

PERMIT BOOK

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:

022013-005

Project Number: 2012-08-016

Installation Number: 095-2436

Parent Company: Paseo-Cargill Energy, LLC

Parent Company Address: 2111 Nicholson Ave., Kansas City, MO 64120

Installation Name: Paseo-Cargill Energy, LLC

Installation Address: 2111 Nicholson Ave., Kansas City, MO 64120

Location Information: Jackson County, S33, T40N, R33W

Application for Authority to Construct was made for:

The expansion of an existing biodiesel production plant from 46 MMgal/yr to 65.5 MMgal/yr. 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.

FEB 28 2013

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 these air contaminant sources. The information must be made available within 30 days of actual startup. 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 these air contaminant sources.

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 sources(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."*

Paseo-Cargill Energy, LLC  
Jackson County, S33, T40N, R33W

1. **Superseding Condition**  
The conditions of this permit supersede all of the special conditions found in the previously issued construction permit No. 1185 issued by the Kansas City Health Department.
2. **Production limit**
  - A. Paseo-Cargill Energy, LLC shall limit its biodiesel production to less than 65.5 MMgal per rolling 12-month period.
  - B. To demonstrate compliance with Special Condition 2.A., Paseo-Cargill Energy, LLC shall keep a record of the amount of biodiesel produced per rolling 12-month period using Attachment A, or other equivalent forms.
3. **Haul Road Control**
  - A. Paseo-Cargill Energy, LLC shall control fugitive emissions from all of the haul roads at this site by paving and washing/cleaning of the haul roads.
  - B. Paseo-Cargill Energy, LLC shall pave the haul roads with asphalt, concrete or other materials approved by the Air Pollution Control Program. The pavement shall be applied in accordance with industry standards for such pavement so as to achieve control of fugitive emissions while the plant is operating.
  - C. Maintenance and/or repair of the road surface shall 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.
  - D. Paseo-Cargill Energy, LLC shall maintain, water, wash, and/or otherwise clean all of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

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#### SPECIAL CONDITIONS:

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

4. Control Device Requirement - Enclosed Flare
  - A. Paseo-Cargill Energy, LLC shall control emissions from all of the process vents (no. 1-6, 10) using an enclosed flare as specified in the permit application.
  - B. The enclosed flare shall be operated and maintained in accordance with the manufacturer's specifications. A heat sensing device (i.e. ultra-violet beam sensor or thermocouple) or equivalent device(s) shall be installed to indicate the continuous presence of the flame.
  - C. The enclosed flare shall be equipped with a monitoring device that continuously indicates and records the combustion temperature of the enclosed flare. The monitoring device shall have accuracy within  $\pm 1$  percent of the temperature being measured. These gauges or meters shall be located such that the Department of Natural Resources employees may easily observe them.
  - D. The operating temperature of the enclosed flare shall be maintained on a rolling 3-hour average to be no less than 50 degrees Fahrenheit below the average temperature of the enclosed flare recorded during the compliance test specified in Special Condition 5, which demonstrates compliance with the minimum destruction efficiency. The acceptable temperature range may be re-established by performing new emission tests.
  - E. Paseo-Cargill Energy, LLC shall maintain an operating and maintenance log for the flare 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.
5. Performance Testing
  - A. Paseo-Cargill Energy, LLC shall perform stack testing on the enclosed flare to ensure a minimum VOC destruction efficiency of 99.1%.
  - B. An initial test shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after the date of permit issuance. Thereafter, a new test shall be performed between 60 days before and 60 days after five (5) years from the date of the most recent stack test.

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**SPECIAL CONDITIONS:**

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

- C. A completed Proposed Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
  - D. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
  - E. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
  - F. If the results of the performance tests show that the destruction efficiency of the flare is less than 99.1% as given in Special Condition No. 5.A., then Paseo-Cargill Energy, LLC shall evaluate what effects these results would have had on the permit applicability, modeling applicability, and the emissions inventory. Paseo-Cargill Energy, LLC shall submit to the Air Pollution Control Program the results of any such evaluation in a completed Application for Authority to Construct within 30 days of submitting the test reports required in Special Condition 5.D.
6. Control Device – Condenser/Scrubber System
- A. Paseo-Cargill Energy, LLC shall control emissions from the transesterification and separator tanks using a condenser/scrubber system as specified in the permit application.
  - B. Emissions from the condenser/scrubber system shall be ducted to the flare required in Special Condition 4.A.
  - C. The scrubber shall be equipped with a continuous internal pressure monitor that indicates the pressure drop across the scrubber and a water flow meter that indicates the water flow through the scrubber. This gauge and meter shall be located in a way they may be easily observed by Department of Natural Resources employees.

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#### SPECIAL CONDITIONS:

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

- D. Paseo-Cargill Energy, LLC shall monitor and record the operating pressure drop and the water flow rate through the scrubber at least once every twenty-four (24) hours. The operating pressure drop and the water flow rate shall be maintained within the design conditions specified by the manufacturer's performance warranty. A copy of the manufacturer's performance warranty shall be kept onsite and be made readily available to Department of Natural Resources employees upon request.
- E. Paseo-Cargill Energy, LLC shall maintain an operating and maintenance log for the condenser/scrubber system 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.; and
  - 3) A written record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that results from that inspection.
- 7. Cooling Tower Operating Requirements
  - A. The cooling tower(s) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specification shall be kept onsite and made readily available to Department of Natural Resources' employees upon request.
  - B. The cooling water circulation rate shall not exceed 180,000 gallons per hour for each cooling tower. Each tower shall be equipped with a gauge or meter, which indicates the flowrate. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them. Paseo-Cargill Energy, LLC shall keep records onsite of the monthly and the 12-month rolling averages of the amount of cooling water circulated.
  - C. The drift loss from the towers shall not exceed 0.005% of the water recirculation rate. Verification of the drift loss shall be by manufacturer's guaranteed drift loss and shall be kept onsite 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:

- D. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed 2,500 ppm. A TDS sample shall be collected each month for the tower system and the results recorded to verify the TDS concentration. Monthly sampling cannot occur within 48 hours of each sampling event.
  - E. The requirements for monthly TDS sample collection may be eliminated or the frequency reduced upon written approval by the Air Pollution Control Program if TDS sampling results demonstrate compliance for twenty-four (24) consecutive months.
8. Record Keeping and Reporting Requirements
- A. Paseo-Cargill Energy, LLC shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS for all materials used
  - B. Paseo-Cargill Energy, LLC shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

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

Project Number: 2012-08-016  
Installation ID Number: 095-2436  
Permit Number:

Paseo-Cargill Energy, LLC  
2111 Nicholson Ave.  
Kansas City, MO 64120

Complete: August 8, 2012

Parent Company:  
Paseo-Cargill Energy, LLC  
2111 Nicholson Ave.  
Kansas City, MO 64120

Jackson County, S33, T40N, R33W

REVIEW SUMMARY

- Paseo-Cargill Energy, LLC has applied for authority to expand its existing biodiesel plant from 46 MMgal/yr to 65.5 MMgal/yr by adding a pre-dryer (a falling-film heat exchanger heated by steam) and a number of valves, pumps and connectors. Paseo-Cargill Energy, LLC has also asked to remove the following condition from the previous permit (No. 1185) issued to the installation – 1) the limit on the amount of feedstock that can come from the neighboring soybean processing plant, 2) the requirement that the flare must be operated in accordance with 40 CFR 60.18, and 3) the requirement to conduct n-hexane testing of the soybean oil feedstock.
- HAP emissions are expected from the proposed equipment, but only in amounts less than their respective SMAL. The HAP of concern from this process is methanol.
- The following NSPS subparts apply to this installation.
  - Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations.*
  - Subpart RRR, *Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes*
  - Subpart VV, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006*
  - Subpart VVa, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, of the NSPS apply to the equipment of this installation.*

- Subpart F, *National Emissions Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry*, of the MACT does not apply to this installation because it is not a major source of HAP and it does not manufacture as a primary product any of the chemicals listed in the subpart. Glycerol is a listed chemical in this subpart and the installation does manufacture glycerol. However, it is not a primary product.
- Subpart G, *National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater*, and Subpart H, *National Emission Standard for Organic Hazardous Air Pollutants for Equipment Leaks*, of the MACT do not apply to equipment at this installation because these subparts only apply to sources that are also subject to MACT Subpart F.
- Subpart GGG, *National Emission Standards for Hazardous Air Pollutants for Source Categories: Pharmaceutical Production*, of the MACT does not apply to this installation because the glycerin production equipment does not process, use or produce HAP.
- Subpart VVVVVV, *National Emission Standards for Hazardous Air Pollutants: Chemical Manufacturing Area Sources*, of the MACT does not apply to this installation because no HAPs listed in Table 1 of the subpart are present in feedstocks or are generated or produced in the biodiesel production or glycerin purification processes.
- Subpart BBBB BBB, *National Emissions Standards for Hazardous Air Pollutants for Area sources: Chemical Preparation Industry*, does not apply to this installation because the facility does not use or manufacture any intermediates or products containing target HAPs defined in this subpart.
- None of the NESHAPs apply to this installation.
- An enclosed flare and a scrubber/condenser system are 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 all pollutants are below *de minimis* levels.
- This installation is located in Jackson County, a maintenance area for ozone and an attainment area for all other criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2, Number 20, *Chemical Process Plants*. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below *de minimis* levels.
- Emissions testing are required for the equipment.
- A Basic Operating Permit application is required within 30 days after permit issuance.
- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

Paseo-Cargill Energy, LLC owns and operates an existing biodiesel production plant with an associated glycerin purification process in Kansas City. The plant receives soybean oil by pipeline, rail or truck. Methanol is added to the oil to produce an ester-rich phase and a glycerin-rich phase. The ester-rich phase is washed with hydrogen chloride to produce a methanol-containing aqueous solution (called wash water) and wet mono-alkyl methyl esters. The methyl esters are dried to produce biodiesel.

The glycerin rich phase is combined with the wash water and sent to a distillation unit to recover the methanol. The glycerin water is then further refined into concentrated glycerin for storage and sale. The raw glycerin can also be fed into a pharmaceutical glycerin process to produce pharmaceutical grade glycerin. A 2.93 MMBtu/hr natural gas boiler is being used to supply steam for the deodorizer unit and a 8.16 MMBtu/hr boiler is being used to supply steam for glycerin distillation. An enclosed flare is being used to control emissions from the process vents. A scrubber/condenser system is also used to control emissions from process vent no. 1 before the emissions are routed to the flare.

The installation is a minor source for construction permits. The following New Source Review permits have been issued to Paseo-Cargill Energy, LLC from the Air Pollution Control Program.

**Table 1: Permit History**

Permit Number	Description
1185	New biodiesel plant.
1209	Two natural-gas boilers

When the biodiesel plant was first permitted, the nearby Cargill soybean extraction plant and the biodiesel plant were determined to be separate installations. In order for two plants to be considered the same installation, the plants must meet all of the following criteria: Have the same SIC code, be under common control, and be on contiguous or adjacent properties. If two plants do not fall under the same primary SIC code, this condition can still be satisfied if the two plants have a supporting relationship. The Cargill soybean extraction plant and the biodiesel plant are on adjacent properties and were considered to be under common control during the initial determination. However, they do not have the same SIC code. The soybean plant falls under SIC code 2075 and the biodiesel plant falls under SIC code 2869. The question is whether the soybean

plant can be considered a support facility to the biodiesel plant since it provides the soybean oil used by the biodiesel plant.

In Permit No. 1185, the Kansas City Health Department limited the biodiesel plant to a maximum of 46 MMgal/yr of oil from the soybean extraction plant. This limit kept the extraction plant from being considered a support facility for the biodiesel plant because the extraction plant would be sending less than 50% of its soybean oil to the biodiesel plant. However, with the expansion of the biodiesel plant, this limit must be removed to allow for the extra production. As a result, there is now a question of whether the two facilities should now be considered the same installation, and a new analysis was performed.

The new analysis also shows that the facilities should be considered separate installations. First, while Cargill, Inc. owns 100% of the soybean extraction plant, it shares ownership of the biodiesel plant with two other entities: Paseo Biofuels (52%) and the Missouri Soybean Association (1%). This new information suggests that the facilities are not under common control. Secondly, the value of the meals, hull and the soybean oil sold to other companies are much higher than the value of the fuel produced by the biodiesel plant (62.2% to 37.8%). Therefore, the biodiesel fuel should not be considered the primary product and the soybean plant cannot be considered a support facility that aids in the production of the primary product.

## PROJECT DESCRIPTION

Paseo-Cargill biodiesel plant is proposing an expansion project that will allow the facility to increase its biodiesel production from 46 MMgal/yr to 65.5 MMgal/yr. The increase in production is accomplished by adding a predryer (a falling-film heat exchanger heated by steam) and a number of valves, pumps and connectors.

The facility also requested that the following special conditions in a previously issued permit (No. 1185) be eliminated.

### Limit on Feed Stock from Cargill's Soybean Extraction Plant

In permit 1185, Special Condition I.2. and I.3. limited the biodiesel plant to a maximum of 46 MMgal/yr of biodiesel produced and 46 MMgal/yr of oil supplied by the neighboring soybean extraction plant, respectively. These limits must be removed to allow for the plant expansion.

### Flare Requirements

Special Condition II.A.1 of Permit No. 1185 requires the biodiesel plant to combust non-fugitive emissions from the process using a flare that meets the requirements of 40 CFR 60.18. However, the facility operates an enclosed flare and it is not possible for an enclosed flare to operate in a manner consistent with the requirements in 40 CFR 60.18. This was confirmed in various determinations (control numbers 0000019 and M000002) made by Region 6 of the EPA which concluded that an enclosed flare is not the type of flare that is regulated by the open-flame flare specifications in 40 CFR 60.18.

Therefore, the special conditions regarding the operation of the flare have been rewritten to not include the reference to 40 CFR 60.18.

Furthermore, Special Condition II.A.8, requires that stack tests be performed annually, but that after the third annual test, Paseo-Cargill Energy, LLC may request a review on whether continued testing is required. The facility has performed four stack tests and has asked to discontinue testing. However, out of the previous four tests, only one (initial test performed in 2008) can and has been accepted by the Air Pollution Control Program. The other three tests cannot be accepted due to errors made during the stack testing procedure (see letter from Ms. Darcy Bybee, Chief of Compliance/Enforcement, to Mr Jeff Ording of Paseo-Cargill Energy, LLC on April 16, 2012). Therefore, the stack testing requirements cannot be eliminated. However, the testing frequency has been reduced from an annual test to once every five (5) years. Also, Special Condition II.A.5 requires that the tests show a minimum destruction efficiency of 98%. However, with the expansion, using a destruction efficiency of 98% would increase emissions of methanol to greater than the major source level of 10.0 tons per year. In order to remain a minor source for HAPs, the facility agreed to perform stack tests to ensure a minimum destruction efficiency of 99.1%.

#### N-Hexane Testing and Recordkeeping Requirements

Special Condition I.4. of Permit No. 1185 requires that Paseo-Cargill Energy, LLC limit its n-hexane emissions to less than 10 tpy in any consecutive 12-month period. N-hexane emissions are expected from soybean oil storage because soybean oil contains n-hexane leftover from the oil production process. Special Condition IV.D. in this permit also requires that Paseo-Cargill conduct weekly testing of the n-hexane in the crude oil or provide supplier certification as to the n-hexane content. Paseo-Cargill Energy, LLC currently conducts testing and uses the results of the testing to compute the 12-month rolling n-hexane emissions. The calculation involves using mass balance assuming 100% of the hexane in the oil are emitted. Based on this approach, the highest rolling 12-month total of n-hexane emissions since the plant started operating was 0.21 tpy, which occurred in November, 2010.

Furthermore, the facility calculated the potential emissions of n-hexane using the EPA TANKs program and historical data on the solvent content in soybean oil. The concentration of the solvent in soybean oil was obtained from oil that has been received by Cargill's soybean oil refinery located in Wichita, KS, which processes crude soybean oil from a variety of suppliers, including the soybean oil plant located next to this biodiesel plant. The maximum solvent content observed in the previous ten years was 339 ppm. This concentration was doubled to give a very conservative estimate of the maximum solvent concentration of the crude oil. Using the TANKs program, the potential emissions of solvents were calculated to be less than 1 ton per year. Considering that the solvent includes not only n-hexane but also other hexane isomers, the actual potential emissions of n-hexane should be even lower. Based on this calculation, the potential emissions of n-hexane are expected to be much less than 10.0 tons per year and Special Condition I.4 and IV.D. are superseded.

## EMISSIONS/CONTROLS EVALUATION

Particulate emissions from the haul roads were calculated using the paved haul road equation in the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 13.2.1, *Paved Roads*, (1/11). Particulate emissions from the cooling towers were calculated using mass balances with the maximum recirculation rate, the drift rate, and the total dissolved solids (TDS). The VOC emissions from the valves, pump seals, connectors, sample connections, the pressure relief valves and the agitators were calculated using the emission factors from Table 2-1 of the *Protocol for Equipment Leak Estimates*, (11/95). Because the facility is required to install a Leak and Detection Repair Program (LDAR) based on NSPS subpart VV, the screening emission factor with VOC concentration less than 10,000 ppm was used. All of the VOC were also assumed to be methanol, a HAP.

Combustion emissions, including PM<sub>2.5</sub>, PM<sub>10</sub>, PM, NO<sub>x</sub>, SO<sub>x</sub>, VOC, CO, n-hexane, CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O from the flare, the pre-heater and the boilers were calculated using emission factors in AP-42, Section 1.4, *Natural Gas Combustion*, (7/98). GHG mass emissions were calculated by adding the CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions. The CO<sub>2</sub>e emissions were calculated by multiplying the CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions by their respective 100 year GWP and adding the results. The fugitive VOC emissions from biodiesel loadout were calculated from equation (1) in AP-42, Section 5.2, *Transportation and Marketing of Petroleum Liquid*, (1/95). Particulate emissions from the diatomaceous earth (DE) transfer were calculated using the drop point equation in AP-42, Section 13.2.4, *Aggregate Handling and Storage Piles*, (11/06).

VOC and methanol emissions from the process vents were estimated using manufacturer's design data and based on mass balances. Emissions from the vents were controlled by an enclosed flare, which was given a control efficiency of 99.1%. The facility is required to perform stack testing to verify this control efficiency. Emissions from Vent No. 1 also passes through a scrubber/condenser system before being routed through the flare. No control device efficiency was used for the scrubber/condenser system as the emissions were calculated using manufacturer's data.

The following table provides an emissions summary for this project. The emissions increase from a project involving existing equipment is normally calculated using the post-project potential emissions minus the baseline actual emissions (BAE). However, using the post-project potential emissions alone did not change the type of review required for this project. Therefore, the BAE were not used, and the PTE of the application are also the PTE of the entire installation. Existing potential emissions were taken from Permits No. 1185 and 1209. Existing actual emissions were taken from the installation's 2011 EIQ.

**Table 2: Emissions Summary (tons per year)**

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2011 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/D	N/D	8.77	N/A
PM <sub>10</sub>	15.0	0.77	N/D	3.24	N/A
PM <sub>2.5</sub>	10.0	N/D	N/D	2.22	N/A
SO <sub>x</sub>	40.0	0.04	N/D	0.04	N/A
NO <sub>x</sub>	40.0	6.93	1.04	6.91	N/A
VOC	40.0	20.63	1.16	11.69	N/A
CO	100.0	4.49	2.13	5.80	N/A
GHG (CO <sub>2</sub> e)	100,000	N/D	N/D	8,380.42	N/A
GHG (mass)	250.0	N/D	N/D	8,330.04	N/A
Methanol	10.0	N/D	N/D	9.74	N/A
HAPs	10.0/25.0	N/D	N/D	10.64	N/A

N/A = Not Applicable; N/D = Not Determined

### 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 all pollutants are below *de minimis* levels.

### APPLICABLE REQUIREMENTS

Paseo-Cargill 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
- *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 10-6.165

## SPECIFIC REQUIREMENTS

- *New Source Performance Regulations, 10 CSR 10-6.070*
  - *Standards of Performance for Equipment Leaks for VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006, 40 CFR Part 60, Subpart VV*
  - *Standards of Performance for Equipment Leaks for VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, 40 CFR Part 60, Subpart VVa*
  - *Standards of Performance for VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operations, 40 CFR Part 60, Subpart NNN*
  - *Standards of Performance for VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Reactor Processes, 40 CFR Part 60, Subpart RRR*
  
- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating, 10 CSR 10-6.405*

## 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.

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Chia-Wei Young  
New Source Review Unit

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 7, 2012, received August 8, 2012, designating Paseo-Cargill Energy, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.



## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....	percent	<b>m/s</b> .....	meters per second
<b>°F</b> .....	degrees Fahrenheit	<b>Mgal</b> .....	1,000 gallons
<b>acfm</b> .....	actual cubic feet per minute	<b>MW</b> .....	megawatt
<b>BACT</b> .....	Best Available Control Technology	<b>MHDR</b> .....	maximum hourly design rate
<b>BMPs</b> .....	Best Management Practices	<b>MMBtu</b> ....	Million British thermal units
<b>Btu</b> .....	British thermal unit	<b>MMCF</b> .....	million cubic feet
<b>CAM</b> .....	Compliance Assurance Monitoring	<b>MSDS</b> .....	Material Safety Data Sheet
<b>CAS</b> .....	Chemical Abstracts Service	<b>NAAQS</b> ...	National Ambient Air Quality Standards
<b>CEMS</b> .....	Continuous Emission Monitor System	<b>NESHAPs</b>	..... National Emissions Standards for Hazardous Air Pollutants
<b>CFR</b> .....	Code of Federal Regulations	<b>NO<sub>x</sub></b> .....	nitrogen oxides
<b>CO</b> .....	carbon monoxide	<b>NSPS</b> .....	New Source Performance Standards
<b>CO<sub>2</sub></b> .....	carbon dioxide	<b>NSR</b> .....	New Source Review
<b>CO<sub>2e</sub></b> .....	carbon dioxide equivalent	<b>PM</b> .....	particulate matter
<b>COMS</b> .....	Continuous Opacity Monitoring System	<b>PM<sub>2.5</sub></b> .....	particulate matter less than 2.5 microns in aerodynamic diameter
<b>CSR</b> .....	Code of State Regulations	<b>PM<sub>10</sub></b> .....	particulate matter less than 10 microns in aerodynamic diameter
<b>dscf</b> .....	dry standard cubic feet	<b>ppm</b> .....	parts per million
<b>EQ</b> .....	Emission Inventory Questionnaire	<b>PSD</b> .....	Prevention of Significant Deterioration
<b>EP</b> .....	Emission Point	<b>PTE</b> .....	potential to emit
<b>EPA</b> .....	Environmental Protection Agency	<b>RACT</b> .....	Reasonable Available Control Technology
<b>EU</b> .....	Emission Unit	<b>RAL</b> .....	Risk Assessment Level
<b>fps</b> .....	feet per second	<b>SCC</b> .....	Source Classification Code
<b>ft</b> .....	feet	<b>scfm</b> .....	standard cubic feet per minute
<b>GACT</b> .....	Generally Available Control Technology	<b>SIC</b> .....	Standard Industrial Classification
<b>GHG</b> .....	Greenhouse Gas	<b>SIP</b> .....	State Implementation Plan
<b>gpm</b> .....	gallons per minute	<b>SMAL</b> .....	Screening Model Action Levels
<b>gr</b> .....	grains	<b>SO<sub>x</sub></b> .....	sulfur oxides
<b>GWP</b> .....	Global Warming Potential	<b>SO<sub>2</sub></b> .....	sulfur dioxide
<b>HAP</b> .....	Hazardous Air Pollutant	<b>tph</b> .....	tons per hour
<b>hr</b> .....	hour	<b>tpy</b> .....	tons per year
<b>hp</b> .....	horsepower	<b>VMT</b> .....	vehicle miles traveled
<b>lb</b> .....	pound	<b>VOC</b> .....	Volatile Organic Compound
<b>lbs/hr</b> .....	pounds per hour		
<b>MACT</b> .....	Maximum Achievable Control Technology		
<b>µg/m<sup>3</sup></b> .....	micrograms per cubic meter		

Mr. Jeff Ording  
Plant Manager  
Paseo-Cargill Energy, LLC  
PO Box 33413  
Kansas City, MO 64120

RE: New Source Review Permit - Project Number: 2012-08-016

Dear Mr. Ording:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions 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 and your new source review permit application 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 Chia-Wei Young, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp  
New Source Review Unit Chief

SH:cyl

Enclosures

c: Kansas City Regional Office  
PAMS File: 2012-08-016

Permit Number: