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: 032013-008 Project Number: 2010-06-038

Parent Company: Triumph Foods, LLC

Parent Company Address: 5302 Stockyards Expressway, St. Joseph, MO 64504

Installation Name: Triumph Foods

Installation Number: 021-0126

Installation Address: 5302 Stockyards Expressway, St. Joseph, MO 64504

Location Information: Buchanan County, S30, T57N, R35W

Application for Authority to Construct was made for:
The construction of a 21,000 hog per day hog-processing facility. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

☐ Standard Conditions (on reverse) are applicable to this permit.

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

MAR 15 2013

EFFECTIVE DATE

Kyra 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 devises 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 sources(s). 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 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 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.

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."

Triumph Foods
Buchanan County, S30, T57N, R35W

1. Control Device Requirements
   A. Triumph Foods shall control emissions from the Blood Drier (EU03), using a venturi scrubber (V1), and two packed bed scrubbers (S1 and S2) as specified in the permit application.

   B. Triumph Foods shall control emissions from Blood Meal Milling (EU04), Bone Meal Milling (EU08), and Bone Meal material transfer equipment (EU10) using two cyclones (C1 and C2), a venturi scrubber (V2), and two packed bed scrubbers (S1 and S2) as specified in the permit application.

   C. Triumph Foods shall control emissions from Blood Meal pneumatic transfer operations (EU05) using a baghouse (B1) as specified in the permit application.

   D. Triumph Foods shall control emissions from Blood Meal Load-out (EU07) using a liquid fat spray application (G1) as specified in the permit application.

2. Control Device Operating Requirements – Venturi Scrubbers (V1 and V2) and Packed Tower Scrubbers (S1 and S2)

   A. Triumph Foods shall monitor and record the operating pressure drop across the scrubbers at least once every 24 hours. The pressure drop across the scrubbers shall be maintained within the range specified in the table below:

Table 1: Scrubber Pressure Drop Range

Control Device	Pressure Drop (inches of water)
12,000 CFM Venturi Scrubber (V1)	-2 to -5
24,000 CFM Venturi Scrubber (V2)	-2 to -5
36,000 CFM Packed Tower Scrubber (S1)	-3 to -5
100,000 CFM Packed Tower Scrubber (S2)	-2 to -5

SPECIAL CONDITIONS:

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

B. Triumph Foods shall monitor and record the liquid flow rate for each scrubber at least once every 24 hours. The scrubbers shall have the following minimum liquid flow rates:

Table 2: Scrubber Minimum Flow Rate

Control Device	Minimum Liquid Flow Rate (gal/min)
12,000 CFM Venturi Scrubber (V1)	30
24,000 CFM Venturi Scrubber (V2)	75
36,000 CFM Packed Tower Scrubber (S1)	200
100,000 CFM Packed Tower Scrubber (S2)	500

C. Triumph Foods shall maintain an operating and maintenance log for the scrubbers 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. Control Device Operating Requirements – Cyclones (C1 and C2) and Baghouse (B1)

A. The cyclones and baghouse shall be operated and maintained in accordance with the manufacturer's specifications. The cyclones and 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 DNR employees may easily observe them.

B. Replacement filters for the baghouse 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).

C. Triumph Foods shall monitor and record the operating pressure drop across the cyclones and baghouse at least once every 24 hours. The pressure drop across the dust collectors shall be maintained within the range specified in the table below:

SPECIAL CONDITIONS:

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

Table 3: Dust Collector Pressure Drop Range

Control Device	Pressure Drop (inches of water)
Blood Meal Milling Cyclone (C1)	-1 to -5
Blood Meal Milling Cyclone (C2)	-1 to -5
Blood Meal transfer Baghouse (B1)	-1 to -5

D. Triumph Foods shall maintain an operating and maintenance log for the cyclones and baghouse 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.

4. Record Keeping and Reporting Requirements
Triumph Foods 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.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2010-06-038
Installation ID Number: 021-0126
Permit Number:

Triumph Foods
5302 Stockyards Expressway
St. Joseph, MO 64504

Complete: June 11, 2010

Parent Company:
Triumph Foods, LLC
5302 Stockyards Expressway
St. Joseph, MO 64504

Buchanan County, S30, T57N, R35W

REVIEW SUMMARY

- Triumph Foods has applied for authority to construct a hog processing and rendering facility.

- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs are expected due to the combustion of natural gas, liquid propane, and diesel fuel.

- 40 CFR 60 Subpart IIII, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" does not apply to the diesel-fired emergency generator because the engine was manufactured in 1999.

- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation. The Maximum Achievable Control Technology (MACT) Standard, 40 CFR 63, Subpart ZZZZ, “National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines” applies to the diesel-fired emergency generator.

- Cyclones, wet scrubbers, and a baghouse are being used to control the emissions of particulate matter less than 10 microns and 2.5 microns in diameter, PM_{10} and $PM_{2.5}$ respectively, 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*.

- This installation is located in Buchanan County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not 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 not required for the equipment.

- No Operating Permit is required for this installation.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Triumph Foods is a large hog-processing facility with 2700 employees and a capacity of 21,000 hogs per day. The facility processes live animals into pork products for both domestic and international markets. The primary products are meat cuts and trimmings for human consumption, and the by-products include blood meal and bone meal. The facility also recovers other materials that are used to make white grease, plasma, peptone, and pet food. Triumph Foods was constructed in 2005, and no permits were issued from the Air Pollution Control Program. As the facility should have obtained a construction permit prior to the start of construction, obtaining this permit is part of a remedial action required by the Air Pollution Control Program.

There is a residential neighborhood located within a half mile of the Triumph Foods property, and the Air Pollution Control Program has received odor complaints. Although Triumph Foods is considered a source of odors, the facility is located in an industrial area near several other manufacturing facilities including: Omnium (021-0045), National Beef Leathers (021-0038), Ag Processing (021-0060), Ag Processing Biodiesel (021-0118), and the Kansas City Power and Light Lake Road generating plant (021-0004).

PROJECT DESCRIPTION

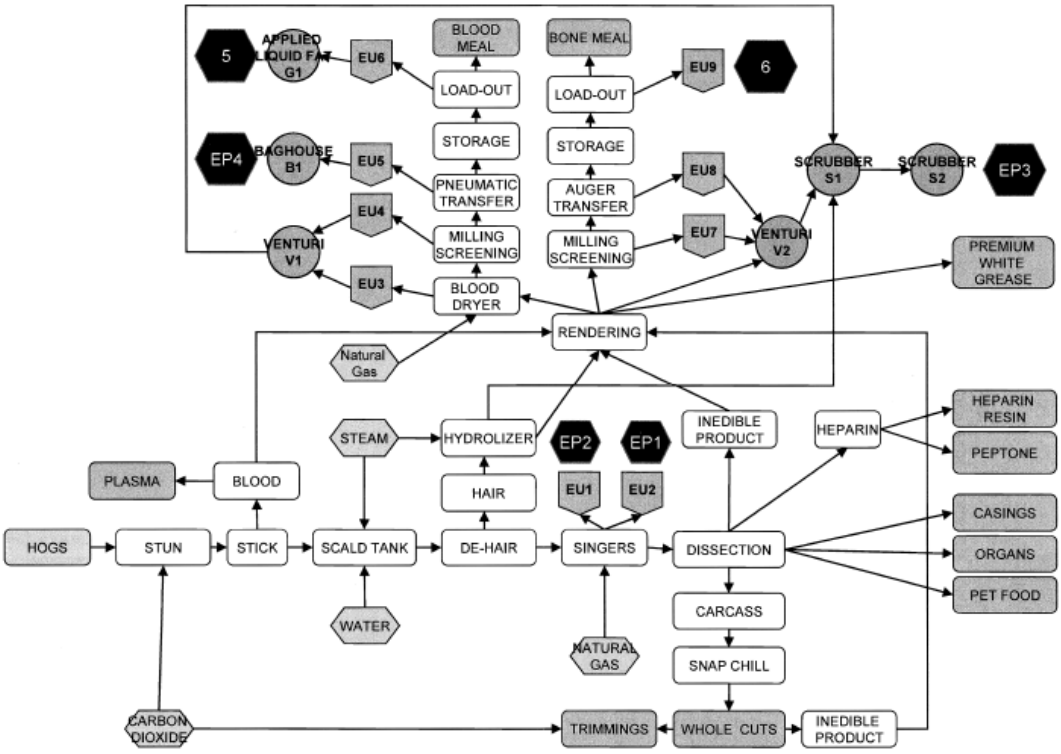
Hogs are initially stunned with carbon dioxide, and the carcass is hung and exsanguinated (drained of blood). Blood is collected and processed into blood meal through the following processes: cooking, coagulation, centrifugal separation, drying, grinding and screening. Dry blood meal is pneumatically transferred to silos for storage and load-out.

Following exsanguination, hair is collected from the carcass and hydrolyzed to recover solids for the rendering plant. Any remaining hair on the carcass is singed using two 2,270 kilowatt (7.8 million Btu per hour) natural gas-fired singers. The primary products (meat cuts and trimmings) and by-products (internal organs and casings) are manually removed from the carcass, chilled and packaged for shipment. Other edible components are processed through grinding, heating, and separation processes to recover materials for use in making pet food and grease.

Hydrolyzed hair, bone, skin, and other inedibles are transferred by conveyers to the rendering plant where the materials are cooked to remove water and fats. The fats are used to make a white grease product and the remaining solid material is ground, screened, and transferred to a bone meal storage silo.

The following is a process flow diagram for the slaughterhouse and rendering plant operations.

Diagram 1: Process Flow Diagram



EMISSIONS/CONTROLS EVALUATION

The pollutants of concern from these activities are PM_{10} and $PM_{2.5}$. The only emission units in the slaughterhouse area are the two hair singers (EU1 and EU2). The emission factor (0.22 lb $PM_{2.5}$/mmBtu) for hair singeing was developed from a stack test performed in Iowa on a natural gas-fired singer.

Most of the emission units are located in the rendering plant where inedibles are processed into dry blood meal and dry bone meal. Emissions from the blood drier (EU3) are controlled with three wet scrubbers operating in series. The controlled emission factors for the blood drier were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 9.5.3 “Meat Rendering Plants” (September 1995). Emissions associated with the milling and screening (EU4 and EU7) of bone meal and blood meal are controlled with cyclones and the scrubbers. Emission factors were obtained from AP-42, Section, 9.9.1 “Grain Elevators & Processes” (May 2003), and a control efficiency of 99% was assumed for the scrubbers. Emissions associated with the material handling and load-out of bone meal and blood meal (EU5 – EU9) are controlled

with a baghouse and the application of liquid fat. Emission factors were obtained from AP-42, Section, 9.9.1 “Grain Elevators & Processes” (May 2003), and a control efficiency of 99% was assumed for the baghouse and 60% for the application of liquid fat.

Emissions from the haul roads and cooling towers were calculated according the procedures in AP-42, Section 13.2.1 “Paved Roads” (January 2011) and AP-42, Sections 13.4 “Wet Cooling Towers” (January 1995). Potential emissions from the haul roads were calculated using a silt loading of 2.08 grams per square meter which was verified through silt load testing. Combustion emissions are expected from the natural gas-fired singers (EU1 and EU2), the natural gas-fired blood drier (EU3), a diesel-fired emergency generator (EU11), a propane-fired trailer washer (EU10), and numerous natural gas-fueled space heaters and HVAC units (EU14). Triumph obtains all of its process steam from the adjacent Kansas City Power and Light Lake Road generating plant and does not have any boilers. Emission factors for combustion were obtained from the following Sections of AP-42, 1.4 “Natural Gas Combustion” (July 1998), 1.5 “Liquified Petroleum Gas Combustion” (July 2008), and 3.3 “Gasoline and Diesel Industrial Engines” (October 1996). Triumph has two 1,000 gallon above ground storage tanks (EU15). Working and breathing losses from the tanks were estimated to be less than 1 pound of volatile organic compounds (VOC) per year.

Triumph operates a waste water treatment plant. The treatment system is an aerobic process which does not generate hydrogen sulfide (H_2S) under normal operating conditions. However, small pockets of anaerobic decomposition can occur and produce H_2S. For this reason, the waste water treatment plant is a possible source of odors. However, the potential emissions of H_2S are expected to be small compared to the de minimis level and were not calculated because it would not affect the outcome of the permit. Potential emissions of H_2S are also expected from the blood drier (EU3), and the controlled emission factor was obtained from AP-42, Section 9.5.3 “Meat Rendering Plants” (September 1995). Potential emissions of the application represent the potential of the emergency generator operating no more than 500 hours per year and all other equipment located at the installation operating continuously (8760 hours per year). The following table provides an emissions summary for this project.

Table 4: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Potential Emissions of the Application	New Installation Conditioned Potential
PM_{10}	15.0	N/A	13.18	N/A
$PM_{2.5}$	10.0	N/A	9.35	N/A
SO_X	40.0	N/A	0.36	N/A
NO_X	40.0	N/A	34.00	N/A
VOC	40.0	N/A	1.94	N/A
CO	100.0	N/A	26.81	N/A
H_2S	10.0	N/A	0.24	N/A
HAPs	10.0/25.0	N/A	0.011	N/A

N/A = Not Applicable

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

APPLICABLE REQUIREMENTS

Triumph Foods 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.

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 a hardcopy Emissions Inventory Questionnaire (EIQ) is required by April 1 (May 1 for an electronic EIQ) for the previous year's emissions. Otherwise, submission of an electronic EIQ via MOEIS is required by May 1.

- *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

- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* 40 CFR Part 63, Subpart ZZZZ applies to the emergency generator.

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.

_____ _____

Kendall B. Hale Date
Environmental Engineer

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated June 9, 2010, received June 11, 2010, designating Triumph Foods, LLC as the owner and operator of the installation.
- Air Construction Permit Application – Supplemental Information, dated January 10, 2011, received January 18, 2011
- Haul Road Silt Loading Analysis, dated January 10, 2011, received May 10, 2011
- Hair Singer EP-3 Test Report, Sioux Center, Iowa, dated June 3, 2008, received March 16, 2011
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Kansas City Regional Office Site Survey, dated July 1, 2010.

Attachment A – Emission Unit List

Triumph Foods
Buchanan County, S30, T57N, R35W
Project Number: 2010-06-038
Installation ID Number: 021-0126
Permit Number:

ID	Description	MHDR	MHDR Units	Control device
EU1A	Singer 1 (Process Emissions)	7.75	mmBtu/hr	N/A
EU1B	Singer 1 (NG-Fired Combustion Emissions)	7.75	mmBtu/hr	N/A
EU2A	Singer 2 (Process Emissions)	7.75	mmBtu/hr	N/A
EU2B	Singer 2 (NG-Fired Combustion Emissions)	7.75	mmBtu/hr	N/A
EU3A	Blood Drier (Process Emissions)	0.68	tons dry blood per hour	V1 Venturi Scrubber S1 Packed Tower Scrubber S2 Packed Tower Scrubber
EU3B	Blood Drier (Combustion Emissions)	3.5	MMBtu/hr	V1 Venturi S1 Packed Tower Scrubber S2 Packed Tower Scrubber
EU4	Blood Meal Milling	0.68	tons dry blood per hour	C1 Cyclone C2 Cyclone V1 Venturi Scrubber S1 Packed Tower Scrubber S2 Packed Tower Scrubber
EU5A	Blood Meal Pneumatic Transfer to Silo	0.68	tons dry blood per hour	B1 Baghouse
EU5B	Blood Meal Storage Silo	0.68	tons dry blood per hour	N/A
EU6	Blood Meal Load-out	0.68	tons dry blood per hour	G1 Liquid Fat Application
EU7A	Bone Meal Milling	6.8	tons bone meal per hour	V2 Venturi Scrubber S1 Packed Tower Scrubber S2 Packed Tower Scrubber
EU7B	Bone Meal Screening	6.8	tons bone meal per hour	N/A
EU8A	Bone Meal Auger/Transfer	6.8	tons bone meal per hour	V2 Venturi Scrubber S1 Packed Tower Scrubber S2 Packed Tower Scrubber
EU8B	Bone Meal Storage Silo	6.8	tons bone meal per hour	N/A
EU9	Bone Meal Load-out	6.8	tons bone meal per hour	N/A
EU10	Propane-Fired Trailer Washer burner	520,000	Btu per hour	N/A
EU11	Diesel-Fired Emergency Generator	345	hp	N/A

ID	Description	MHDR	MHDR Units	Control device
EU12A	Cooling Tower	144,000	gal/hr	N/A
EU12B	Cooling Tower	144,000	gal/hr	N/A
EU12C	Cooling Tower	144,000	gal/hr	N/A
EU12D	Cooling Tower	144,000	gal/hr	N/A
EU12E	Cooling Tower	144,000	gal/hr	N/A
EU13	Haul Road	3.66	round trip miles	N/A
EU14A	RMAU-1: 45F Cut Floor 5,670,000 Btu/hr Space Heaters (7)	39.69	MMBtu/hr	N/A
EU14B	RMAU-8: 70F Kill Floor 2,268,000 Btu/hr Space Heaters (2)	4.536	MMBtu/hr	N/A
EU14C	RMAU-10: 70F Casings 718,000 Btu/hr Space Heater	0.718	MMBtu/hr	N/A
EU14D	Trane 697,000 BTU/HR Space Heaters (4)	2.788	MMBtu/hr	N/A
EU14E	Trane 410,000 BTU/HR Space Heater (4)	1.64	MMBtu/hr	N/A
EU14F	Hog Barn unit: 160,000 BTU/HR Space Heater	0.16	MMBtu/hr	N/A
EU14G	Trane RTU #2: 120,000 BTU/HR Space Heater	0.12	MMBtu/hr	N/A
EU14H	Hog Barn Heater (6)	0.66	MMBtu/hr	N/A
EU14I	Black Torpedo Heater (2)	2.2	MMBtu/hr	N/A
EU14J	Hanging Heaters (6)	0.72	MMBtu/hr	N/A
EU15A	above ground storage tank (diesel fuel)	1,000	gallon	N/A
EU15B	above ground storage tank (liquid propane)	1,000	gallon	N/A

Mr. Steve Enyart
Safety Manager
Triumph Foods
5302 Stockyards Expressway
St. Joseph, MO 64504

RE: New Source Review Permit - Project Number: 2010-06-038

Dear Mr. Enyart:

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 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 Kendall Hale, 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:khl

Enclosures

c: Kansas City Regional Office
PAMS File: 2010-06-038

Permit Number: