

STATE OF MISSOURI

PERMIT BOOK



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 032009-010 Project Number: 2007-11-032

Parent Company: Terra Bioenergy

Parent Company Address: 10 Westowne St. Building 10, Suite 1000, Liberty, MO 64068

Installation Name: Terra Bioenergy

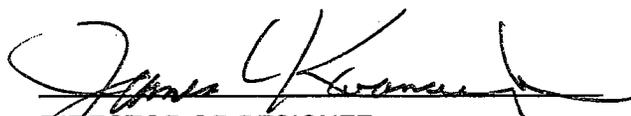
Installation Address: Stockyards Expressway and Bluffview Drive, St. Joseph, MO 64504

Location Information: Buchanan County, S31, T57N, R35W

Application for Authority to Construct was made for:
Increase biodiesel production capacity from 20 million gallons per year to 32.85 million gallons per year. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAR 16 2009
EFFECTIVE DATE


DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Terra Bioenergy
Buchanan County, S31, T57N, R35W

1. Control Equipment – Condenser/Scrubber System
 - A. The condenser/scrubber system must be in use at all times when the associated equipment is in operation and shall be operated and maintained in accordance with the manufacturer's specifications.
 - B. Terra Bioenergy, LLC shall monitor and record the temperature of the water into the condenser/scrubber at least once every twenty-four (24) hours. The condenser/scrubber input line shall be equipped with a gauge or meter that indicates this temperature. The temperature shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - C. Terra Bioenergy, LLC shall monitor and record the flow rate of the water at least once every twenty four (24) hours. The flow rate shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - D. Terra Bioenergy, LLC shall maintain an operating and maintenance log for the condenser/scrubber which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection
2. Fuel Oil Sulfur Content Restriction
 - A. The sulfur content of the fuel oil to be used for combustion shall not exceed 0.05% by weight. Terra Bioenergy shall obtain the sulfur content of the fuel oil for each fuel oil delivery from the fuel vendors or conduct their own fuel analysis to evaluate the typical sulfur content weight percent of the fuel oil. The fuel consumption records and statement shall be kept on-site for five (5) years and shall be made immediately available to the Missouri Department of Natural Resources' personnel upon request.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3. Cooling Tower Operating Requirements
 - A. The cooling tower(s) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specifications shall be kept on site and made readily available to Department of Natural Resources' employees.
 - B. The cooling water circulation rate shall not exceed 3,000 gallons per minute.
 - C. Terra Bioenergy shall keep records of the monthly and 12-month rolling averages of the amount of water circulated.
 - D. The drift loss from the towers shall not exceed 0.005 percent of the water circulation rate. Verification of drift loss shall be by manufacturer's guaranteed drift loss and shall be kept on site and made readily available to Department of Natural Resources' employees upon request.
 - E. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed a TDS concentration of 3,500 parts per million (ppm). A TDS sample shall be collected and the results recorded monthly to verify the TDS concentration.
 - F. The requirement for TDS sample collection may be eliminated or the frequency may be reduced upon written approval by the Air Pollution Control Program if TDS sampling results demonstrate compliance for 24 consecutive months.
4. Emergency Equipment Requirements
 - A. The operating hours of the emergency generator shall not exceed 500 hours in any consecutive 12-month period. To facilitate the record keeping for this condition, the emergency generator shall be equipped with a non-resettable running time meter.
 - B. The operating hours of the emergency fire pump shall not exceed 500 hours in any consecutive 12-month period. To facilitate the record keeping for this condition, the emergency generator shall be equipped with a non-resettable running time meter.
 - C. Attachment A or an equivalent form shall be used to record the hours of operation. Terra Bioenergy shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

upon request. These records shall include the operating hours for that month and the total hours of operation for the previous 12-month period.

- D. Terra Bioenergy shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten (10) days after the end of the month during which the records from Special Condition 4.C indicate that the source exceeds the Special Condition 4.A or 4.B.
5. **Control Device – Fabric Filter**
A fabric filter must be in use at all times when the silica handling equipment are in operation. The fabric filter shall be operated and maintained in accordance with the manufacturer's specifications.
6. **Best Management Practices**
Terra Bioenergy, LLC shall control fugitive emissions from all of the haul roads and stockpiles at this site by performing *Best Management Practices*, which include the usage of paving, chemical dust suppressants, or documented watering. These practices are defined in Attachment AA.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2007-11-032
Installation ID Number: 021-0120
Permit Number:

Terra Bioenergy
Stockyards Expressway and Bluffview Drive
St. Joseph, MO 64504

Complete: November 13, 2007
Reviewed: February 14, 2008

Parent Company:
Terra Bioenergy
10 Westowne St.
Building 10, Suite 1000
Liberty, MO 64068

Buchanan County, S31, T57N, R35W

REVIEW SUMMARY

- Terra Bioenergy has applied for authority to increase biodiesel production capacity from 20 million gallons per year to 32.85 million gallons per year.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are methanol and hexane.
- New Source Performance Standards (NSPS) apply to this installation. Specifically, 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, applies to the storage tanks. Subpart NNN, for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations, applies to the biodiesel plant. NSPS Subpart RRR, for VOC Emissions from SOCMI Reactor Processes, applies to the biodiesel plant. In addition, NSPS Subpart VV, for Equipment Leaks of VOC in the SOCMI, applies to the biodiesel plant. Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, of the New Source Performance Standards (NSPS) applies to the proposed boilers.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart FFFF, National Emission Standards for Miscellaneous Organic Chemical Production and Processes (MON) does not apply since the installation is not major for HAPs.
- A condenser/scrubber system is being used to control the VOC and HAP emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC and HAP are below de minimis levels.

- This installation is located in Buchanan County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2], Number 20, *Chemical Process Plants*.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the equipment as required by applicable NSPS.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

Terra Bioenergy, LLC (Terra) received a construction permit (Permit 042007-016) for the construction of a greenfield biodiesel production facility. The original capacity of the facility was 20 million gallons of biodiesel per year. Although some earthwork has begun under that construction permit, Terra has requested an increase in plant capacity to 32.85 million gallons of biodiesel per year, with the increase to full capacity occurring over the next one to five years.

In addition to soybean oil, animal fat will be used as raw material for production. Raw feedstock will be shipped in to the plant by rail or truck and stored in the storage tanks. Other vegetable oils may also be substituted.

Three reactors will be used to produce the biodiesel. As the methyl esters are separated from the glycerin, the excess unreacted methanol will be recovered and recycled back into the process. Emissions from all of the processing equipment will be vented to a single emission point and controlled/partially recovered by a condenser and scrubber in order to qualify as a de minimis source. If this plant were in the future to expand such that the HAPs were above major thresholds, 40 CFR Part 63, Subpart FFFF would apply.

Biodiesel and co-products will be loaded onto tank trucks and rail cars for transport offsite. However, potential emissions were determined assuming all materials being transported on or off-site (i.e. biodiesel, raw oils, and co-products) will be shipped by truck. Fugitive emissions from all haul roads will be controlled by documented watering or chemical dust suppressants. Both types of control have the same control efficiency for emissions calculations.

In the original permit, two 6 MMBTU per hour natural gas boilers were proposed. Terra is now proposing the construction of one larger boiler and one steam generator. The generator (4 MMBTU/hr) will combust natural gas only while the larger boiler (21 MMBTU/hr) will combust natural gas and liquid fuels such as off-spec biodiesel, vegetable oil, animal fat, free fatty acid, and #2 fuel oil. In addition, an emergency generator and fire pump will be available.

EMISSIONS/CONTROLS EVALUATION

The emission factors and control/recovery efficiencies used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, as well as from stack test data from a similar plant (by parent company name Soymor, in Albert Lea, MN). Storage tank emissions were estimated by using the EPA TANKS program Version 4.0.9d. The remaining emissions were calculated by using mass balances. Table 1 outlines the emission points, the maximum hourly design rates (MHDRs) and the source of emission factors.

Table 1: Biodiesel Plant Emission Points

Emission Point	Description	MHDR	Emissions Source
SV 001	Stack vent for biodiesel production process: reactors, separation, biodiesel washing, biodiesel vacuum drying, glycerin soap splitting, glycerin drying, and methanol rectification	3750 gallons	Scaled stack test
SV002a	Removed from application		
SV003a	Natural Gas Boiler	21 MMBTU/hr	AP 42 Section 1.4 and 1.3
SV004	Silica handling controlled by baghouse	82 lb	Vendor data
SV005	Vacuum pump for silica system	3750 gallon	Tanks estimation
SV006	Steam natural gas generator	4 MMBTU/hr	AP 42 Section 1.4 and 1.3
SV007	Emergency diesel engine	308 hp	AP 42 Section 1.4 and 1.3
SV008	Emergency diesel fire pump	190 hp	AP 42 Section 1.4 and 1.3
FS 001	Hotwell tank for moisture and hexane removed from oil	32,850,000 gallons	Mass Balance assuming all hexane is lost to atmosphere
FS 002 and FS 003	Haul road fugitive emissions	2640 ft	AP 42 Section 13.2.2
FS 004 and FS 005	Cooling towers (FS005a removed from application)	150,000 gallons	Mass balance assuming all dissolved solids in evaporation and drift water become PM10
FS 006	Loading rack fugitive emissions	N/A	AP 42 Section 5.2
FS 008	Equipment fugitive leaks	3,750 gallons	EPA Protocol for Equipment Leak Emission Estimates assuming maximum allowable methanol concentration per NSPS Subpart VV
TF5001	feedstock, animal fat	192,922 gallons	TANKS 4.0.9d
TF5002	feedstock, soy oil	108,518 gallons	
TS5101	feedstock mix tank	1,30,000 gallons	
TS51 02	feedstock mix tank	2,30,000 gallons	
TS5103	feedstock day tank	30,000 gallons	
TS51 04	biodiesel feed tank	30,000 gallons	
TS5704	ME biodiesel shift tank	1,30,000 gallons	
TS5705	ME biodiesel shift tank 2	30,000 gallons	
TS5801	FFA free fatty acid tank	10,000 gallons	
TS5803	soapstock tank	10,000 gallons	
TS5201	methanol storage tank	30,000 gallons	
TS5206	sodium methoxide storage	10,000 gallons	
TF5701	ME biodiesel storage tank	1,125,000 gallons	
TF5702	ME biodiesel storage tank 2	125,000 gallons	
TS5601	Crude glycerine storage	30,000 gallons	
TK023	TK023 off-spec fuel tank	58,750 gallons	
TK024	TK024 wastewater tank	46,685 gallons	
TK026	TK026 fuel oil, #2 distillate tank	11,800 gallons	

Prior to discharge through the stack vent (SV 001), the single emission point for the biodiesel process operations (EU 001-007), a scrubber/condenser system is utilized to capture methanol and recycle it for reuse in the process. The two stage condenser operates between 30-40°F to condense methanol from the process emission stream and send it back to the process. The second device is a wet circulating scrubber. In the original application, a vegetable oil based scrubber was proposed. However, due to changes in the design of this project, the scrubber medium was changed to water. The methanol dissolves into the water and is sent to methanol recovery. The biodiesel process collects emissions from seven emissions units venting to a single atmospheric duct system. The duct leads to the recovery devices. The main pollutant of concern is methanol, a HAP. When using a conservative approach the PTEs of total HAPs and methanol are above the de minimis levels. The expected PTE of the installation, however, is less than de minimis, which will be verified by record keeping required by NSPS Subparts NNN (for stack testing) and VV (for leak detection).

EU 001 – EU 007 include reactors, separation, biodiesel washing, biodiesel vacuum drying, glycerin soap splitting, glycerin drying, and methanol rectification. Emissions from these emission units are vented through a single stack, SV 001, and were calculated by doubling scaled rates of emissions from stack testing from a different plant (Soymor of Albert Lea, MN). Even at this rate, the plant will still be below de minimis levels for methanol.

Tanks will store raw materials, products, and wastewater in a secondary containment tank farm. All tanks are fixed roof style; some have conservation vents. A list of the tanks is located in Table 1.

Potential emissions of the application represent the potential of the controlled equipment, assuming continuous operation (8760 hours per year). This installation is considered a new installation. Therefore, there are no existing potential or actual emissions associated with this installation. The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (EIQ)	Potential Emissions of the Application*	New Installation Conditioned Potential
PM ₁₀	15.0	N/A	N/A	3.5	N/A
SO _x	40.0	N/A	N/A	0.4	N/A
NO _x	40.0	N/A	N/A	9.1	N/A
VOC	40.0	N/A	N/A	19.7	N/A
CO	100.0	N/A	N/A	10.1	N/A
Methanol	10	N/A	N/A	6.9	N/A
Total HAPs	25.0	N/A	N/A	16.2	N/A

N/A = Not Applicable

* Potential emissions are based upon controls. Uncontrolled HAP emissions are above de minimis levels.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of criteria air pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Terra Bioenergy shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Volatile Organic Liquid Storage Vessels*, 40 CFR Part 60, Subpart Kb.

- *New Source Performance Regulations, 10 CSR 10-6.070 – New Source Performance Standards (NSPS) for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations, 40 CFR Part 60, Subpart NNN.*
- *New Source Performance Regulations, 10 CSR 10-6.070 – New Source Performance Standards (NSPS) for VOC Emissions from SOCMI Reactor Processes, 40 CFR Part 60, Subpart RRR.*
- *New Source Performance Regulations, 10 CSR 10-6.070 – New Source Performance Standards (NSPS) for Equipment Leaks of VOC in the SOCMI, 40 CFR Part 60, Subpart VV.*
- *Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260*
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating, 10 CSR 10-3.060*

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Emily Wilbur
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 2, 2007, received November 13, 2007, designating Terra Bioenergy as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Kansas City Regional Office Site Survey, dated December 11, 2007.

Attachment AA: Best Management Practices (BMPs)- Construction Industry Fugitive Emissions

Construction Industry Sites covered by the Interim Relief Policy shall maintain Best Management Control Practices (BMPs) for fugitive emission areas at their installations when in operation. Options for BMPs are at least one of the following:

For Haul Roads:

1. Pavement of Road Surfaces –
 - A. The operator(s) may pave all or any portion of the haul roads with materials such as asphalt, concrete, and/or other material(s) after receiving approval from the program. The pavement will be applied in accordance with industry standards for such pavement so as to achieve “Control of Fugitive Emissions¹” while the plant is operating.
 - B. Maintenance and/or repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator(s) shall periodically water, wash and/or otherwise clean all of the paved portions of the haul road(s) as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

2. Usage of Chemical Dust Suppressants –
 - A. The operator(s) shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to all the unpaved portions of the haul roads. The suppressant will be applied in accordance with the manufacturer’s suggested application rate (if available) and re-applied as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
 - B. The quantities of the chemical dust suppressant shall be applied, re-applied and/or maintained sufficient to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator(s) shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.

3. Usage of Documented Watering –
 - A. The operator(s) shall control the fugitive emissions from all the unpaved portions of the haul roads at the installation by consistently and correctly using the application of a water spray. Documented watering will be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating. For example, the operator(s) shall calculate the total square feet of unpaved vehicle activity area requiring control on any particular day, divide that product by 1,000, and multiply the quotient by 100 gallons for that day.
 - B. The operator(s) shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on day(s) the plant is in operation (e.g., meteorological situations, precipitation events, freezing, etc.)
 - C. Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the plant is operating.
 - D. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. The operator(s) shall record a brief description of such events in the same log as the documented watering.
 - E. The operator(s) shall record the date and the amount of water applied for each application on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department

¹ For purposes of this document, Control of Fugitive Emissions means to control particulate matter that is not collected by a capture system and visible emissions to the extent necessary to prevent violations of the air pollution law or regulation. (Note: control of visible emission is not the only factor to consider in protection of ambient air quality.)

For Vehicle Activity Areas around Open Storage Piles:

1. Pavement of Stockpile Vehicle Activity Surfaces –
 - A. The operator(s) may pave all or any portion of the vehicle activity areas around the storage piles with materials such as asphalt, concrete, and/or other material(s) after receiving approval from the program. The pavement will be applied in accordance with industry standards for such pavement so as to achieve control of fugitive emissions while the plant is operating.
 - B. Maintenance and/or repair of the road surface will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator(s) shall periodically water, wash and/or otherwise clean all of the paved portions of the vehicle activity areas around the storage piles as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

2. Usage of Chemical Dust Suppressants –
 - A. The operator(s) shall apply a chemical dust suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) to all the vehicle activity areas around the open storage piles. The suppressant will be applied in accordance with the manufacturer's suggested application rate (if available) and re-applied as necessary to achieve control of fugitive emissions from these areas while the plant is operating.
 - B. The quantities of the chemical dust suppressant shall be applied, re-applied and/or maintained sufficient to achieve control of fugitive emissions from these areas while the plant is operating.
 - C. The operator(s) shall record the time, date and the amount of material applied for each application of the chemical dust suppressant agent on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.

3. Usage of Documented Watering –
 - A. The operator(s) shall control the fugitive emissions from all the vehicle activity areas around the storage piles at the installation by consistently and correctly using the application of a water spray. Documented watering will be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of vehicle activity areas around the storage piles as necessary to achieve control of fugitive emissions from these areas while the plant is operating. (Refer to example for documented watering of haul roads.)
 - B. The operator(s) shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on day(s) the plant is in operations (e.g., meteorological situations, precipitation events, freezing, etc.)
 - C. Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the plant is operating.
 - D. Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. The operator(s) shall record a brief description of such events in the same log as the documented watering.
 - E. The operator(s) shall record the date and the amount of water applied for each application on the above areas. The operator(s) shall keep these records with the plant for not less than five (5) years, and the operator(s) shall make these records available to Department of Natural Resources personnel upon request.

Mr. David Holcombe
C.E.O.
Terra Bioenergy LLC
10 Westowne St., Building 10, Suite 1000
Liberty, MO 64068

RE: New Source Review Permit - Project Number: 2007-11-032

Dear Mr. Holcombe:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Emily Wilbur at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH: ewl

Enclosures

c: Kansas City Regional Office
PAMS File: 2007-11-032

Permit Number: