

# 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: **092010-006** Project Number: 2010-05-040

Parent Company: MFA Incorporated

Parent Company Address: 201 Ray Young Drive, Columbia, MO 65201-3599

Installation Name: MFA Agri Service

Installation Number: 053-0029

Installation Address: 1605 Radio Hill Road, Boonville, MO 65233

Location Information: Cooper County (S10, T48N, R17W)


Application for Authority to Construct was made for:

The installation of a dry/liquid fertilizer plant and a bulk seed storage/treatment operation at an existing grain storage and drying installation. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

SEP 16 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."*

MFA Agri Service  
Cooper County (S10, T48N, R17W)

1. Emission Limitation
  - A. MFA Agri Service shall emit less than 15.0 tons of particulate matter less than ten (10) microns in diameter (PM<sub>10</sub>) in any consecutive 12-month period from the entire installation (see table 1)

**Table 1: Installation Emission Points**

<b>Grain Storage and Drying Operation</b>	
<b>Emission Points</b>	<b>Equipment/Activities</b>
EP1	Grain receiving by truck
EP2	All internal handling equipment
EP3	Storage bin
EP4, 5	Grain dryer
EP6	Grain truck loadout
<b>Fertilizer Mixing Operation</b>	
<b>Emission Points</b>	<b>Equipment/Activities</b>
EP8	Fertilizer receiving
EP9	Bay/bin filling by conveyor
EP10	Bulk seed filling
EP11	Fertilizer mixer
EP12	Seed to mixer
EP13	Fertilizer loadout
<b>Seed Treatment Operation</b>	
<b>Emission Points</b>	<b>Equipment/Activities</b>
EP14	Seed receiving
EP10	Bulk seed filling
EP15	Conveyors/handling equipment
EP16	Seed weigh hopper
EP17	Seed treater (blender)
EP18	Seed loadout
<b>All Three Operations</b>	
<b>Emission Points</b>	<b>Equipment/Activities</b>
EP7	Haul road

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**SPECIAL CONDITIONS:**

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

- 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. **Control Method Requirement-Oil Suppression**  
MFA Agri Service shall control PM<sub>10</sub> emissions from all internal handling equipment (i.e. elevators, conveyors and augers, EP2), storage bins (EP3) and truck loadout (EP6) of the grain elevator/dryer using oil suppression as specified in the permit application.
3. **Record Keeping and Reporting Requirements**
  - A. MFA Agri Service shall maintain all records required by this permit for not less than five (5) years and shall make them available to any Missouri Department of Natural Resources' personnel upon request. These records shall include Material Safety Data Sheets (MSDS) for all materials used.
  - B. MFA Agri Service 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 shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (6) REVIEW

Project Number: 2010-05-040  
Installation ID Number: 053-0029  
Permit Number:

MFA Agri Service  
1605 Radio Hill Road  
Boonville, MO 65233

Complete: May 17, 2010

Parent Company:  
MFA Incorporated  
201 Ray Young Drive  
Columbia, MO 65201-3599

Cooper County (S10, T48N, R17W)

REVIEW SUMMARY

- MFA Agri Service has applied for authority to install a dry/liquid fertilizer plant and a bulk seed storage and treatment operation.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. The HAP of concern is ethylene glycol from the use of fungicides.
- None of the New Source Performance Standards (NSPS) apply to the installation. 40 CFR 60 Subpart DD, "Standards of Performance for Grain Elevators," of the New Source Performance Standards (NSPS) does not apply to the equipment because the facility is not a grain terminal elevator (i.e. grain elevator with storage capacity over 88,100 m<sup>3</sup> (2.5 million bushels)) constructed, modified or reconstructed after August 3, 1978. Subpart X, "Standards of Performance for the Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities" of the NSPS does not apply to the facility because the facility does not process the Granular Triple Superphosphates within seventy-two (72) hours after it is produced.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation. None of the currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- Oil suppression will be used to control the particulate matter (PM, PM<sub>10</sub> and PM<sub>2.5</sub>) emissions from the equipment at the grain elevator.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM are above de minimis levels.
- This installation is located in Cooper 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 because PM does not have a National Ambient Air Quality Standard (NAAQS) and conditioned potential emissions of all other pollutants are below de minimis levels.
- Emissions testing is not required for the equipment.
- No operating permit is required for this installation.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

The installation is a grandfathered grain elevator that did not require a construction permit and it was purchased by MFA Incorporated approximately a year ago. The grain elevator has a maximum hourly design rate of 304.5 tons per hour. The grain dryer has a maximum hourly design rate of only 42 tons per hour because not all grain received by the elevator are dried. The dryer combusts liquified petroleum gas (LPG) at a maximum rate of 0.213 Mgal/hr. No permits have been issued to this installation from the Air Pollution Control Program. This facility is considered a minor source for construction permits and no operating permit is required for the installation.

### PROJECT DESCRIPTION

MFA Incorporated will install a new dry/liquid fertilizer plant and a bulk seed storage and treatment plant at the site. At the fertilizer plant, dry fertilizers would be received from trucks and discharged into a receiving conveyor which would feed the fill conveyor located inside the building. The fill conveyor would load the six (6) storage bays that have a combined storage capacity of approximately 2,880 tons. Bucket elevators would move the fertilizers to one of two eight (8) ton vertical mixers. The two (2) mixers have a combined maximum hourly design rate of 90 tons per hour and serve as a bottleneck for the entire process. The mixed fertilizers would then be loaded into trucks for shipment offsite. Bulk seed can also be loaded into the mixer to be mixed with the fertilizers based on customer need. The fertilizer plant can process liquid at 50 tons per hour. The liquid fertilizer is a Urea Ammonium Nitrate (UAN) solution and does not contain any regulated air pollutants that may be emitted, such as volatile organic compounds (VOCs) or hazardous air pollutants (HAPs). If the facility decides to process liquid fertilizers that contains VOC or HAP, a new permit review will be required.

The seed treatment plant has a maximum hourly design rate of 30 tons per hour. It consists of four (4) 3,000 bushels hopper bottom storage bins with a fill conveyor. The seed would be conveyed to a weigh hopper before being transferred into the treater or directly into trucks or storage bags. The seeds will be treated with fungicide solutions, some of which contain VOC or HAPs. The conveyor that feeds the weigh hopper acts as the bottleneck of the system. It can only fill the weigh hopper at 30 tons per hour even though the seeds can be received at 36 tons per hour.

## EMISSIONS/CONTROLS EVALUATION

PM, PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the grain elevator and the seed treating operation were calculated using emission factors found in the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 9.9.1, "Grain Elevators and Processes," May, 2003. A control efficiency of 60% was given for internal handling, storage bin and product shipping for the use of oil suppressants at the grain elevator. The facility will apply between 1 gallon to 1.5 gallons per 1,000 bushels of grain. The facility will use both hopper bottom and straight trucks for material receiving. Since straight truck receiving has the higher emission factor, the potential PM<sub>2.5</sub>, PM<sub>10</sub> and PM emissions from receiving were calculated assuming that the facility uses 100% straight trucks. However, to keep records of PM<sub>10</sub> emissions for compliance with the 15.0 tons per year installation-wide limit, the facility may use the hopper truck emission factor for those received using hopper trucks.

Combustion emissions (NO<sub>x</sub>, SO<sub>x</sub>, VOC, CO and HAPs) from the grain dryer were calculated using emission factor in AP-42, Chapter 1.5, "Liquified Petroleum Gas Combustion," July, 2008. The material safety data sheets (MSDS) of the fungicides used by the seed treatment plant show some VOC and HAPs. The VOC and HAPs emissions were calculated by using a mass balance approach assuming that all of the VOC and HAPs would be emitted.

AP-42 does not give emission factors for equipment at fertilizer plants. However, the Air Pollution Control Program has, in the past, approved the use of 0.02 lbs/ton as the PM<sub>10</sub> emission factor for handling and mixing equipment at dry fertilizer plants. A PM emission factor (0.067 lbs/ton) from the fertilizer were calculated using the PM<sub>10</sub> emission factor (0.02 lbs/ton) and scaling it based on particle size distribution data. The particle size distribution data is taken from the paper, "Fugitive Dust Control for Phosphate Fertilizer," developed by the University of Florida, Department of Engineering Sciences (December, 1988). The paper discusses the particle size distribution for two different types of fertilizers (Granular Triple Phosphate (GTSP) and diammonium phosphate (DSP)). The average PM<sub>10</sub> percentage (30%) from the two fertilizers were used to scale the PM<sub>10</sub> emission factor. The particle size distribution did not include PM<sub>2.5</sub>. According to AP-42, Chapter 9.9.1, PM<sub>2.5</sub> emissions from grain handling equipment are estimated to be approximately 20% of the PM<sub>10</sub> emissions. Therefore, the PM<sub>10</sub> emission factor for fertilizer handling (0.02 lbs/ton) was multiplied by 20% to obtain an emission factor (0.004 lbs/ton) for PM<sub>2.5</sub>.

Potential emissions of the application represent the potential of the seed treatment and fertilizer operation, assuming continuous operation (8760 hours per year.). Potential emissions of the grain elevator were not included in the potential emissions of the application because it is an existing operation. The existing potential emissions are the emissions of the grain elevator. The existing actual emissions are listed as not determined (N/D) because MFA Agri Services purchased the facility last year and records do not show that the previous owner have ever submitted an Emissions Inventory Questionnaire (EIQ) to the Air Pollution Control Program.

The installation conditioned potential of 15 tons per year of PM<sub>10</sub> is based on a voluntary

limit from the company. The installation conditioned potential of PM<sub>2.5</sub>, PM, VOC and HAPs are based on limiting each of the three (3) operations (seed treatment, fertilizer mixing and grain elevator) to 15.0 tons of PM<sub>10</sub> and taking the emissions from the operation with the highest emissions of that particular pollutant. SO<sub>x</sub>, NO<sub>x</sub> and CO emissions are not proportionally reduced because they are from the combustion of the grain dryer and the grain dryer only dries a portion of the grain received. It can potentially operate for the entire year and not violate the 15.0 tons per year PM<sub>10</sub> limit.

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

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	New Installation Conditioned Potential
PM <sub>2.5</sub>	10.0	24.51	N/D	13.58	2.74
PM <sub>10</sub>	15.0	151.34	N/D	76.96	<15.0
PM	25.0	460.12	N/D	224.25	45.61
SO <sub>x</sub>	40.0	1.40	N/D	0.00	1.40
NO <sub>x</sub>	40.0	12.13	N/D	0.00	12.13
VOC	40.0	0.93	N/D	25.10	15.30
CO	100.0	7.0	N/D	0.00	7.00
Ethylene Glycol	10.0	0.0	N/A	1.81	1.10
HAPs	10.0/25.0	0.16	N/D	1.81	1.10

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

### 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 PM are above its de minimis level.

### APPLICABLE REQUIREMENTS

MFA Agri Service 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 an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *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 (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

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Chia-Wei Young  
Environmental Engineer

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Date

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 14, 2010, received May 17, 2010, designating MFA Agri Service as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated June 16, 2010.

## Attachment A - PM<sub>10</sub> Compliance Worksheet

MFA Agri Service  
 Cooper County (S10, T48N, R17W)  
 Project Number: 2010-05-040  
 Installation ID Number: 053-0029  
 Permit Number: \_\_\_\_\_

This sheet covers the month of \_\_\_\_\_  
 (month, year)

Emission Description	Throughput (tons)	Composite Emission Factor (pounds of PM <sub>10</sub> per ton)	<sup>1</sup> Emissions (Pounds)
<b>Grain Elevator/Dryer</b>			
Grain Receiving, Straight Trucks		0.059	
Grain Receiving, Hopper Trucks		0.0078	
All Grain Handling, Hauling		0.0464	
Grain Dryer		0.0586	
<b>Seed Treatment Plant</b>			
Seed Receiving, Straight Trucks		0.059	
Seed Receiving, Hopper Trucks		0.0078	
Seed Treatment Handling, Mixing, Hauling		0.1283	
<b>Fertilizer Plant</b>			
Fertilizer Plant		0.1328	
<b><sup>2</sup> Monthly PM<sub>10</sub> Emissions (pounds)</b>			
<b><sup>3</sup> Monthly PM<sub>10</sub> Emissions (tons)</b>			
<b>PM<sub>10</sub> Emissions from the Previous Eleven (11) Months (tons)</b>			
<b><sup>4</sup> Cumulative 12-Month PM<sub>10</sub> Emissions (tons)</b>			

<sup>1</sup> Emissions calculated by multiplying the Throughput (tons) by the respective Emission Factor (lbs/ton).

<sup>2</sup> Monthly PM<sub>10</sub> Emissions in pounds calculated by summing the emissions from each emission point.

<sup>3</sup> Monthly PM<sub>10</sub> Emissions in tons calculated by dividing the Monthly PM<sub>10</sub> Emissions in pounds by 2,000.

<sup>4</sup> Cumulative PM<sub>10</sub> Emissions calculated by summing this month's PM<sub>10</sub> Emissions in tons with the previous eleven (11) month's PM<sub>10</sub> Emissions in tons. A total of less than **15.0** tons per year is necessary for compliance.