

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: **032012-005**

Project Number: 2011-12-024
Installation Number: 021-0037

Parent Company: Albaugh, Inc.

Parent Company Address: 1525 NE 36th Street, Ankeny, IA 50021

Installation Name: Albaugh, Inc.

Installation Address: 4900 Packers Avenue, St. Joseph, MO 64504

Location Information: Buchanan County, S30, T57N, R35W

Application for Authority to Construct was made for:

The installation of four storage tanks, four reactors, and a mixer. 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 12 2012

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 startup 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 startup 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."

Albaugh, Inc.
Buchanan County, S30, T57N, R35W

1. Volatile Organic Compound (VOC) Emission Limitations
 - A. Albaugh, Inc. shall emit less than 100.0 tons of volatile organic compounds (VOCs) in any consecutive 12-month period. This limit applies to the VOC emissions from all equipment/processes installed or permitted at Albaugh, Inc. as of the issuance date of this permit.
 - B. Attachment A, or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A.
2. Hazardous Air Pollutants (HAPs) Emission Limitations
 - A. Albaugh, Inc. shall emit less than 10.0 tons of individual hazardous air pollutants (HAP) and 25.0 tons of combined HAP in any consecutive 12-month period. These limits apply to individual and combined HAP emissions from all equipment/processes installed or permitted at Albaugh, Inc. as of the issuance date of this permit.
 - B. Albaugh, Inc. shall emit less than 0.01 tons of 2-methylnaphthalene (CAS #91-57-6) in any consecutive 12-month period from the equipment of this permit. The equipment include four storage tanks (T-501, T-502, T-503, and T-504), four reactors (R-501, R-502, R-503, and R-504), and a mixer (M-501).
 - C. Attachment B, C, D or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A. and 2.B.
3. Operational Requirement
Albaugh, Inc. shall keep all chemicals in sealed containers whenever the materials are not in use. Albaugh, Inc. shall provide and maintain suitable, easily read, permanent markings on chemical solution containers used with this equipment.

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SPECIAL CONDITIONS:

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

4. Record Keeping and Reporting Requirements
 - A. Albaugh, 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. These records shall include Material Safety Data Sheets (MSDS) for all materials used.
 - B. Albaugh, 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 (5) REVIEW

Project Number: 2011-12-024
Installation ID Number: 021-0037
Permit Number:

Albaugh, Inc.
4900 Packers Avenue
St. Joseph, MO 64504

Complete: December 12, 2011

Parent Company:
Albaugh, Inc.
1525 NE 36th Street
Ankeny, IA 50021

Buchanan County, S30, T57N, R35W

REVIEW SUMMARY

- Albaugh, Inc. has applied for authority to install four storage tanks (T-501, T-502, T-503 and T-504), four reactors (R-501, R-502, R-503 and R-504) and one mixer (M-501).
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAPs of concern from this process are polycyclic organic matters (POM), particularly 1-methylnaphthalene (CAS #90-12-0) and 2-methylnaphthalene (CAS #91-57-6).
- None of the New Source Performance Standards (NSPS) apply to the proposed equipment. Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*, does not apply to the storage tanks because their volumes do not exceed 75 cubic meters (19,813 gallons) each. Subpart VVa, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry for Which Construction, Reconstruction or Modification Commenced After November 7, 2006*, does not apply to the proposed equipment because the facility does not produce, as a final product or intermediate, any of the chemicals listed at 40 CFR §60.489.
- None of the currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment. Subpart NNNNNN, *National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources: Chromium Compounds*, does not apply to the installation because the installation does not make any chromium compounds. Subpart VVVVVV, *National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources*, does not apply to the installation because the installation does not use as feedstock, generate as byproducts or produce as products any of the HAPs listed in Table 1 of this subpart.

- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation. Subpart V, *National Emissions Standards for Equipment Leaks (Fugitive Emission Sources)*, does not apply to this installation because the installation does not service vinyl chloride or benzene.
- Dust collectors are being used to control particulate emissions from the proposed equipment, but are not required as a condition of this permit. The facility's potential particulate emissions are below the *de minimis* levels even without the dust collector.
- 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 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, 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 the *de minimis* levels and the Screening Model Action Levels (SMAL).
- Emissions testing is not required for the equipment.
- A modification to the facility's 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

Albaugh, Inc. manufactures, formulates and repackages a variety of herbicides and pesticides at the St. Joseph facility. Equipment at the installation includes storage tanks, mixing tanks, reaction vessels and other material handling and chemical processing equipment. The installation was issued an Intermediate Operating Permit in 2007 which limited its volatile organic compound (VOC) emissions to less than 100.0 tons per year (tpy), its individual HAP emissions to less than 10.0 tons per year and its combined HAP emissions to less than 25.0 tons per year. Due to these limits, the facility is also a minor source for construction permits.

The following construction permits have been issued to Albaugh, Inc. from the Air Pollution Control Program.

Table 1: Construction Permit History

Permit Number	Description
0486-005	Esterification of 2,4-dichlorophenoxyacetic acid
0794-021	Addition of a 3,000 gallon Pfaundler reactor
0495-001	Addition of two (2) 3,500 gallon premix tanks
0895-001	Addition of eight (8) 20,000 gallon tanks
1095-008	Installation of a 15,000 gallon premix tank and 5,000 gallon reactor
1295-011	Installation of a 381,000 gallon tank
1296-001	Installation of a 170,000 gallon carbon steel tank
0797-010	Addition of eleven storage tanks
1197-004	Addition of four (4) 36,000 gallon tanks and removal of three (3) existing tanks
0198-003	Replacement of a 3,500 gallon Pfaundler reactor with a 5,000 gallon Pfaundler reactor. Addition of two (2) 3,500 gallon cooling tanks
0498-020	Addition of a new trifluralin storage tank
1099-005	Addition of 20 tanks
112000-015	Addition of 17 blending tanks for glyphosate and dicamba 2,4-D production
012005-007	Installation of a new glyphosate process
032009-004	Installation of four (4) storage/mixing tanks

PROJECT DESCRIPTION

The facility proposes to install four (4) storage tanks, four (4) reactors and a three-chamber mixer. Each storage tank (T-501, T-502, T-503 and T-504) has a capacity of 7,000 gallons. Two of the reactors (R-501 and R-502) have capacities of 2,100 gallons each and the remaining two have capacities of 4,700 gallons each. Each chamber of the mixer can hold 700 gallons for a total of 2,100 gallons for the entire mixer. The equipment can produce nine (9) different products: Metalaxyl, Captan, Tebuconazole, Thiabendazole, Imidacloprid, Mepaquat Chloride, Propiconazole, Myclobutanil, and Cyromazine. However, only one all-liquid formulation and one solid/liquid formulation can be produced at the same time.

EMISSIONS/CONTROLS EVALUATION

Potential emissions are calculated using the all-liquid formulation with the highest emissions and the solid/liquid formulation with the highest emissions, assuming 8760 hours of production for each. Table 2 lists the highest emitting all-liquid and solid/liquid formulations for each pollutant and their maximum annual production rate.

Table 2: Highest Emitting All-Liquid and Solid/Liquid Formulations

Pollutants	All-Liquid Formulation	¹ Maximum Annual Production (Batches)	Solid/Liquid Formulation	¹ Maximum Annual Production (Batches)
VOC	Myclobutanil	3396	Metalaxyl	3096
Combined HAP	Myclobutanil	3396	Thiabendazole	2503
Ethylene Oxide	None	None	Thiabendazole	2503
Naphthalene	Propiconazole	4787	None	None
1-Methylnaphthalene	Myclobutanil	3396	None	None
2-Methylnaphthalene	Myclobutanil	3396	None	None

Note 1: Each batch is 1,000 gallons.

A mass balance approach was used to calculate the potential VOC and HAPs emissions from the tanks. During each step in the production process, different chemicals are added and air is pulled through the system. As the air flows through the tanks, mass is transferred from the liquid to the vapor in an attempt to establish equilibrium. It was assumed that 25% of the air becomes saturated with this vapor. This number is considered conservative due to the limited area for mass transfer. The vapor compositions were calculated using the liquid composition, the vapor pressure and the system pressure. The uncontrolled VOC and HAPs emissions were then calculated using the mass of 25% of the air flow multiplied by the vapor composition.

Emissions of particulate matter less than ten microns in diameter (PM₁₀) were calculated using an uncontrolled emission factor of 0.012 pounds per ton of material used. This is based on emissions testing performed in 1995 at the St. Joseph facility for 2,4-dichlorophenoxyacetic acid dumping into a tank. During the transfer of the solids to the reactors, the material will be lifted over the top of the mixing tank and slowly discharged into the liquid that is already in the tank. The dust generated during this process will be removed from the head space of the vessel by a duct that is connected to a dust collector. The dust collector is expected to have at least 90% control efficiency. However, this control efficiency was not utilized in the potential emissions calculations because even without the dust collector, PM₁₀ emissions are expected to be less than its *de minimis* level.

No particle size distribution is available to differentiate between PM₁₀, particulate matter less than two-and-a-half microns (PM_{2.5}) and particulate matter (PM). However, at such low emission rates of PM₁₀ (0.09 tpy), differentiating between them is unnecessary and all of the PM₁₀ are considered PM_{2.5} and PM in this permit.

The facility has traditionally accepted a 100 tpy VOC and a 10.0/25.0 tpy HAP limit in its intermediate operating permit and this has kept the facility a minor source. With the addition of the 14.93 tpy VOC and 0.86 tpy of HAP in this permit, the facility will have potential emissions above the major source level for VOC and HAP. The installation has decided to accept the 100 tpy VOC and 10.0/25.0 tpy HAP limit in this construction permit to keep its status as a minor source. Emissions of 1-Methylnaphthalene and 2-methylnaphthalene are greater than their respective Screening Model Action Levels (SMAL) of 0.01 tpy. In order to avoid modeling requirements, the facility accepted a 0.01 tpy limit for 2-methylnaphthalene. Since only one chemical emits these pollutants, this limit would also keep emissions of 1-methylnaphthalene under 0.01 tpy.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	¹ Existing Potential Emissions	Existing Actual Emissions (2010 EIQ)	Potential Emissions of the Application	New Project Conditioned Potential	New Installation Conditioned Potential
PM _{2.5}	10.0	N/D	N/D	0.05	N/A	N/A
PM ₁₀	15.0	N/D	N/D	0.05	N/A	N/A
PM	25.0	N/D	N/D	0.05	N/A	N/A
SO _x	40.0	N/D	N/D	N/A	N/A	N/A
NO _x	40.0	N/D	N/D	N/A	N/A	N/A
VOC	40.0	<100	28.68	14.93	N/A	<100.0
CO	100.0	N/D	N/D	N/A	N/A	N/A
HAPs	10.0/25.0	<10.0/25.0	N/D	0.86	N/A	<10.0/25.0
Ethylene Oxide	0.1	N/D	N/D	0.0003	N/A	N/A
Naphthalene	10	N/D	N/D	0.46	N/A	N/A
1-Methylnaphthalene	0.01	N/D	N/D	0.0942	0.003	N/A
2-Methylnaphthalene	0.01	N/A	N/A	0.3532	<0.01	N/A

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

Note 1: Existing potential emissions of VOC and HAPs based on limit in the Intermediate Operating Permit OP2010-035.

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

Albaugh, 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.

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

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 December 9, 2011, received December 12, 2011, designating Albaugh, Inc. as the owner and operator of the installation.

Attachment D

Monthly Individual 2-Methylnaphthalene Tracking Record: Project Only

This sheet or an equivalent form may be used for the recordkeeping requirements of Permit Condition 2.B., Project No. 2011-12-024

This sheet covers the month of _____ in the year _____.

Name of specific HAP: 2-methylnaphthalene

Column 1 (a)	Column 2	Column 3 (b)
Batches of Myclobutanil Produced	Emission Factor, in lbs/batch	Emissions this Month, in tons
	0.208	
(c) 12-month 2-methylnaphthalene emissions total from last month's Attachment D, in tons:		
(d) Monthly 2-methylnaphthalene emissions total (b) from last year's Attachment D, in tons:		
(e) Current 12-month total of HAP emissions, in tons: [(b) + (c) - (d)]		

Instructions:

- (a) List the batches of Myclobutanil produced this month.
- (b) Calculate total 2-methylnaphthalene emissions for this month by [Column 2] x [Column 3] ÷ 2,000
- (c) Record the previous 12-month individual 2-methylnaphthalene emissions total (e) from last month's Attachment D, in tons
- (d) Record the monthly 2-methylnaphthalene emissions total (b) from previous year's Attachment D, in tons
- (e) Calculate the current 12-month individual 2-methylnaphthalene emissions total

A 12-month individual HAP emissions total of less than 0.01 tons indicates compliance.

Mr. Ron Collins
Manager of Environmental, Health, and Safety
Albaugh, Inc.
4900 Packers Avenue
St. Joseph, MO 64504

RE: New Source Review Permit - Project Number: 2011-12-024

Dear Mr. Collins:

Enclosed with this letter is your permit to construct. Please study it carefully. 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, 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 Chia-Wei Young, 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:cyl

Enclosures

c: Kansas City Regional Office
PAMS File: 2011-12--024

Permit Number: