

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: 122011-013

Project Number: 2011-11-045
Installation Number: 021-0016

Parent Company: Lifeline Foods, Inc.

Parent Company Address: 28 South 11th Street, St. Joseph, MO 64503

Installation Name: Lifeline Foods, Inc.

Installation Address: 28 South 11th Street, St. Joseph, MO 64503

Location Information: Buchanan County, S20, T57, R35W

Application for Authority to Construct was made for:
Construction of two hammermills, a natural gas dryer and regenerative thermal oxidizer, and equipment associated with the Polar Process. This review was conducted in accordance with Section (6), 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.

DEC 28 2011

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "Kyrad L. Moore".

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."

Lifeline Foods, Inc.
Buchanan County, S20, T57, R35W

1. **Superseding Condition**

The conditions of this permit supersede the following special conditions found in the previously issued construction permit (Permit #082007-017A) issued by the Air Pollution Control Program.

 - A. Special Condition 1.A (installation-wide VOC limit), 1.B. (installation-wide CO limit), and 1.C (installation-wide HAP limit)
 - B. Special Condition 2 (Operational Limits)

2. **Emission Limitations**
 - A. **Volatile Organic Compounds (VOCs)**
 - 1) Lifeline Foods, Inc. shall emit less than 100.0 tons of VOC from the entire installation in any consecutive 12-month period.
 - 2) Lifeline Foods, Inc. shall record the monthly and the sum of the most recent consecutive twelve (12) months VOC emissions in tons from this installation. Attachment A, Monthly VOC Emission Tracking Record, or an equivalent form shall be used for this purpose. The emission rates shall be verified through performance testing, as detailed in Special Condition 7.

 - B. **Carbon Monoxide (CO)**
 - 1) Lifeline Foods, Inc. shall emit less than 100.0 tons of CO from the entire installation in any consecutive 12-month period.
 - 2) Lifeline Foods, Inc. shall record the monthly and the sum of the most recent consecutive twelve (12) months CO emissions in tons from this installation. Attachment B, Monthly CO Emission Tracking Record, or an equivalent form shall be used for this purpose. The emission rates shall be verified through performance testing, as detailed in Special Condition 7.

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SPECIAL CONDITIONS:

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

C. Hazardous Air Pollutants (HAPs)

- 1) Lifeline Foods, Inc. shall not discharge any Hazardous Air Pollutants (HAPs) into the atmosphere from the entire installation, or individual stack, in excess of the listed amounts in any consecutive twelve (12) month period:

HAP	Stack	Limit (tpy)
Acrolein	(S40) Fermentation Scrubber	0.04818
	(S10) DDGS Dryer/Thermal Oxidizer	0.05475
	(S11) Gas Dryer/RTO	0.14
Acetaldehyde	Entire installation (except for cellulosic ethanol plant Project #2010-04-053)	9.67
Any remaining individual HAP	Entire installation	10.0
Combined HAP	Entire installation (except for cellulosic ethanol plant Project #2010-04-053)	24.48

tpy = tons per year, DDGS = dried distiller's grain, RTO = regenerative thermal oxidizer

- 2) Lifeline Foods, Inc. shall record the monthly and the sum of the most recent consecutive twelve (12) months HAP emissions in tons from this installation. Attachment C, Monthly Individual HAP Emission Tracking Record, Attachment D, Monthly Combined HAP Emission Tracking Record or an equivalent form shall be used for this purpose. The emission rates shall be verified through performance testing, as detailed in Special Condition 7.

D. Particulate Matter less than 10 microns in diameter (PM₁₀)

- 1) Lifeline Foods, Inc. shall not discharge PM₁₀ into the atmosphere from the following stacks in excess of the listed amounts:

Emission Point	Description	Lbs/hr
S11	Gas Dryer with RTO	1.126
S30	Corn Hammermill	0.300
S31	Hammermill Receiver	0.135
S32	Bran Hammermill	0.360
S33	DDGS Receiver	0.846
P1	Polar Cleaning	0.360
P2	Polar Degerming	0.390

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

P3	Polar Flaking/Drying/Cooling	0.600
P4	Polar Grinding	0.240
P5	Polar Packaging	0.120
P6	Polar Transfer	0.390

Lbs/hr = pounds per hour

- 2) These emission rates shall be verified through performance testing, as detailed in Special Condition 7.
3. Operational Limits
 - A. Lifeline Foods, Inc. shall not exceed a daily grain receiving limit of 6,020 tons of grain per day during the period of September 1 to November 30. Lifeline Foods, Inc. shall not exceed a daily grain receiving limit of 3,105 tons of grain per day during the period of December 1 to August 31.
 - B. Lifeline Foods, Inc. shall not exceed a daily co-product receipt and shipping limit of 1,333 tons per day. Co-product includes all other products other than grain and ethanol, such as corn flour (Polar Process), DDGS, wet distiller's grain (WDGS), hominy, germ, syrup, corn oil, lime, ash, carbon dioxide (CO₂) and denaturant.
 - C. Lifeline Foods, Inc. shall not exceed the following annual limits:
 - 1) Grain receiving: 1,133,333 tons per year;
 - 2) Co-product shipping and receiving: 486,545 tons per year;
 - D. To demonstrate compliance with Special Condition 3.A., 3.B. and 3.C., Lifeline Foods, Inc. shall keep a record of the daily weight (tons) of grain received, and co-product received and shipped. Attachment E, or equivalent form(s), shall be used for this purpose.
 - E. During the hours of 5 pm to 7 am (i.e. night hours), Lifeline Foods, Inc. shall receive and ship less than 1,250 tons of grain or co-product per night. This hours of operation limitation applies to the haul roads for grain, fugitive emissions for grain receiving and the grain elevator.
 4. Control Equipment – Regenerative Thermal Oxidizer (S11)
 - A. The thermal oxidizer must be in use at all times when the new DDGS Natural Gas Dryer is in operation or any time that regulated volatile organic compounds (VOC) or hazardous air pollutant (HAP) emissions are possible. The thermal oxidizer shall be operated and maintained in

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SPECIAL CONDITIONS:

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

accordance with the manufacturer's specifications. Emission rates of PM₁₀, particulate matter less than 2.5 microns in diameter (PM_{2.5}), VOC, HAPs, nitrogen oxides (NO_x), sulfur oxides (SO_x) and CO will be tested, as detailed in Special Conditions 7, to verify the thermal oxidizer is operating as assumed.

- B. The operating temperature of the thermal oxidizer shall be continuously monitored and recorded during operation. The operating temperature of the thermal oxidizer shall be maintained, on a rolling 3-hour average, within 50 degrees Fahrenheit of the average temperature of the oxidizer recorded during the compliance test specified in Special Condition 7 which demonstrated compliance with the emission limits. The acceptable temperature range may be reestablished by performing a new set of emission tests.
- C. Lifeline Foods, Inc. shall maintain an operating and maintenance log for the thermal oxidizer 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.

5. Control Device Requirement-Baghouse

- A. As specified in the permit application, the baghouses listed below must be in use at all times when the associated equipment is in operation and operated at or below the stated flow rate and grain loading:

Emission Point	Emission Unit controlled	Flow Rate (scfm)	Grain Loading (grains/scf)
S30	Corn Hammermilling	10,000	0.0035
S31	Hammermill Receiving (Slurry)	4,500	0.0035
S32	Bran Hammermilling	12,000	0.0035
S33	DDGS Receiver	28,200	0.0035
Polar 1	Cleaning	12,000	0.0035
Polar 2	Degerming	13,000	0.0035
Polar 3	Flaking/Drying/Cooling	20,000	0.0035
Polar 4	Grinding	8,000	0.0035
Polar 5	Packaging	4,000	0.0035
Polar 6	Transfer	13,000	0.0035

scfm = standard cubic feet per minute

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

- B. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the Department of Natural Resources' employees may easily observe them.
- C. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
- D. Lifeline Foods, Inc. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours of operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
- E. Lifeline Foods, Inc. shall maintain an operating and maintenance log for the baghouses 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.

6. Control Device Requirements for Existing Baghouses

The following baghouses shall be operated and maintained at or below the following flow rates and grain loadings:

Emission Point	Emission Unit controlled	Flow Rate (scfm)	Grain Loading (grains/scf)
S104	Bran Storage	1,000	0.004
S101	Degermer Baghouse	20,000	0.003
S120	Anderson Dryer	3,000	0.004
S121	Anderson Cooler	4,000	0.004
S71	Germ Cooler Cyclone	10,000	0.003
SANDJ	Source "J" Units-Aux Corn Mill	187,500	0.0015

These flow rates shall be verified through performance testing, as detailed in Special Condition 7.

7. Performance Testing

- A. Lifeline Foods, Inc. shall conduct performance tests on the stacks listed in the following table Column A. The emission rates for the pollutants listed

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

in Column C shall be determined in terms of the units described in Column D. These emission rates shall also be used to show compliance with the special conditions described in Column F and be used in the Attachments as described in Column E.

Column A	Column B	Column C	Column D	Column E	Column F
Emission Point	Description	Pollutant	Units	Attachments	Special Condition
S11	Gas Dryer with RTO	VOC, HAP, CO, PM ₁₀ , PM _{2.5} , NO _x SO _x	lb of pollutant/hr, lb of pollutant/ton DDGS	A, B, C, and D	2.A, 2.B, 2.C, 2.D
S30	Ground Corn Hammermill	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed	Not applicable	2.D
S31	Hammermill Receiving	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
S32	Bran Hammermill	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton bran processed		2.D
S33	DDGS Receiving	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton DDGS processed		2.D
P1	Polar Cleaning	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
P2	Polar Degerming	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
P3	Polar Flaking/Drying/Cooling	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
P4	Polar Grinding	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
P5	Polar Packaging	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D
P6	Polar Transfer	PM ₁₀ , PM _{2.5}	lb of pollutant/hr, lb of pollutant/ton grain processed		2.D

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

- B. The operating parameters (i.e. temperature, pressure, flow rate, etc.) at which the stack tests are conducted shall be used to set the appropriate values used in actual operations of the Regenerative Thermal Oxidizer (RTO), and baghouses listed in Special Condition 7.A. The operating parameters of the baghouses listed in Special Condition 6 shall be determined during the tests required in Permit #082007-017A. Actual emissions shall be determined using actual operating conditions.
 - C. The operating parameters in Special Condition 7.B. shall be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Lifeline Foods, Inc. before the start of the performance tests.
 - D. The operating parameters in Special Condition 7.B. shall be recorded on record keeping sheet(s) and be made available to Department of Natural Resources personnel upon request. The frequency of the record keeping is dependent upon the parameters being kept and shall be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Lifeline Foods, Inc. before the start of the performance tests.
 - E. These tests shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 8.A.
 - F. Lifeline Foods, Inc. shall conduct performance tests to verify the emission rates as indicated in Special Condition 7.A once every 5 years from the date of the most recent performance tests.
8. Proposed Test Plan and Test Report Requirements
- A. 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.
 - B. 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

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

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.

- C. 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. In determining the emission rate of a pollutant with a sample concentration below the detection limit of the applicable analysis, the analytical detection limit shall be used to quantify the emission rate of the pollutant being tested.
 - D. If the performance testing required by Special Condition 7 of this permit indicates that any of the emission limits specified in Special Condition 2 are being exceeded, Lifeline Foods, Inc. must propose a plan to the Air Pollution Control Program within thirty (30) days of submitting the performance test results. This plan must demonstrate how Lifeline Foods, Inc. will reduce the emission rates below those stated in Special Condition 2. Lifeline Foods, Inc. shall implement any such plan immediately upon its approval by the Director.
 - E. No later than 30 days after the performance test results are submitted, Lifeline Foods, Inc. shall provide the director with a report that establishes the potential emissions of PM_{2.5}, SO_x, and NO_x for the emission units tested according to Special Condition 7. The emission rates shall be reported in pounds per hour and tons per year so that the Air Pollution Control Program may verify the potential emissions of this project for PM_{2.5}, SO_x, and NO_x. If the potential emissions are greater than what was indicated in this permit, then Lifeline Foods, Inc. shall submit an application for an amendment to this permit to correct the potential emissions calculations.
9. Capture Device Requirement – Grain Receiving Building
- A. Lifeline Foods, Inc. shall receive grain inside a building exhausted to a baghouse as specified in the permit application. The connecting scalper, drag conveyor and bucket elevator shall also be exhausted to a baghouse as indicated by the applicant.
 - B. Lifeline Foods, Inc. shall conduct performance testing to determine particulate matter less than ten microns in diameter (PM₁₀) capture

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SPECIAL CONDITIONS:

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

- efficiency at the grain receiving building. Testing shall be conducted at the maximum rate of grain receiving.
 - C. The test shall be performed within 60 days after achieving the maximum receiving rate of the installation, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 8.A.
 - D. No later than 30 days after the performance test results are submitted, Lifeline Foods, Inc. shall provide the Director with a report that establishes the PM₁₀ capture efficiency at the grain receiving building. The report shall establish the capture efficiency in a percent basis to the hundredths decimal place.
 - E. If the results of the performance testing show that the capture efficiency is less than 97.00%, Lifeline Foods, Inc. shall evaluate what effects the difference would have had on the modeling applicability of this project. Lifeline Foods, Inc. shall submit the results of any such evaluation in an amendment application within 30 days of submitting the report required in Special Condition 9.D. of this permit.
10. Haul Road Silt Loading Requirements
- A. The silt loading shall not exceed 0.5 grams/meter² on the haul roads at this installation.
 - B. Lifeline Foods, Inc. shall develop, maintain, and implement a Fugitive Dust Control Plan (FDCP) that will control emissions from haul roads. The FDCP shall at a minimum include control and/or cleaning methods and establish a documentation procedure for the control and/or cleaning methods.
 - C. Compliance with the silt loading limitation shall be demonstrated by conducting a series (as defined in Appendix C of AP-42) of silt loading performance tests at least once per quarter during the first year after permit issuance. If the average silt loading is less than 75% of the limit (0.375 grams/meter²) in four consecutive tests, test frequency shall be reduced to once per calendar year.
 - D. The silt loading tests shall be representative (as defined in Appendix C of AP-42) and conducted in accordance with ASTM-C-136 method. Testing

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SPECIAL CONDITIONS:

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

cannot be done immediately after cleaning. If there is a regular cleaning schedule, testing shall be done at the midpoint of the cleaning cycle (i.e. if cleaning is scheduled every week, then testing must be done at the midpoint of seven (7) days).

- E. For each day of operation, the owner or operator shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and if these emissions are leaving the plant property. Documentation of all corrective actions and daily surveys shall be maintained in a log. Lifeline Foods, Inc. shall water haul roads whenever conditions exist which would cause visible fugitive emissions to enter the ambient air beyond the property boundary.

11. Operational Requirements

- A. Lifeline Foods, Inc. shall combust exclusively natural gas in the Boiler (S106), which was previously described as "Syn Gas Boiler".
- B. Lifeline Foods, Inc. shall render inoperable the Ash Storage emission unit (S105) prior to operation of the equipment in this construction permit. Operation of the Ash Storage emission unit (S105) shall not occur for any reason without prior review and approval by the Air Pollution Control Program.
- C. Lifeline Foods, Inc. shall construct the stacks according to the following table. All remaining stack parameters must be maintained at the values indicated in the most recent compliant modeling demonstration.

Emission Point	Description	Stack Height (ft)	Diameter (ft)
S11	RTO	125	7.0
S30	Corn Hammermilling	125	2.0
S31	Hammermill Receiving (Slurry)	140	1.25
S32	Bran Hammermilling	140	2.0
S33	DDGS Receiver	125	3.0
Polar 1	Cleaning	166	2.0
Polar 2	Degerming	166	2.0
Polar 3	Flaking/Drying/Cooling	166	3.0
Polar 4	Grinding	166	2.0
Polar 5	Packaging	166	0.667
Polar 6	Transfer	76	1.5

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SPECIAL CONDITIONS:

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

12. Record Keeping and Reporting Requirements
 - A. Lifeline Foods, Inc. 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.
 - B. Lifeline Foods, Inc. 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 (6) REVIEW

Project Number: 2011-11-045
Installation ID Number: 021-0016
Permit Number:

Lifeline Foods, Inc.
28 South 11th Street
St. Joseph, MO 64503

Complete: November 23, 2011

Parent Company:
Lifeline Foods, Inc.
28 South 11th Street
St. Joseph, MO 64503

Buchanan County, S20, T57, R35W

REVIEW SUMMARY

- Lifeline Foods, Inc. has applied for authority to construct two hammermills, a natural gas dryer and regenerative thermal oxidizer (RTO) system, and equipment associated with the Polar Process.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. The HAP of concern from this process is acrolein.
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment.
- None of the currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- Baghouses are being used to control the particulate matter less than 10 microns in diameter (PM₁₀) emissions from the equipment in this permit. In addition, an RTO is being used to control VOC and HAP emissions from the new dried distiller's grain (DDGS) gas dryer.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of PM₁₀ are above de minimis levels.
- This installation is located in Buchanan County, an attainment area for all criteria pollutants.

- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is currently classified as item number 20. Chemical process plants in Missouri. 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 performed to determine the ambient impact of PM₁₀ and acrolein.
- Emissions testing is required for the equipment.
- An Intermediate Operating Permit is required for this installation within 90 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Lifeline Foods, Inc. (Lifeline) is a cereal manufacturing plant located in St. Joseph, Missouri. Locally grown grains are milled and processed into food products and ingredients for various companies. Lifeline also operates an ethanol manufacturing plant on the same site, which uses the byproduct of the cereal process to produce ethanol. This ethanol plant is capable of producing 50 million gallons of denatured ethanol annually.

ICM IBR was issued a construction permit (Permit 062010-009) for the construction of a 260,000 gallon per year fuel ethanol production facility. The process converts cellulosic materials (renewable biomass) to fuel ethanol through a natural fermentation process. ICM IBR has constructed this operation on leased land located at the Lifeline property (021-0016). Although ICM IBR will manage the cellulosic ethanol production site (021-0125) independently of Lifeline's grain ethanol production site (021-0016), ICM IBR has 49 percent ownership of Lifeline which qualifies as common control of the two sites. Therefore, the two sites are considered the same source for construction and operating permit purposes, and the limits associated with the ICM IBR plant are shared with the Lifeline's grain ethanol production site. Specifically, the ICM IBR cellulosic ethanol facility has been given limits of 0.33 tons of acetaldehyde per year and 0.52 tons of all HAPs combined per year. In order to remain an area source of HAPs, the individual and combined HAPs limits for the Lifeline Foods' grain ethanol production site have been adjusted accordingly.

This installation is considered a minor source under construction permits. Lifeline was issued a Part 70 Operating Permit in 2000. However, an Intermediate Operating Permit application is currently under review (Project #2009-05-008).

The following construction permits have been issued to Lifeline from the Air Pollution Control Program.

Table 1: Construction Permit History

Permit Number	Description
0686-003	Two (2) boiler replacements
1289-002	Installation of two (2) cereal manufacturing lines
0790-004	Installation of additional dry and wet dust collecting systems
0791-007	Installation of two hammermills and baghouses replacements
0596-002	Modification to the ingredient transfer system
112001-006	Installation of three (3) dryers and three (3) coolers for the corn milling operation
082007-017	Installation of a 50 million gallon per year denatured ethanol plant
082007-017A	Amendment to revise emission rates from original permit
082009-010	Installation of a pilot plant
082009-010A	Extension of permit

PROJECT DESCRIPTION

Lifeline is proposing the construction of two projects: the addition of hammermilling and drying equipment, and the construction of the Polar process. The hammermilling and drying project will consist of a corn hammermill, a bran hammermill, and a new natural gas fired distiller grains dryer. The additional corn hammermill and the additional bran hammermill will allow the ethanol plant to independently grind corn and bran for ethanol production. Both the hammermill emissions will be controlled by baghouses. The emissions from transferring the ground corn to the existing slurry blender and DDGS to the new dryer will also be controlled by baghouses. The new distiller's grain dryer will be controlled by a regenerative thermal oxidizer (RTO). Both are natural gas fired.

Based on the information submitted by Lifeline, the addition of the hammermill project is considered a de-bottlenecking project. Although the previous construction permit gave Lifeline the authority to construct an ethanol plant with the capacity of producing 50 million gallons of denatured ethanol per year, the ethanol plant was unable to meet this capacity because they were not sufficiently receiving enough starch from the food plant to produce at the higher capacity. By being able to independently grind corn, the ethanol plant will be able to increase ethanol production that was not achievable under the original configuration. Therefore, the increase in emissions from the de-bottlenecked sources must also be considered under this permit review.

The sources affected by the de-bottleneck are the sources that handle corn or DDGS for PM₁₀ and the fermenter and RTO from the increase in ethanol production for VOC, CO and HAPs. The emissions from the baghouses were determined to remain the same since the flow rate and the grain loading of these devices are not changing. A special condition is being added to this construction permit setting the flow rate and grain loading for these emission units to ensure no increase is occurring.

In addition, testing at the existing fermenters and RTO will not need to be performed unless the testing was performed at a lower ethanol production rate. The increase from these sources was not quantified since the installation is taking minor source limitations for VOC, CO and HAP. This construction permit supersedes Special Conditions 1.A (installation-wide VOC limit), 1.B. (installation-wide CO limit), and 1.C (installation-wide

HAP limit) from Permit #082007-017A and re-instates the limits in Special Condition 2 (Emission Limits) for the entire installation.

Lifeline has requested that information on the Polar Process project be held confidential. The confidentiality request has undergone a complete review (Project #2011-11-046) and the description of the project, along with other aspects of the project, has been deemed confidential according to Missouri State Rule 10 CSR 10-6.210. There will be six new baghouses associated with the equipment of this project.

According to Lifeline, there will not be an increase in truck traffic due to the proposed projects. Lifeline has indicated that they will keep existing permit limits for the haul roads and shipping. Therefore, Special Condition 2 (Operational Limits) from Permit #082007-017A is being superseded and replaced by Special Condition 3 (Operational Limits) of this construction permit to include the Polar Process product. In addition, Lifeline is not proposing an increase in ethanol production over existing limits. Based on Special Condition 3 of Permit #082007-017, Lifeline shall not exceed an annual production limit of 50,000,000 gallons of denatured ethanol per 12 consecutive month period. This condition will remain in effect after the issuance of this construction permit.

EMISSIONS/CONTROLS EVALUATION

PM₁₀, particulate matter less than 2.5 microns in diameter (PM_{2.5}), VOCs, nitrogen oxides (NO_x), sulfur oxides (SO_x) and carbon monoxide (CO) are the pollutants of concern from the new gas dryer and RTO. Emissions from the RTO take into account combustion emissions from natural gas and process emissions from the gas dryer. VOC and HAP emissions from the DDGS dryers are controlled using the RTO. The emission factors used to determine combustion emissions from the new RTO (18 MMBtu/hr), and gas dryer (40 MMBtu/hr) were obtained from Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.4, *Natural Gas Combustion (7/98)*. However, AP-42 emission factors are not appropriate for the RTO which use emissions from the ethanol production process as fuel in addition to natural gas. The applicant has provided emission factors for the RTO using engineering estimates. Therefore, testing is required by this construction permit to verify the emission rates of these pollutants from the RTO.

SO_x and NO_x emission rates are not expected to increase from the existing RTO (S10) due to the increase in ethanol production. The existing limits on the RTO will remain in effect after the issuance of this construction permit. In addition, the Syngas Boiler (S106) previously had higher SO_x and NO_x emission rates associated with it due to the combustion of Syngas. Lifeline has proposed to remove the dual fuel combustion status of the existing Syngas Boiler and exclusively combust natural gas. Therefore, SO_x and NO_x emission rates are expected to decrease from the existing Syngas Boiler.

The applicant has requested to remain a minor source. Therefore, the annual limits for VOC, CO and HAPs are being superseded and re-instated by this construction permit to include the new equipment. Performance testing will be required by this construction permit to verify the emission rate of the limited pollutants. The tested rates will be used

to determine compliance with the emission limitation given in Special Condition 2. If these limitations are exceeded, the applicant will be required to curtail production or install control equipment to meet these limitations.

All new equipment for the hammermill and Polar process are being exhausted to baghouses. Emissions of PM₁₀ from the baghouses were calculated using the manufacturer's grain loading of the bag and the flow rate through the baghouse. The applicant has estimated PM_{2.5} emissions from the baghouses to be 29% of PM₁₀ emissions from the equipment. These emissions will be confirmed by performance testing required by this construction permit.

The material handling equipment for both the hammermill and Polar projects operate under closed systems and are vented to a series of baghouses. Therefore, 100% capture efficiency was assumed for this equipment.

Greenhouse gases (GHG) from the RTO and dryer were estimated through emission factors for the combustion of natural gas obtained from the AP-42, Section 1.4, Natural Gas Combustion (7/98). Carbon dioxide (CO₂) emissions from biomass-derived fuels were not counted toward applicability based on the EPA deferral for CO₂ emissions from bioenergy and other biogenic sources released in January 2011.

Existing potential emissions were taken from Permit #082007-017. Actual emissions were taken from the installation's 2010 Emissions Inventory Questionnaire (EIQ). Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8,760 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 (2010 EIQ)	Potential Emissions of the Application*	New Installation Conditioned Potential
PM _{2.5}	10.0	N/D	3.29	9.16	N/A
PM ₁₀	15.0	38.23	14.80	21.32	N/A
SOx	40.0	94.39	27.34	14.73	N/A
NOx	40.0	86.34	25.04	14.84	N/A
VOC	40.0	<100	17.50	6.55	<100
CO	100.0	<100	22.50	14.73	<100
GHG**	75,000	N/D	N/D	29,973	N/A
HAPs	10.0/25.0	<10.0/25.0	7.01	2.66	<10.0/25.0
Acrolein***	0.04	N/D	N/A	0.14	0.24

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

*Potential emissions do not take into account increase of VOC, CO or HAP from de-bottlenecking of existing fermenter and RTO.

**The "subject to regulation" threshold for GHG has been inserted under the Regulatory De Minimis Level column for GHG.

***The Screening Model Action Level (SMAL) for acrolein has been inserted under the Regulatory De Minimis Level column for acrolein.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀ are above de minimis levels.

APPLICABLE REQUIREMENTS

Lifeline Foods, Inc. 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

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *Maximum Allowable Emission of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-2.040

AMBIENT AIR QUALITY IMPACT ANALYSIS

The potential emission for the project is greater than the de minimis level for PM₁₀ and above the Screening Action Modeling Level for acrolein. Therefore, ambient air quality modeling was performed to determine the ambient impact of PM₁₀ and acrolein. The modeling demonstrated compliance with all air quality standards. For further details on the modeling, please refer to the memo titled "Ambient Air Quality Impact Analysis (AAQIA) for Lifeline Foods, Inc. November 23, 2011 Submittal".

An amendment for Permit #082007-017 was issued in January 2011. The amendment included a modeling analysis that utilized the draft version of the AP-42 Section 13.2.1,

Paved Roads. Special Condition 16 was inserted into the amendment requiring Lifeline to re-submit modeling for PM₁₀ if the final version of AP-42 Section 13.2.1, *Paved Roads* was different than the draft version. Shortly after the amendment was issued, the final version was released, and it was different from the draft version. The modeling performed for this construction permit has taken into account the revised paved haul information, and the results are being used to demonstrate compliance with Special Condition 16 of Permit #082007-017A.

Additional special conditions have been included in this construction permit to ensure compliance with the modeled result. The limits in Special Conditions 2.C., 2.D. and 11 are required to ensure compliance with the air standards for PM₁₀ and the Risk Assessment Level for acrolein. As determined by the model and as requested by the applicant, the silt loading content for the haul roads must be maintained below a maximum of 0.5 g/m². The limit and compliance methods are outlined in Special Condition 10. Finally, in order to increase the capture efficiency of the grain receiving building, Special Condition 9 sets forth the capture efficiency requirements of the grain receiving building.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), 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 17, 2011, received November 23, 2011, designating Lifeline Foods, Inc. 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.

Appendix A: Equipment List Summary

Installation Name: Lifeline Foods, Inc.

Project Number: 2011-11-045

Permit Number:

New Equipment					
Point ID	Description	Control Device	MHDR	Unit	PM ₁₀ Emission Rate Limit (lb/hr)
S11	Gas Dryer with RTO	RTO	58	MMBTU	1.13
S30	Corn Hammermill	Baghouse	57	Tons grain processed	0.34
S31	Hammermill Receiver	Baghouse	57	Tons grain processed	0.15
S32	Bran Hammermill	Baghouse	6.5	Tons bran	0.41
S33	DDGS Receiver	Baghouse	20	Ton DDGS	0.97
P1	Polar Cleaning	Baghouse	11	Tons grain processed	0.41
P2	Polar Degerming	Baghouse	11	Tons grain processed	0.45
P3	Polar Flaking/Drying/Cooling	Baghouse	11	Tons grain processed	0.69
P4	Polar Grinding	Baghouse	11	Tons grain processed	0.27
P5	Polar Packaging	Baghouse	11	Tons grain processed	0.14
P6	Polar Transfer	Baghouse	11	Tons grain processed	0.45

Existing Equipment		
Point ID	DESCRIPTION	COMMENTS/CHANGES
S10	Dryers and RTO	No Change (Limit acrolein emissions)
S40	Fermentation Scrubber	No Change (Limit acrolein emissions)
S60	Methanator Flare	No Change
S105	Ash Storage	Boiler being converted to NG only. No ash will be produced. This source will be removed.
S106	Syn Gas Boiler	Reducing dual-fuel capability to only natural gas.
S104	Bran Storage	No Change
S80	Cooling Tower (CTC1, 2, 3)	No Change
S101	Degermer Baghouse	No Change
S120	Anderson Dryer	No Change
S121	Anderson Cooler	No Change
S50	Loadout Flare	No Change
SANDJ	Source "J" units	No Change
S110	Package Boiler (K01)	No Change
SCALPER	Scalper	Exhausted to baghouse
G02	Grain Elevator	No Change

G03	Grain Elevator	No Change
G04	Grain Elevator	No Change
G05	Grain Elevator	No Change
G06	Grain Elevator	No Change
G07	Grain Elevator	No Change
A06	Combined A Sources-Masa Corn	No Change
C01	Corn Meal Packaging	No Change
C05	Corn Mill P4 & P5 Aspirator Filter	No Change
C06	Corn Mill Cleaning House	No Change
C08	Corn Mill Grits Processing	No Change
C09	Corn Mill Hominy Grinder	No Change
D03	Extruder Grinder	No Change
RD1	Haul Road	AP-42 Paved Haul Road equation (Sect 13.2.1) used to calculate emissions.
ASHLMLD	Ash/Lime Loadout	No Change
DOOR2	Fugitive Receiving Dry Fract	No Change (10 hour/day time restriction, and capture efficiency 97%)
DOOR3	Fugitive Handling Dry Fract	No Change (10 hour/day time restriction, and capture efficiency 97%)
DDGLDT1	DDG Receiving Door 1	No Change
DDGLDT2	DDG Receiving Door 2	No Change
S20	Secondary Receiving Pit	No Change
S75	Germ Dryer Receiving Cyclone	No Change
I29	RTE LINE 1 HOT CYCLONE	No Change
I26	Extruder Dust collection	No Change
I08	HEX BINS-Railcar Flour Loadout	No Change
I06	HEX BINS-Railcar Unloading	No Change
E06	Aux Mill	No Change

Mr. Bill Roddy
Director, Environmental Compliance, ERI
Lifeline Foods, Inc.
125 North First Street
Colwich, KS 67030

RE: New Source Review Permit - Project Number: 2011-11-045

Dear Mr. Roddy:

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 amended 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 Department's 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:ewl

Enclosures

c: Kansas City Regional Office
PAMS File: 2011-11-045

Permit Number: