

STATE OF MISSOURI



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: 082009-001 Project Number: 2009-06-038

Parent Company: Producers' Choice Soy Energy, LLC

Parent Company Address: 607 Fowler Road, Moberly, MO 65270

Installation Name: Producers' Choice Soy Energy, LLC

Installation Address: 607 Fowler Road, Moberly, MO 65270

Location Information: Randolph County, SW1/4, S25, T54N, R14W

Application for Authority to Construct was made for:
Installation of 10 million gallon biodiesel facility and a 250 ton per day soybean crushing plant. 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.

AUG - 4 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/18 months 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/18 months 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 Departments' 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 within 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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Project No.	2009-06-038

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."

Producers' Choice Soy Energy, LLC
Randolph County, SW1/4, S25, T54N, R14W

1. PM₁₀ Emission Limitation
 - A. Producers' Choice Soy Energy, LLC shall emit less than 15.0 tons of particulate matter less than ten (10) microns in diameter (PM₁₀) in any consecutive 12 month period from the entire installation as described in Table 2.
 - B. Producers' Choice Soy Energy, LLC shall maintain an accurate record of PM₁₀ emitted into the atmosphere from the entire installation. Attachment A or an equivalent form shall be used for this purpose. Producers' Choice Soy Energy, LLC 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 upon request.
 - C. Producers' Choice Soy Energy, LLC 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 Number 1B indicate that the source exceeds the limitation of Special Condition Number 1A.

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SPECIAL CONDITIONS:

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

2. Cyclone Dust Collection

A. Producers' Choice Soy Energy, LLC shall control emissions from the equipment listed below using cyclone dust collection to control the PM₁₀ emissions from these sources as specified in the permit application and must be in use at all times when this plant is in operation and shall be operated and maintained in accordance with the manufacturer's specifications

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
CD - 1.	EP-09	Soybean cleaning
CD - 2.	EP-11	Drying – fluid Bed # 1
CD - 3.	EP-12	Cracker/Dehulling
CD - 4.	EP-13	Drying – fluid Bed # 2
CD - 5.	EP-14	Cake breaker
CD - 6.	EP-19	Cake cooler
CD - 7	EP-17	Meal handling
CD - 8	EP-10	Hull grinding

B. Producers' Choice Soy Energy, LLC shall maintain an operating and maintenance log for the cyclone that shall include the following:

- 1) Incidents of malfunction: with impact on emissions, duration of event, probable cause and corrective actions
- 2) Maintenance activities: with inspection schedule, repair actions and replacements, etc

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 57,000 gallons per hour in any 12-month period.
- C. Producers' Choice Soy Energy, LLC 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 0.02 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.

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SPECIAL CONDITIONS:

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

- E. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed a TDS concentration of 12,000 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. Solvent/Housekeeping Condition
Producers' Choice Soy Energy, LLC shall keep solvents and cleaning solutions in sealed containers whenever the materials are not in use. Producers' Choice Soy Energy, LLC shall provide and maintain suitable, easily read, permanent markings on all solvent and cleaning solution containers used with this equipment.

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

Project Number: 2009-06-038
Installation ID Number: 175-0076
Permit Number:

Producers' Choice Soy Energy, LLC
607 Fowler Road
Moberly, MO 65270

Complete: July 21, 2009

Parent Company:
Producers' Choice Soy Energy, LLC
607 Fowler Road
Moberly, MO 65270

Randolph County, SW1/4, S25, T54N, R14W

REVIEW SUMMARY

- Producers' Choice Soy Energy, LLC has applied for authority to construct a 10 million gallon biodiesel facility and a 250 ton per day soybean crushing plant.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. The HAP of concern from this process is methanol.
- 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 Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, of the New Source Performance Standards (NSPS) applies to the proposed boiler. 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.
- 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.
- Cyclones are being used to control the PM₁₀ 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 PM₁₀ are conditioned to de minimis levels.

- This installation is located in Randolph 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 conditioned to de minimis levels.
- Emissions testing is required for the source as required by applicable NSPS and MACT.
- 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

Producers' Choice Soy Energy, LLC submitted a construction permit application for the construction of a ten (10) million gallon per year biodiesel production plant and a soybean crushing/processing plant at 607 Fowler Road, Moberly, Randolph County, Missouri. The soybean crushing facility will have the capacity to process 250 tons/day of soybeans (producing 65,000 tons per year of soybean meal) based on twenty-four hours a day of operation

Crushing Plant

The crushing facility consists of soybean, soybean hull, and soybean meal storage, material transfer, drying, and cracking/dehulling. Soybeans are received by truck and unloaded onto the open pit. From the pit, the soybeans are transferred to a storage silo and then to the crushing facility. The crushing facility produces crude oil, bean meal, and bean hulls. The bean meal and hulls are transferred into storage silos. The extraction of the oil from the soybeans is a mechanical process, and does not involve the use of any solvents. The extracted crude oil is transferred to a degumming process before it enters the biodiesel plant. The degumming process uses sodium hydroxide (NaOH) and acid (stored in totes) to remove impurities from the crude soy oil. The breakdown of soybean meal, soybean hulls, and soy oil produced by weight is 80 percent, 10 percent, and 5 percent, respectively

Air pollution control equipment includes cyclones for particulate control at the soybean crushing facility.

Biodiesel Plant

The biodiesel plant includes chemical reaction vessels, soy oil storage tanks, methanol storage tanks, glycerine storage tanks, biodiesel storage tanks and other process equipment. Although the primary feedstock for the biodiesel plant is the soy oil from the

adjacent soybean processing/degumming plant, other feedstock, such as animal fat may be used. The biodiesel at this facility is produced from the base-catalyzed transesterification of soy oil with methanol. Glycerine is the by-product of this process. Excess methanol is recovered by a methanol recovery system that includes a cooling tower. Most of the plant is under a vacuum. There is no vent and there is no vaporized methanol being released from the system. There are emergency release valves but that is it. There are six distillation columns that are capturing all the methanol and putting it back into the system. A natural gas hot oil boiler is utilized in the methanol recovery system process.

No permits have been issued to Producers' Choice Soy Energy, LLC from the Air Pollution Control Program.

This is a Greenfield installation with no existing emissions.

EMISSIONS/CONTROLS EVALUATION

Crushing Plant

PM₁₀ is the main pollutant expected from the processes at the crushing plant. Emissions from the crushing plant were calculated using AP-42, Section 9.9.1 *Grain Elevators and Processes* and Section 9.11.1, *Vegetable Oil Processing*. Fugitive PM₁₀ emissions from the haul road are also expected. The haul road will not be paved at this time but may be paved in the future.

The degumming process uses a natural gas fueled hot water boiler to heat the crude soy oil. Natural gas combustion emissions were calculated using AP-42, Section 1.4, *Natural Gas Combustion*. No other emissions besides those from the natural gas combustion are expected from the degumming process.

Natural gas combustion emissions are also expected from the two fluid bed dryers.

Biodiesel Plant

Methanol is the main pollutant expected from the biodiesel plant. The methanol emissions will come primarily from the tank farm and equipment leaks. Tank emissions were calculated using EPA's TANKS 4.09D. Emissions from fugitive equipment leak were calculated using emission factors and control efficiencies from *Protocol for Leak Emission Estimates*, EPA-453/R-95-017, November 1995. PM₁₀ emissions from the cooling tower were calculated using AP-42 Section 13.4, *Wet Cooling Towers*. Combustions emissions from the hot oil boiler were calculated using AP-42, Section 1.4, *Natural Gas Combustion*.

The installation voluntarily requested 15.0 tons per year limit for PM₁₀ in order to be *de minimis* source under 10 CSR 10-6.060 section (5) in order to avoid dispersion modeling and increment analysis

Table 1 outlines the new emission points, the maximum hourly design rates (MHDR) and the source of emission factors.

Table 1: Biodiesel Plant Emission Points

Emission Point	Description	MHDR	Emissions Source
EP01	Soybean Crush Plant Hot Water Boiler	0.395 MMBTU/hr	SCC 10200603
EP02	Soybean Crush Plant Fluid Bed # 1 – Combustion Emissions	2.0 MMBTU/hr	SCC 10200603
EP03	Soybean Crush Plant Fluid Bed # 2– Combustion Emissions	3.5 MMBTU/hr	SCC 10200603
EP04	Biodiesel Hot Oil boiler	10.5 MMBTU/hr	SCC 10200602
EP05	Soybean receiving pit	10.42 tons/hr	AP-42 Section 9.9.1
EP06	Soybean handling to bin	10.42 tons/hr	AP-42 Section 9.9.1
EP07	Storage bin vents	10.42 tons/hr	AP-42 Section 9.9.1
EP08	Soybean handling to cleaning	10.42 tons/hr	AP-42 Section 9.9.1
EP09	Soybean cleaning	10.42 tons/hr	AP-42 Section 9.9.1
EP10	Hull grinding	1.56 tons/hr	AP-42 Section 9.11.1
EP11	Drying – fluid Bed #1 – Process Emissions	10.42 tons/hr	AP-42 Section 9.9.1
EP12	Cracker/Dehulling	10.42 tons/hr	AP-42 Section 9.11.1
EP13	Drying – Fluid Bed # 2 Process Emissions	10.42 tons/hr	AP-42 Section 9.9.1
EP14	Cake breaker	10.42 tons/hr	AP-42 Section 9.9.1
EP15	Cake cooler	10.42 tons/hr	AP-42 Section 9.11.1
EP16	Cake grinder	10.42 tons/hr	AP-42 Section 9.11.1
EP17	Meal handling	8.33 tons/hr	AP-42 Section 9.9.1
EP18	Storage bin vents	9.90 tons/hr	AP-42 Section 9.9.1
EP19	Meal loadout	8.33 tons/hr	AP-42 Section 9.11.1
EP20	Fugitive Emissions from Equipment leaks		EPA Protocol for Leak Emission Estimates, EPA-453/R-95-017, November 1995, Tables 2-1 and 5-2
EP21	Cooling Tower	950 gallons/hr	Cycles of concentration are unknown, therefore, the PM ₁₀ emission factor from AP-42, Table 13.4-1, SCC 3-85-001-01 will be used
HR-01	Haul Road # 1	436.6 VMT/year	AP-42 Section 13.2.2
HR-02	Haul Road # 2	1123.3 VMT/year	AP-42 Section 13.2.2
RTF-T-401	Methanol Storage tank	30,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-301	Methylate Storage tank	12,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-201	Bulk Glycerin Tank	30,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-101	Biodiesel Storage Tank # 1	40,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-102	Biodiesel Storage Tank # 2	40,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-103	Biodiesel Storage Tank # 3	40,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-101	Raw Feed Oil # 1	40,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-102	Raw Feed Oil # 2	40,000 gallons (capacity)	TANKS 4.0.9 Data
RTF-T-103	Raw Feed Oil # 3	40,000 gallons (capacity)	TANKS 4.0.9 Data

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year).

The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (EIQ)	Potential Uncontrolled Emissions of the Application (Tons/year)	Potential Controlled Emissions (Tons/year)	New Installation Conditioned Potential (Ton/year)
PM ₁₀	15.0	N/A	N/A	115.8505	43.48	< 15.0
SO _x	40.0	N/A	N/A	N/A	N/A	N/A
NO _x	40.0	N/A	N/A	0.66	N/A	N/A
VOC	40.0	N/A	N/A	30.1386	N/A	N/A
CO	100.0	N/A	N/A	0.55	N/A	N/A
* HAPs	10.0/25.0	N/A	N/A	30.0986	6.44	N/A

N/A = Not Applicable

***All HAPs emissions are methanol**

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 PM₁₀ are conditioned to de minimis levels.

APPLICABLE REQUIREMENTS

Producers' Choice Soy Energy, LLC 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 June 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

- *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.*
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating, 10 CSR 10-3.060*
- *Restriction of Emission of Particulate Matter From Industrial Processes, 10 CSR 10-6.400*

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.

Samer Al-Shoukhi
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated June 10, 2009, received June 12, 2009, designating Producers' Choice Soy Energy, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Mr. Roger Smith
Operations Manager
Producers' Choice Soy Energy, LLC
607 Fowler Road
Moberly, MO 65270

RE: New Source Review Permit - Project Number: 2009-06-038

Dear Mr. Smith:

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 Samer Al-Shoukhi, at the Departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, by telephone at (573) 751-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:sak

Enclosures

c: Northeast Regional Office
PAMS File: 2009-06-038

Permit Number: