

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: **122010-009**

Project Number: 2010-07-034

Parent Company: BCP Ingredients, Inc.

Parent Company Address: 299 Extension Street, Verona, MO 65769

Installation Name: BCP Ingredients, Inc.

Installation Number: 109-0004

Installation Address: 299 Extension Street, Verona, MO 65769

Location Information: Lawrence County (S17, T26N, R26W)

Application for Authority to Construct was made for:

The installation of a new mixing and drying line to modify existing products. 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.

DEC 13 2010

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 Departments' Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available 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 source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

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

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SPECIAL CONDITIONS:

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

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

BCP Ingredients, Inc.
Lawrence County (S17, T26N, R26W)

1. Control Device Requirement – Cartridge Filter
 - A. BCP Ingredients, Inc. shall control emissions from the following equipment using cartridge filters as specified in the permit application.
 - 1) All Surge Bins (EP16-1)
 - 2) All Feed Augers (EP16-1)
 - 3) All Feeders (EP16-1)
 - 4) The Bulk Sack Loadout (EP16-1)
 - 5) The Particle Shaper (EP16-1)
 - 6) The Super Sack Filling (EP16-1)
 - 7) Bag Dump Station (EP16-2)
 - B. The cartridge filters shall be operated and maintained in accordance with the manufacturer's specifications. Pressure drop shall be used as an indicator of the proper operation of the control device. BCP Ingredients, Inc. shall use one of the following on each cartridge filter to assure proper operation of the control device.
 - 1) A differential pressure switch with an audible alarm that indicates operation of the unit outside of the manufacturer's design specifications whenever the device is in operation. An alarm indicates a decrease in efficiency of the control device and corrective action shall be implemented and documented as described in Special Condition 2.D; or
 - 2) A pressure gauge or meter that 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. BCP Ingredients, Inc. shall monitor and record the operating pressure drop across the cartridge filters at least once every twenty-four (24) hours when the device is in operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

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SPECIAL CONDITIONS:

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

- C. Replacement filters for the cartridge filter shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. BCP Ingredients, Inc. shall maintain an operating and maintenance log for the cartridge filter 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.
2. Control Device Requirements – Cyclone
- A. BCP Ingredients, Inc. shall control emissions from the screen/dryer using a cyclone (EP16-7) as specified in the permit application.
 - B. The cyclone shall be operated and maintained in accordance with the manufacturer's specifications.
 - C. BCP Ingredients, Inc. shall maintain an operating and maintenance log of the cyclone 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. Record Keeping and Reporting Requirements
- A. BCP Ingredients, Inc. 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. These records shall include Material Safety Data Sheets (MSDS) for all materials used.
 - B. BCP Ingredients, Inc. shall report to the Air Pollution Control Program's 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: 2010-07-034
Installation ID Number: 109-0004
Permit Number:

BCP Ingredients, Inc.
299 Extension Street
Verona, MO 65769

Complete: July 19, 2010

Parent Company:
BCP Ingredients, Inc.
299 Extension Street
Verona, MO 65769

Lawrence County (S17, T26N, R26W)

REVIEW SUMMARY

- BCP Ingredients, Inc. has applied for authority to construct a new mixing and drying line to modify existing products.
- Hazardous Air Pollutant (HAP) emissions are not expected from the proposed equipment.
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or the currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment. However, Subpart FFFF, *National Emissions Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemicals Manufacturing*, of the MACT does apply to other equipment at the installation.
- Cartridge filters and cyclones are being used to control particulate matter less than 2.5 microns in diameter (PM_{2.5}) and particulate matter less than ten microns in diameter (PM₁₀) emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below *de minimis* levels.
- This installation is located in Lawrence 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.
- A modification to your Part 70 Operating Permit is required within one (1) year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

BCP Ingredients, Inc. (BCPI) is located in Verona, Missouri and manufactures feed and food-grade nutritional additives. The manufacturing processes involve acid-base reactions and the resulting salts are either sold in liquid form or are concentrated, purified and dried. Other chemicals, including choline and ammonium salts, are also produced.

BCPI is considered a minor source with regards to construction permits. The installation was issued a Part 70 operating permit in March, 2007. The following permits have been issued to BCPI from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
0290-012*	Modify sodium propionate process and add sodium and potassium benzoate process
0990-001	Production and storage of tetramethyl ammonium chloride
0991-012*	Construction of a calcium propionate densifying machine
1191-005	Construction of a bulk storage tank for acetic acid liquors
0692-025	Modify tetramethyl ammonium chloride process
0793-005	Various equipment that was installed without permits
0294-001	Construct and modify three (3) processes
0893-013*	Various processes and storage tanks
0694-025	Install equipment to increase production of choline salts and installation of a boiler
0694-007	Increase production of choline salts by the addition of a dryer
0894-029**	Increase production of choline salts by the addition of a crystallizer, receiver and heat exchanger
0290-012A*	Increase in production of sodium and potassium benzoate. Amendment to 0290-012
0297-019*	Increase the production of sodium and potassium benzoate
0997-045*	Increase the existing throughput limit of dry acetate on three (3) permitted tanks
0498-006*	Increase production of sodium and potassium benzoate
122000-006	A temporary permit to conduct trial batch operation
012002-009	Installation of processing equipment for encapsulation of feed and food-grade materials
032002-023	Construction of liquid/gas repackaging stations
012008-012	Various modifications to the existing production lines.

* According to the Statement of Basis in OP2009-010, the equipment and/or processes in these permits are no longer in operation.

**According to BCPI, the equipment listed in Permit No. 0894-029 was never installed.

PROJECT DESCRIPTION

BCPI proposes to add a mixing and drying line to modify existing products. The new production line consists of various handling equipment (i.e. feeders, augers and bins), a particle shaper and a screen/dryer. The new production line will process material manufactured in building V-03 and send its product for encapsulation in building V-9. The new line is not expected to debottleneck equipment in building V-03 or V-9. It only modifies current products already being produced. The new mixing/drying line will use steam from an existing boiler. The boiler will not operate beyond already permitted capacity.

The company has requested that all other information, with the exception of emissions data, be kept confidential as allowed per Missouri State Rule 10 CSR 10-6.210. The confidential data includes process rates, formulations and material safety data sheet (MSDS) and can only be obtained with written permission from BCPI.

EMISSIONS/CONTROLS EVALUATION

Only PM_{2.5} and PM₁₀ are expected from the equipment. Currently, there are no emission factors for this process in Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, so emission factors from similar processes were used. No particle size distribution is available for emissions from the equipment, so all of the PM₁₀ are assumed to be PM_{2.5}.

Emissions from the handling equipment (i.e. feeders, augers and bins) before the extruder were calculated from an emission factor for cement loadout (scc 3-05-006-19) from EPA's Factor Information Retrieval System (FIRE). The factor for cement loadout was chosen because both cement and the raw material for the new line are in powder form. PM₁₀ emissions from the operation of the particle shaper were calculated using an emission factor for soybean hull grinding (scc 3-02-007-86) from FIRE. The grinding action in the hull grinding should emit more PM₁₀ emissions than the cutting and rounding action in the particle shaper and this emission factor should give a very conservative estimate of emissions. PM₁₀ emissions from the handling equipment downstream of the extruder were calculated using the emission factor for grain handling (scc 3-02-005-30) in AP-42, Chapter 9.9.1, *Grain Elevator and Processes* (May, 2003). The product from the new line is a pasta-like round material that should have less silt content than grain. PM₁₀ emissions from the screen/dryer were calculated using the emission factor for grain cleaning (scc 3-02-007-53) from AP-42, Chapter 9.9.7, *Corn Wet Milling* (January, 1995).

The particulate emissions will be piped to the cartridge filters and the connections are expected to be fully enclosed. However, the company does not want to claim 100% capture and does not want to install any devices (e.g. pressure gauges) to prove 100% capture. For this project, the PM₁₀ and PM_{2.5} emissions are calculated to be 6.17 tons per year (tpy), which would be below their respective *de minimis* levels, even if emissions are not captured and are emitted to the atmosphere. Therefore, obtaining an accurate number for capture efficiency is not needed. The capture efficiency was assumed to be 50% for all equipment because this number should give a very conservative estimation of emissions.

The cartridge filters are given a control device efficiency of 98%, even though our default control efficiency for a cartridge filter is 99%. The company stated in its application that the "device that is purchased will be chosen through a competitive bid process for a device that meets or exceeds the specifications of 1000 cfm and 98% efficiency for all particles larger than 1 micron." The cyclone

was given a control efficiency of 10% because AP-42, Appendix B, Table B.2-3 lists 10% as the efficiency of a cyclone for PM_{2.5}.

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	*Existing Potential Emissions	Existing Actual Emissions (2009 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM _{2.5}	10.0	N/D	N/D	4.07	N/A
PM ₁₀	15.0	49.87	5.01	4.07	N/A
SO _x	40.0	123.45	0.024	N/A	N/A
NO _x	40.0	49.99	3.80	N/A	N/A
VOC	40.0	250.00	50.53	N/A	N/A
CO	100.0	27.85	3.18	N/A	N/A
HAPs	10.0/25.0	188.64	9.28	N/A	N/A

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

* Existing potential emissions taken from permit 012008-012 (Project 2007-07-059)

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

BCP Ingredients, 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
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1, if submitting by hardcopy, or May 1, if submitting online at <https://www.dnr.mo.gov/moeis/main/login>, for the previous year's emissions. Payments are due June 1.

- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

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.

Chia-Wei Young
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated July 12, 2010, received July 19, 2010, designating BCP Ingredients, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southwest Regional Office Site Survey, dated August 4, 2010.