; and

(2) An analysis showing the capacity of the storage vessel.

(d) The requirements of 40 CFR 60.110b(c) and 60.116b(b) (promulgated on July 1, 2002) **are** applicable to storage vessel Units 501, 502, 506, 6002, 6026, and 6029, because each of the storage vessels, which each have a storage capacity greater than or equal to seventy-five (75) m3 (19,813 gallons), but less than one hundred fifty-one (151) m3 (39,890 gallons), store a volatile organic liquids (VOL) (as defined by 40 CFR 60.111b) with a maximum true vapor pressure less than 15.0 kPa (112.5 millimeters of mercury (mmHg)).

Pursuant to 40 CFR 60.116b(b) (promulgated on July 1, 2002), the Permittee shall keep readily accessible records of the following for the life time of the source for Units 501, 502, 506, 6002, and 6026:

(1) The dimension of the storage vessel; and

(2) An analysis showing the capacity of the storage vessel.

State Rule Applicability – Natural Gas Combustion Sources

326 IAC 4-2-2 (Incinerators)

The boilers, oil heaters, and emergency generators are not incinerators, as defined by 326 IAC 1-2-34, since they do not burn waste sustances. Therefore, these ovens are not subject to 326 IAC 4-2-2.

326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)

(a) The emergency generators are not subject to the requirements of 326 IAC 6-2 as they are not sources of indirect heating.

(b) The natural gas-fired steam boilers (B-100 and B-200) and process hot oil heaters (H-100 and H-200) are subject to the requirements of 326 IAC 6-2-2, since each of the units are sources of indirect heating, were installed prior to September 21, 1983, and are located in Lake County. Pursuant to this rule, particulate matter emissions from these faclities shall be limited by the following equation:

$Pt = 0.87/Q^{0.16}$ where Pt = Pounds of particulate matter emitted per million Btu (lb/mmBtu) heat input; and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu/hr) heat input.

Pursuant to 326 IAC 6-2-2(b), the two (2) natural gas-fired steam boilers (B-100 and B-200), which were each respectively installed in 1972 and 1955, and rated at 10 MMBtu/hr and 6 MMBtu/hr, each have particulate matter emission limitations of 0.56 lb/mmBtu (based on the total source capacity of 16 MMBtu/hr that existed at the source on June 8, 1972).

Pursuant to 326 IAC 6-2-2(c), the two (2) natural gas-fired process hot oil heaters (H-100 and H-200), which were each respectively installed in May 1978 and October 1980, and rated at 5 MMBtu/hr and 5 MMBtu/hr, each have particulate matter emission limitations of 0.52 lb/mmBtu (based on the total maximum source capacity of 26 MMBtu/hr that existed at the source prior to September 21, 1983).

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-1(b)(14), each of the boilers, oil heaters, and emergency generators unit are exempt from the requirements of 326 IAC 6-3, because they each have a potential particulate emissions less than five hundred fifty-one thousandths (0.551) pound per hour.

326 IAC 7-1 (Sulfur dioxide emission limitations: applicability)

The boilers, oil heaters, and emergency generators are each not subject to the requirements of 326 IAC 7-1, because the potential and the actual emissions are less than twenty-five (25) tons per year and ten (10) pounds per hour respectively.

Conclusion

The construction and operation of this stationary epoxidized vegetable oil (EVO), brominated vegetable

oil (BVO), and polyol manufacturing plant shall be subject to the conditions of the attached proposed Registration No. 089-20338-00020.

Appendix A: Emissions Calculations
VOCs, HAPs
Chemical Process Equipment
Summary of Output from EPA's TANK 4.0 Program

Company Name: **American Chemical Sevices, Inc.**
Address City IN Zip: **420 South Colfax Avenue, Griffith, Indiana 46319**
Permit Number: **089-20338**
Plt ID: **089-00020**
Reviewer: **Nathan C. Bell**
Date: **November 24, 2004**

		Potential Emissions (tons/year)					
		Pollutant					
Unit Number	Operation	Toluene	Propionaldehyde	Hexane	Methanol	**TOTAL VOCs**	**TOTAL HAPs**
C-17	Batch EVO	0.92				0.92	0.92
C-18	Batch EVO	0.64				0.64	0.64
C-1	Batch EVO	0.06				0.06	0.06
C-3X	Batch EVO	0.06				0.06	0.06
C-5	Batch EVO	0.08				0.08	0.08
C-55	Batch EVO	0.07				0.07	0.07
6022	Batch EVO	0.14				0.14	0.14
6005	Batch EVO	0.19				0.19	0.19
6008	Batch EVO	0.30				0.30	0.30
6023	Batch EVO	0.66				0.66	0.66
6024	Batch EVO	0.66				0.66	0.66
6010	Batch EVO	0.15				0.15	0.15
6027	Batch EVO	0.07				0.07	0.07
6031	Batch EVO	0.09				0.09	0.09
6011	Batch EVO	0.53				0.53	0.53
6009	Batch EVO	2.1E-04				2.1E-04	2.1E-04
6025	Batch EVO	0.03				0.03	0.03
6013	Batch EVO	0.04				0.04	0.04
6018	Batch EVO	0.04				0.04	0.04
C-13	Batch EVO	2.0E-05				2.0E-05	2.0E-05
7000	Batch EVO and Batch BVO	0.03		0.30		0.33	0.33
E-1	Batch EVO and Batch BVO	0.58		0.94		1.52	1.52
E-2	Batch EVO	0.30				0.30	0.30
Fugitive Emissions	Batch EVO	0.50				0.50	0.50
Breakdown Product	Batch EVO		0.15			0.15	0.15
C-10	Batch BVO			0.02		0.02	0.02
C-3	Batch BVO			0.02		0.02	0.02
6016	Batch BVO			0.17		0.17	0.17
6017	Batch BVO			0.23		0.23	0.23
6019	Batch BVO			1.5E-04		1.5E-04	1.5E-04
6020	Batch BVO			0.05		0.05	0.05
Fugitive Emissions	Batch BVO			0.04		0.04	0.04
V-600	Batch Polyol				0.43	0.43	0.43
V-300	Batch Polyol				1.29	1.29	1.29
V-500 Vessel	Batch Polyol				0.14	0.14	0.14
V-500 Vac. Pump	Batch Polyol				0.94	0.94	0.94
R-401	Batch Polyol				0.12	0.12	0.12
R-500	Batch Polyol				2.0E-04	2.0E-04	2.0E-04
505	Batch Polyol				0.12	0.12	0.12
351	Batch Polyol				1.0E-03	1.0E-03	1.0E-03
Fugitive Emissions	Batch Polyol				0.14	0.14	0.14
405	Fuel Oil No. 2 Storage					Negligible	Negligible
406	Fuel Oil No. 2 Storage					Negligible	Negligible
	TOTALS	**6.15**	**0.15**	**1.76**	**3.19**	**11.25**	**11.25**

Appendix A: Emissions Calculations
VOCs, Particulate, HAPs
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: American Chemical Sevices, Inc.
Address City IN Zip: 420 South Colfax Avenue, Griffith, Indiana 46319
Permit Number: 089-20338
Plt ID: 089-00020
Reviewer: Nathan C. Bell
Date: November 24, 2004

Criteria Pollutants

					PM*	PM10*	SO2	NOx**	VOC	CO
				Pollutant	PM*	PM10*	SO2	NOx**	VOC	CO
				Emission Factor (lb/MMCF)	1.9	7.6	0.6	100.0	5.5	84.0
Emission Unit	Number of Units	Unit Heat Input Capacity MMBtu/hr	Combined Total Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr	Potential Emission tons/yr					
					PM*	PM10*	SO2	NOx**	VOC	CO
Steam Boiler B-200	1	6	6	52.6	0.050	0.200	0.016	2.6	0.145	2.2
Process Oil Heater H-100	1	5	5	43.8	0.042	0.166	0.013	2.2	0.120	1.8
Process Oil Heater H-200	1	5	5	43.8	0.042	0.166	0.013	2.2	0.120	1.8
Emergency Generators operated at less than 500 hours per year										
Emergency Generator G-100	1	0.81	1	0.41	3.8E-04	0.002	1.2E-04	0.02	0.001	0.02
Totals	**4**		**16.8**		**0.13**	**0.53**	**0.04**	**7.0**	**0.39**	**5.9**

Hazardous Air Pollutants (HAPs)

Pollutant	Benzene	DCB	Formaldehyde	Hexane	Toluene	Pb	Cd	Cr	Mn	Ni
Emission Factor (lb/MMCF)	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Emission Unit	Potential Emission tons/yr									
	Benzene	DCB	Formaldehyde	Hexane	Toluene	Pb	Cd	Cr	Mn	Ni
Steam Boiler B-200	5.5E-05	3.2E-05	2.0E-03	4.7E-02	8.9E-05	1.3E-05	2.9E-05	3.7E-05	1.0E-05	5.5E-05
Process Oil Heater H-100	4.6E-05	2.6E-05	1.6E-03	3.9E-02	7.4E-05	1.1E-05	2.4E-05	3.1E-05	8.3E-06	4.6E-05
Process Oil Heater H-200	4.6E-05	2.6E-05	1.6E-03	3.9E-02	7.4E-05	1.1E-05	2.4E-05	3.1E-05	8.3E-06	4.6E-05
Emergency Generators operated at less than 500 hours per year										
Emergency Generator G-100	4.3E-07	2.4E-07	1.5E-05	3.6E-04	6.9E-07	1.0E-07	2.2E-07	2.8E-07	7.7E-08	4.3E-07
Totals	**1.5E-04**	**8.4E-05**	**5.3E-03**	**1.3E-01**	**2.4E-04**	**3.5E-05**	**7.7E-05**	**9.8E-05**	**2.7E-05**	**1.5E-04**

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32
The five highest organic and metal HAPs emission factors are provided above. Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Methodology
Potential Throughput (MMCF) = Combined Total Heat Input Capacity (MMBtu/hr) * 8,760 hrs/yr * 1 MMCF/1,000 MMBtu
Potential Throughput (MMCF) for Emergency Gernators (<500 hrs/yr) = Combined Total Heat Input Capacity (MMBtu/hr) * 500 hrs/yr * 1 MMCF/1,000 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) * Emission Factor (lb/MMCF) / 2,000 lb/ton
Emission Factors are from AP 42, Chapter 1.4, 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 3/98)
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu, MMCF = 1,000,000 Cubic Feet of Gas

Abbreviations
PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
SO2 = Sulfur Dioxide
NOx = Nitrous Oxides
VOC - Volatile Organic Compounds
CO = Carbon Monoxide
DCB = Dichlorobenzen
Pb = Lead
Cd = Cadmium
Cr = Chromium
Mn = Manganese
Ni = Nickel

Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
#1 and #2 Fuel Oil

Company Name: American Chemical Sevices, Inc.
Address City IN Zip: 420 South Colfax Avenue, Griffith, Indiana 46319
Permit Number: 089-20338
Plt ID: 089-00020
Reviewer: Nathan C. Bell
Date: November 24, 2004

Criteria Pollutants

Weight % Sulfur, S = 0.5 %

				Pollutant	PM*	SO2 (142*S)	NOx	VOC	CO
				Emission Factor (lb/kgal)	2.0	71	20.0	0.34	5.0
Emission Unit	Number of Units	Unit Heat Input Capacity MMBtu/hr	Combined Total Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	Potential Emission tons/yr PM*	SO2	NOx	VOC	CO
Emergency Generators operated at less than 500 hours per year									
Emergency Generator G-200	1	2.47	2.47	8.82	0.01	0.31	0.09	0.001	0.02
Totals	**1**		**2.47**		**0.01**	**0.31**	**0.09**	**0.001**	**0.02**

Hazardous Air Pollutants (HAPs)

				Pollutant	As	Be	Cd	Cr	Pb	Mn	Hg	Ni	Se
				Emission Factor (lb/MMBtu)	4.0E-06	3.0E-06	3.0E-06	3.0E-06	9.0E-06	6.0E-06	3.0E-06	3.0E-06	1.5E-05
Emission Unit	Number of Units	Unit Heat Input Capacity MMBtu/hr	Combined Total Heat Input Capacity MMBtu/hr		Potential Emission tons/yr As	Be	Cd	Cr	Pb	Mn	Hg	Ni	Se
Emergency Generators operated at less than 500 hours per year													
Emergency Generator G-200	1	2.47	2.47		2.5E-06	1.9E-06	1.9E-06	1.9E-06	5.6E-06	3.7E-06	1.9E-06	1.9E-06	9.3E-06
Totals	**1**		**2.47**		**2.5E-06**	**1.9E-06**	**1.9E-06**	**1.9E-06**	**5.6E-06**	**3.7E-06**	**1.9E-06**	**1.9E-06**	**9.3E-06**

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) for Emergency Gernators (<500 hrs/yr) = Combined Total Heat Input Capacity (MMBtu/hr) * 500 hrs/yr * 1kgal/1000 gal * 1 gal/0.140 MM Btu

Emission Factors for Criteria Pollutants are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Potential Emission for Criteria Pollutants (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Potential Emissions for HAPs (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

No data was available in AP-42 for organic HAPs.

Abbreviations

PM = Particulate Matter
SO2 = Sulfur Dioxide
NOx = Nitrous Oxides
VOC - Volatile Organic Compounds
CO = Carbon Monoxide
As = Arsenic
Be = Beryllium
Cd = Cadmium
Cr = Chromium
Pb = Lead
Mn = Manganese
Hg = Mercury
Ni = Nickel
Se = Selenium

Appendix A: Emissions Calculations
VOCs, Particulate, HAPs
Natural Gas or No. 2 Fuel Oil Combustion for Steam Boiler B-100
MM BTU/HR <100

Company Name: American Chemical Sevices, Inc.
Address City IN Zip: 420 South Colfax Avenue, Griffith, Indiana 46319
Permit Number: 089-20338
Plt ID: 089-00020
Reviewer: Nathan C. Bell
Date: November 24, 2004

Criteria Pollutants

		Pollutant	PM*	PM10*	SO2	NOx**	VOC	CO
Natural Gas Emission Factor (lb/MMCF)			1.9	7.6	0.6	100.0	5.5	84.0
No. 2 Fuel Oil Emission Factor (lb/kgal) with weight % Sulfur =		0.5	2.0		71	20.0	0.34	5.0
Emission Unit	Unit Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr	Potential Throughput kgals/year	Potential Emissions (tons/yr) PM*	PM10*	SO2	NOx**	VOC	CO
Steam Boiler B-100 (Natural Gas)	10	87.6	NA	0.08	0.33	0.03	4.4	0.24	3.7
Steam Boiler B-100 (No. 2 Fuel Oil)	10	NA	625.7	0.63		22.21	6.3	0.11	1.6
		Worse Case PTE (tons/yr)	**0.63**	**0.33**	**22.2**	**6.3**	**0.24**	**3.7**

Hazardous Air Pollutants (HAPs)

Pollutant***	Benzene	DCB	Formaldehyde	Hexane	Toluene	As	Be
Natural Gas Emission Factor (lb/MMCF)	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03		
No. 2 Fuel Oil Emission Factor (lb/MMBtu)						4.0E-06	3.0E-06
Emission Unit	Potential Emissions (tons/yr)						
Steam Boiler B-100 (Natural Gas)	9.2E-05	5.3E-05	3.3E-03	7.9E-02	1.5E-04		
Steam Boiler B-100 (No. 2 Fuel Oil)						1.8E-04	1.3E-04
Worse Case PTE (tons/yr)	**9.2E-05**	**5.3E-05**	**3.3E-03**	**7.9E-02**	**1.5E-04**	**1.8E-04**	**1.3E-04**

Pollutant***	Pb	Cd	Cr	Mn	Hg	Ni	Se
Natural Gas Emission Factor (lb/MMCF)	5.0E-04	1.1E-03	1.4E-03	3.8E-04		2.1E-03	
No. 2 Fuel Oil Emission Factor (lb/MMBtu)	9.0E-06	3.0E-06	3.0E-06	6.0E-06	3.0E-06	3.0E-06	1.5E-05
Emission Unit	Potential Emissions (tons/yr)						
Steam Boiler B-100 (Natural Gas)	2.2E-05	4.8E-05	6.1E-05	1.7E-05		9.2E-05	
Steam Boiler B-100 (No. 2 Fuel Oil)	3.9E-04	1.3E-04	1.3E-04	2.6E-04	1.3E-04	1.3E-04	6.6E-04
Worse Case PTE (tons/yr)	**3.9E-04**	**1.3E-04**	**1.3E-04**	**2.6E-04**	**1.3E-04**	**1.3E-04**	**6.6E-04**

*PM emission factor for natural gas is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32
***The five highest organic and metal HAPs emission factors are provided above. Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Methodology (Natural Gas Example)
Potential Throughput (MMCF) = Unit Heat Input Capacity (MMBtu/hr) * 8,760 hrs/yr * 1 MMCF/1,000 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) * Emission Factor (lb/MMCF) / 2,000 lb/ton
Emission Factors are from AP 42, Chapter 1.4, 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 3/98)
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu, MMCF = 1,000,000 Cubic Feet of Gas

Methodology (No. 2 Fuel Oil)
1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu
Potential Throughput (kgals/year) = Unit Heat Input Capacity (MMBtu/hr) * 8,760 hrs/yr * 1kgal/1000 gal * 1 gal/0.140 MM Btu
Potential Throughput (kgals/year) for Emergency Gernators (<500 hrs/yr) = Unit Heat Input Capacity (MMBtu/hr) * 500 hrs/yr * 1kgal/1000 gal * 1 gal/0.140 MM Btu
Emission Factors for Criteria Pollutants are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)
*PM emission factor for No. 2 Fuel Oil is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.
Potential Emission for Criteria Pollutants (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton
Potential Emissions for HAPs (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton
No data was available in AP-42 for organic HAPs.

Abbreviations
PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
SO2 = Sulfur Dioxide
NOx = Nitrous Oxides
VOC - Volatile Organic Compounds
CO = Carbon Monoxide
DCB = Dichlorobenzene
As = Arsenic
Be = Beryllium
Cd = Cadmium
Cr = Chromium
Pb = Lead
Mn = Manganese
Hg = Mercury
Ni = Nickel
Se = Selenium

Appendix A: Emission Calculations
Fugitive Dust Emissions - Unpaved and Paved Roads

Company Name: **American Chemical Sevices, Inc.**
Address City IN Zip: **420 South Colfax Avenue, Griffith, Indiana 46319**
Permit Number: **089-20338**
Plt ID: **089-00020**
Reviewer: **Nathan C. Bell**
Date: **November 24, 2004**

Unpaved Roads at Industrial Site

The following calculations determine the amount of emissions created by unpaved roads, based on 8,760 hours of use and AP-42, Ch 13.2.2 (12/2003).

Vehicle Informtation (provided by source)

Type	Maximum vehicles per day (trip/day)	Maximum Weight (tons/vehicle)	Maximum vehicle-tons (ton/day)	Maximum One-Way Road Distance (mi/trip)	Maximum vehicle-miles (miles/day)
Car	26	3	78	0.48	12.48
Truck	5	38	190	0.48	2.4
Truck	1	40	40	0.48	0.48
Total	32		308		15.36

Average (Maximum) Vehicle Weight = 9.6 tons/vehicle
Average (Maximum) Miles Per Trip = 0.48 tons/vehicle

Maximum Vehicle Mile Traveled (VMT) Per Year (provided by source)
32 trip/day x 0.48 mile/trip x 2 (round trip) x 365 day/yr = 11213 miles per year

Ef = k*[(s/12)^a]*[(W/3)^b] (Equation 1a from AP-42 13.2.2)
where k = 1.5 lb/mi = particle size multiplier for PM-10 (k=4.9 for PM-30 or TSP) (AP-42 Table 13.2.2-2)
s = 5.1 % = mean percent silt content of typical unpaved roads from AP-42 Table 13.2.2-3
a = 0.9 = Constant for PM-2.5, PM-10 (a = 0.7 for PM-30 or TSP) (AP-42 Table 13.2.2-2)
W = 9.6 tons = average vehicle weight (provided by source)
b = 0.45 = Constant for PM-2.5, PM-10, or PM-30 (TSP) (AP-42 Table 13.2.2-2)

$$Ef = \frac{1.17 \text{ lb/mi} \times 11213 \text{ mi/yr}}{2000 \text{ lb/ton}} = 6.58 \text{ tons/yr}$$

Taking natural mitigation due to precipitation into consideration, Eext = E * [(365-p)/365] = 4.33 tons/yr
where p = 125 days of rain greater than or equal to 0.01 inches (see Fig. 13.2.2-1)

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (12/2003).

Vehicle Informtation (provided by source)

Type	Maximum vehicles per day (trip/day)	Maximum Weight (tons/vehicle)	Maximum vehicle-tons (ton/day)	Maximum One-Way Road Distance (mi/trip)	Maximum vehicle-miles (miles/day)
Car	26	3	78	0.06	1.56
Truck	5	38	190	0.06	0.3
Truck	1	40	40	0.06	0.06
Total	32		308		1.92

Average (Maximum) Vehicle Weight = 9.6 tons/vehicle
Average (Maximum) Miles Per Trip = 0.06 tons/vehicle

Maximum Vehicle Mile Traveled (VMT) Per Year (provided by source)
32 trip/day x 0.48 mile/trip x 2 (round trip) x 365 day/yr = 11213 miles per year

E = [k * (sL/2)^0.65 * (W/3)^1.5 - C] (Equation 1 from AP-42 13.2.1)
where k = 0.016 lb/mi = particle size multiplier for PM-10 (k=0.082 for PM-30 or TSP) (AP-42 Table 13.2.1-1)
W = 9.6 tons = average vehicle weight (provided by source)
C = 0.00047 lb/mi = Emission Factor for PM-10 from vehicle exhaust, brake wear, and tire wear (AP-42 Table 13.2.1-2)
sL (baseline) = 0.6 g/m^2 for 12 months (see AP-42 Table 13.2.1-3)
sL (winter) = 2.4 g/m^2 for 4 months (see AP-42 Table 13.2.1-3)
sL = 1.4 g/m^2 = Ubitiguous Silt Loading Values of typical paved roads (averaged for whole year)

$$E = \frac{0.01 \text{ lb/mi} \times 11213 \text{ mi/yr}}{2000 \text{ lb/ton}} = 0.08 \text{ tons/yr}$$

Taking natural mitigation due to precipitation into consideration, Eext = E * [(365-p)/365] = 0.05 tons/yr

Total Mitigated Fugitive Dust Emissions from Unpaved & Paved Roads = 4.4 tons/yr

Appendix A: Emissions Calculations
VOC, Particulate, HAPs
Emission Summary

Company Name: American Chemical Sevices, Inc.
Address City IN Zip: 420 South Colfax Avenue, Griffith, Indiana 46319
Permit Number: 089-20338
Plt ID: 089-00020
Reviewer: Nathan C. Bell
Date: November 24, 2004

		Potential Emissions (tons/year)			
Category	Pollutant	Process Equipment	Natural Gas Combustion	Fugitive Dust	**TOTAL**
Criteria Pollutants	PM		0.77	4.38	5.1
	PM10		0.87	4.38	5.2
	SO2		22.6		22.6
	NOx		13.4		13.4
	VOC	11.25	0.87		12.1
	CO		9.60		9.60
Hazardous Air Pollutants	Propionaldehyde	0.15			0.15
	Methanol	3.19			3.2
	Benzene		2.4E-04		2.4E-04
	Dichlorobenzene		1.4E-04		1.4E-04
	Formaldehyde		8.6E-03		8.6E-03
	n-Hexane	1.76	2.1E-01		2.0
	Toluene	6.15	3.9E-04		6.2
	Arsenic		1.8E-04		1.8E-04
	Beryllium		1.3E-04		1.3E-04
	Lead		4.3E-04		4.3E-04
	Cadmium		2.1E-04		2.1E-04
	Chromium		2.3E-04		2.3E-04
	Manganese		2.9E-04		2.9E-04
	Mercury		1.3E-04		1.3E-04
	Nickel		2.8E-04		2.8E-04
	Selenium		6.7E-04		6.7E-04
	HAP Totals	**11.25**	**0.22**	**0**	**11.5**
				Worst Single HAP	**6.2**