

Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

AUG 30 2019

Mr. Minh Hoac
Sr. EHS Specialist-Central Hub
BASF Corporation-Hannibal Site
3150 Highway JJ
Palmyra, MO 63461

RE: New Source Review Permit - Project Number: 2019-05-036 Public

Dear Mr. Hoac:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. 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 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: <http://dnr.mo.gov/regions/>. The online CAV request can be found at <http://dnr.mo.gov/cav/compliance.htm>.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.



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If you have any questions regarding this permit, please do not hesitate to contact Nicole Weidenbenner, at the Department of Natural Resources' 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



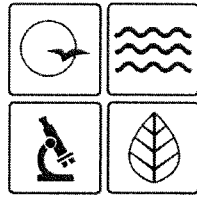
Susan Heckenkamp
New Source Review Unit Chief

SH:nwa

Enclosures

c: Northeast Regional Office
PAMS File: 2019-05-036 Public

Permit Number: **082019-012**



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: **082019-012** Project Number: 2019-05-036 Public
Installation Number: 127-0001

Parent Company: BASF Corporation Agricultural Products

Parent Company Address: 26 Davis Drive, Research Triangle, NC 27709

Installation Name: BASF Corporation-Hannibal Site

Installation Address: 3150 Highway JJ, Palmyra, MO 63461

Location Information: Marion County, S14, T53N, R5W

Application for Authority to Construct was made for:
Increasing production of PROWL plant. 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.



Director or Designee
Department of Natural Resources

AUG 30 2019

Effective Date

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 Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's 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's 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 the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 using the contact information below.

Contact Information:

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:

<http://dnr.mo.gov/regions/>

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 to 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 (3)(E). "Conditions required by permitting authority."

BASF Corporation-Hannibal Site
Marion County, S14, T53N, R5W

1. Control Device Requirements
 - A. BASF Corporation-Hannibal Site shall control emissions from the equipment contained in this permit as specified in Table 2, except for any control devices indicated as voluntary. BASF has the option of using control devices indicated as voluntary as these are not federally enforceable but stated for informational purposes.
 - B. BASF Corporation-Hannibal Site shall operate and maintain all control devices (except voluntary) in accordance with the manufacturer's specifications.
 - C. BASF Corporation-Hannibal Site shall maintain an operating and maintenance log for each control device (except voluntary) 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. Record Keeping and Reporting Requirements
 - A. BASF Corporation-Hannibal Site 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 SDS for all materials used.
 - B. BASF Corporation-Hannibal Site shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by email at AirComplianceReporting@dnr.mo.gov, no later than 10 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 (5) REVIEW

Project Number: 2019-05-036 Public

Installation ID Number: 127-0001

Permit Number: 082019-012

Installation Address:

BASF Corporation-Hannibal Site
3150 Highway JJ
Palmyra, MO 63461

Parent Company:

BASF Corporation Agricultural Products
26 Davis Drive
Research Triangle, NC 27709

Marion County, S14, T53N, R5W

REVIEW SUMMARY

- BASF Corporation-Hannibal Site has applied for authority to increase production at the PROWL plant.
- The application was deemed complete on July 22, 2019.
- HAP emissions are expected from the process.
- None of the New Source Performance Standards (NSPS) apply to the PROWL process.
- None of the NESHAPs apply to the PROWL process.
- 40 CFR part 63 Subpart MMM, National Emissions Standards of Hazardous Air Pollutants from Pesticide Active Ingredient Facilities applies to the PROWL process.
- Existing control equipment, including scrubbers, vent condensers, and RCRA Incinerators are being used to control emissions from the PROWL process.
- 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 Marion County, an attainment/unclassifiable 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. It is listed under number 9 *Hydrofluoric, Sulfuric, or Nitric Acid Plants*, and number 20, *Chemical Processing 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 for any criteria pollutants since the emissions increases are below their respective de minimis levels.
- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.
- An update to the current Part 70 Operating Permit renewal application is required.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

BASF Corporation-Hannibal Site is an agricultural chemical manufacturing installation in Marion County, Missouri. This installation is classified as a major source for construction permits and a Part 70 source for operating permits. The following New Source Review permits have been issued to BASF Corporation-Hannibal Site from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description	Permit Status
0276-003	Installation of PROWL, HERBICIDE, THIMET, and COUNTER plants	Active permit
0778-038 through 0778-041	Installation of Nitric Acid Plant, storage tank, and lime storage silo	Active permit
0878-001	Installation of a temporary incinerator	Unit(s) removed from site.
1179-EPA	Major source permit for a Nitric Acid plant	Unit(s) removed from site.
0380-002	Installation of an Animal Feed Intermediate spray drying system	Unit(s) removed from site.
0385-002	Installation of a solid waste incinerator for herbicide wastes	Unit(s) removed from site.
0885-005A	Construction of SCEPTER and ARSENEL herbicide production lines	Superseded by permit 102009-007. Superseded by permit 052015-012.
0887-003	Construction of ASSERT herbicide production line	Active permit
0488-001	Construction of a sulfuric acid regeneration facility	Active permit
0588-007A	Installation of a packaging operation for THIMET and COUNTER insecticides	Unit(s) removed from site.
0988-004	Installation of a backup flare for odor control	Active permit
0489-004	Addition of a bulk herbicide blending and storage facility	Active permit
1189-001	Installation of the PROWL "C" Incinerator and waste storage tank	Active permit
0690-005	Modification of existing equipment to increase PROWL herbicide production	Active permit

Permit Number	Description	Permit Status
0491-002	Addition of a fermenter to expand pharmaceutical plant	Unit(s) removed from site.
0392-006	Construction of bulk lime and dicalite handling equipment and storage	Unit(s) removed from site.
0393-001	Modification of existing Animal Feed Intermediate Plant	Unit(s) removed from site.
0793-001	Construction of a pellet-coating plant	Unit(s) removed from site.
0694-008	Addition of a centrifuge to increase PROWL herbicide production	Superseded by permit 102009-007. Superseded by permit 052015-012.
0894-010	Modification to increase COUNTER insecticide production	Active permit
0696-013	Modification to imidazoline (IMI-2) line	Active permit
122000-003	Addition of pyrrole production plant	Superseded by permit 092009-005.
0997-003	Modification to increase PROWL herbicide production	Active permit
062000-019	Modification to increase PROWL herbicide production	Active permit. Special Conditions #2 and 10 superseded by permit amendment 062000-019A. Special Conditions #1 and 9 superseded by permit amendment 062000-019B.
082005-014	Modification of the IMI-2 herbicide manufacturing facility to allow the production of three new pesticide active ingredient intermediates for imidazolinone herbicides	Superseded by permit 102008-001.
022006-005	Modification of the Pyrrole/MMPDC manufacturing facility to allow for the production of a new broad-spectrum insecticide called 320I. Production will use existing equipment and a new potassium methoxide (KCOH ₃) scrubber.	Superseded by permit 012017-006. Superseded by permit 122017-011.
102008-001	Allow production of a new active ingredient, 800H, and expand production capacity of three diacids.	Active permit
062000-019A	Reduce reporting requirements	Special Condition #1 superseded by permit amendment 062000-019C.
062000-019B	Account for cleaning emissions	Active permit
102009-007	Increasing production of Imidazolinone	Superseded by permit 052015-012.
092009-005	Increasing production of MMPDC	Superseded by permit 012017-006. Superseded by permit 122017-011.

Permit Number	Description	Permit Status
092010-009	Conversion of herbicide storage tank to store o-xylene	Active permit
022011-009	Addition of tank into existing process	Active permit
072013-001	Construct natural gas fired boilers	Portions of Special Condition #5.A.2. superseded by permit amendment 072013-001A.
092014-007	Increase in production of 800H herbicide	Active permit
052015-012	Replacement of centrifuges for IMI-1	Expired, installation did not install equipment
062000-019C	Reducing reporting requirements for excess SO ₂ emissions during startup	Active permit
072013-001A	Eliminating GHG emission rate limit	Active permit
032016-002	Temporary permit to vent fumes to the atmosphere via the incineration bypass vent to identify emission sources and investigate source reductions	Replaced by 0997-003A
012017-006	Increasing production of Chlorfenapyr active ingredient	Superseded by permit 122017-011.
122017-011	Modification of the existing Pyrrole plant to accommodate a new active ingredient called Revysol.	Active permit
0997-003A	Vent fumes to the atmosphere via the incineration bypass vent to identify emission sources and investigate source reductions	Active permit

PROJECT DESCRIPTION

This project will modify systems in the PROWL production process that are currently limiting production capacity and utilize the existing capacity of the majority of the equipment present in the existing PROWL plant. The primary modifications will be to increase the production capacity of the denitrosation, neutralization, and evaporation process (Section 170). This project also involves the addition of process equipment, piping, and instrumentation. The proposed changes will increase production from the current rate of XXXXXXXX lbs per day to XXXXXXXX lbs per day or XXXXXXXX lbs per year.

Existing emissions control devices will control air emissions from these modifications. Organic HAP emissions from process vents will be handled in the installation's RCRA incinerators (PR-47, PR-53, PR-54, and TC-01). Liquid process wastes from this facility will be handled in the existing waste storage tanks and incinerators in the North and South Waste Management Areas. The existing RCRA incinerators (PR-47, PR-53, PR-54, and TC-01) will continue to operate in accordance with applicable regulations. A transfer line will be added to transfer aqueous waste from North to the South Incineration area where it will be managed by "D" incinerator (TC-01).

The Sulfuric Acid Regeneration (SAR) Plant (PR-51 and PR-52) is an existing facility and is not being modified in this project. It will continue to operate within the presently permitted capacity of 225 tons/day of sulfuric acid. This facility is permitted under Construction Permit 0997-003.

The two natural gas fired boilers are existing facilities and are also not being modified as part of this project. These boilers are permitted under Construction Permit 072013-001.

Table 2: Emission Points Associated with PROWL process

Emission Point #	Description	Control Devices	Changes in this project
PR-01	Xylene Storage Tank Vent (110-002)	Voluntary condenser (#631-021)	Increase throughput
PR-02	Potassium Hydroxide Tank (110-005) ¹	None	Increase throughput
PR-03	Sodium Hydroxide Tank (110-008) ¹	None	Increase throughput
PR-04	HCl Storage Tanks (110-011 A/B)	None	increase throughput
PR-05	DEK Storage Tank (110-014)	Voluntary condenser (#631-117)	Increase throughput
PR-06	4-Nitro-o-xylene Storage Tank (140-032)	None	Increase throughput
PR-07	O-Xylene Storage Tank (180-109)	Voluntary condenser (#631-101)	Increase throughput
PR-08	67% Nitric Acid Storage Tanks and Unloading (Process #110-038 A and B) ¹	Vapor Return and Condenser Vent	Increase throughput
PR-08B	56% Nitric Acid Storage Tank and 67% Railcar Unloading (Process #004-572) ¹	Scrubber	Increase throughput
PR-09	DEK Day Tank (200-018)	Voluntary condenser (#631-111)	Increase throughput
PR-10	Equipment Removed		
PR-11	98% Sulfuric Acid Storage (Process #210-008) ¹	None	Increase throughput
PR-12	Aqueous Recycle Box (process #002-018); capacity <50 gallons	RCRA Incinerators	Increase throughput

¹ Does not emit a criteria pollutant. Listed to provide a complete accounting of all emission units in the PROWL process.

Emission Point #	Description	Control Devices	Changes in this project
PR-13	Mono-nitro-xylene (MNOx) Extraction/Purification (Washer #1 process #002-019); 352-gallon capacity process vessel	RCRA Incinerators	Increase throughput
PR-14	Aqueous Recycle Box (002-023); capacity <50 gallons	RCRA Incinerators	Increase throughput
PR-15	Mono-nitro-xylene (MNOx) Extraction/Purification (Washer #2 process #002-021); 352 gallon capacity process vessel ²	None	Increase throughput
PR-16	Demin/Recycle water tank (process #130-005); 530-gallon capacity ¹	None	Increase throughput
PR-17	Mixed Mono-nitro-xylene (MNOx) storage tank (140-001)	None	Increase throughput
PR-18	Duplicate emission point , same as PR-06		
PR-19	3-Nitro-o-xylene Storage Tank (170-069)	None	Increase throughput
PR-20	Reductive Alkylation-Alkylation Seal Pot (150-004) process #150-002A/B	None	Increase throughput
PR-21	Reductive Alkylation-Alkylation Catch Tank Vent (150-030)	None	Increase throughput
PR-22	Reductive Alkyl Separator (150-011) & Filtration Hold Tank Vent (150-100); & Vent from Purge Catalyst Filter (150-009 was PR-26)	Vent condenser (150-104)	Increase throughput
PR-23	Catalyst Slurry Tanks (150-006A/B)	None	Increase throughput
PR-24	Catalyst Hopper (150-007A&B)	None	Increase throughput

² It contains low concentration of organics with vapor pressure less 10 mmHg Listed to provide a complete accounting of all emission units in the PROWL process.

Emission Point #	Description	Control Devices	Changes in this project
PR-25	Purge Catalyst Scale Tank (150-008)	None	Increase throughput
PR-26	Purge Catalyst Filter Niagara Filter (150-009)	None	Increase throughput
PR-27	Polishing Filter (150-029A/B) & Sample Return	None	Increase throughput
PR-28	Equipment Removed		
PR-29	Crude Alkyl Xylidine Storage Tank (150-014)	None	Increase throughput
PR-30	Seal Pot Vent (150-018)	None	Increase throughput
PR-31	Alkyl Product Storage Tank (Process #150-021) Changing Service PFS	RCRA Incinerators	Increase throughput
PR-32	Acetone Storage Tank (150-038) ¹	Vent condenser (#631-050)	Increase throughput
PR-33	Equipment Removed		
PR-34	Equipment Removed		
PR-35	Nitration Seal Pot Vent (Process #003-055)	RCRA Incinerators	Increase throughput
PR-36	Alkyl Nitration Drain Tank (003-068)	None	no change
PR-37	Equipment Removed		
PR-38	Equipment Removed		
PR-39	Organic Waste Hold Tank (633-001) Incineration	None	Increase throughput
PR-40	Equipment Removed		
PFS (PR-41)	Strong Spent Acid Storage Tank (210-001) and (#220 - V27)	RCRA Incinerators	Increase throughput
PFS (PR-42)	2 Weak Spent Acid Storage Tanks (Process #170-070; #220-V26)	RCRA Incinerators	Increase throughput
PR-43	98% Product Acid Tank (Process #220-051) ¹	None	Increase throughput
PR-44	Equipment Removed		
PR-45	Equipment Removed		

Emission Point #	Description	Control Devices	Changes in this project
PFS (PR-46)	Mixed Acid Makeup Tanks (Process #120-007; #120-009)	RCRA Incinerators	Increase throughput
PR-47, 53, 54, TC-01	RCRA Incinerators		No change
PR-48	Equipment Removed		
PR-49	Equipment Removed		
PR-50	Duplicate emission point, same as PR-43		
PR-51	SAR Facility	None	No change
PR-52	SAR Pre-heater	None	No change
PR-55	Plant Fume System for SSM event	None	No change
PR-56	PROWL Process Building Vent (fugitives)	None	No change
PR-57, through PR-62 ³	Equipment Removed		
PR-63	Washed MNOX Storage Tank B (140-101)	None	Increase throughput
PR-64, thru PR-85 ⁴	Equipment Removed		
PR-86	Ethylene Dichloride Railcar Unloading	None	Increase throughput
PR-87	Diethyl Ketone Railcar Unloading	None	Increase throughput
PR-88	o-Xylene Barge and Railcar Unloading.	Vent through PR-01 Voluntary condenser (#631-021)	Increase throughput
PR-89	32% Hydrochloric Acid Tank Trailer Unloading	None	Increase throughput
PR-90	Alkyl Xylidine Storage tank (150-060)	None	Increase throughput
PR-91	40,800 gallon 4-NOX, Tank B (process # 110-062)	None	Increase throughput
FFP-02	AR-200 Railcar Unloading	None	No change

³ Includes PR-57, PR-58, PR-59, PR-60, PR-61, and PR-62.

⁴ Includes PR-64, PR-65, PR-66, PR-67, PR-68, PR-69, PR-70, PR-71, PR-72, PR-73, PR-74, PR-75, PR-76, PR-77, PR-78, PR-79, PR-80, PR-81, PR-82, PR-83, PR-84, and PR-85.

EMISSIONS/CONTROLS EVALUATION

Potential emission calculations were provided by the applicant and are based on a mass balance approach and process knowledge. Emissions for storage tanks were estimated using the calculation methodologies and equations from AP-42, Chapter 7.1- *Organic Liquid Storage Tanks (November 2006)*.

This project will result in an increase in the amount of hydrogen chloride (HCl), Xylene, and ethylene dichloride (EDC) because of the increased product yields. The increase in product yield will result in an emissions increase associated with the truck, railcar, and barge loading operations. The vapors displaced due to the loading operations are estimated using the ideal gas law.

Emissions from fugitive components are estimated using the fugitive component count and the methodology and SOCFI Leak Rate/Screening Value Correlations for the applicable components type. The control effectiveness for an LDAR program at a SOCFI process unit and applicable site-specific data are also used in estimating these fugitive emissions.

Filter change outs contribute to emissions and are calculated based on the assumption that 1 pound of residual fugitive VOC is emitted per every cloth change from the cartridge filters. The number of batches per year, weekly filter changes, and other site specific data were used to estimate emissions.

Emissions from process vessels were estimated using the ideal gas law, mass fractions, mole fractions, which are estimated using partial and vapor pressure data, and number of batches in addition to site specific data.

Because BASF is an existing major source for NSR purposes, a Prevention of Significant Deterioration (PSD) applicability determination was performed as part of this review. Actual emissions data was reviewed, and a baseline period of 2017-2018 was chosen. The potential emissions of this project were subtracted from the baseline data for each regulated NSR pollutant. These values were less than the significant thresholds, therefore a PSD permit is not required.

The following table provides an emissions summary for this project. Existing potential emissions were taken from previous construction permits. Existing actual emissions were taken from the installation's 2018 EIQ and EPA's Greenhouse Gas Reporting System, FLIGHT. Emissions Increase of the Application represent the sum of post-project potential to emit minus the pre-project potential to emit for each new and modified emissions unit. Emissions decreases and netting are not included in the Emissions Increase. The pre-project potential to emit was estimated using current production data and assuming a linear relationship to the post-project potential emissions presented in the application.

Table 3: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Emissions Increase of the Application
PM	25.0	Major	NR	0.0
PM ₁₀	15.0	Major	78.53	0.0
PM _{2.5}	10.0	Major	74.99	0.0
SOx	40.0	Major	88.27	0.0
NOx	40.0	Major	323.37	0.0
VOC	40.0	Major	19.91	3.82
CO	100.0	Major	62.13	0.0
GHG (CO ₂ e)	N/A	ND	143,256 ⁵	N/D
GHG (mass)	N/A	ND	ND	0.0
HAPs	10.0/25.0	Major	19.46	1.51
Ethylene Dichloride	10.0	ND	ND	0.27
Hydrochloric Acid	10.0	ND	ND	0.07
Xylene	10.0	Major	ND	1.12

N/A = Not Applicable; ND = Not Determined, NR= Not Reported

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Emissions Increases are below de minimis levels.

APPLICABLE REQUIREMENTS

BASF Corporation-Hannibal Site 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.

⁵ 2017 emissions, as reported to EPA FLIGHT. Units of metric tons of CO₂e.

GENERAL REQUIREMENTS OF THE INSTALLATION

- *Operating Permits*, 10 CSR 10-6.065
- *Start-Up, Shutdown, and Malfunction Conditions*, 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *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

- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards of Hazardous Air Pollutants from Pesticide Active Ingredient Facilities*, 40 CFR Part 63, Subpart MMM

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*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 29, 2019, received May 30, 2019, designating BASF Corporation Agricultural Products as the owner and operator of the installation.

APPENDIX A

Abbreviations and Acronyms

%percent	Mgal1,000 gallons
°Fdegrees Fahrenheit	MWmegawatt
acfmactual cubic feet per minute	MHDRmaximum hourly design rate
BACTBest Available Control Technology	MMBtuMillion British thermal units
BMPsBest Management Practices	MMCFmillion cubic feet
BtuBritish thermal unit	MSDSMaterial Safety Data Sheet
CAMCompliance Assurance Monitoring	NAAQSNational Ambient Air Quality Standards
CASChemical Abstracts Service	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CEMSContinuous Emission Monitor System	NO_xnitrogen oxides
CFRCode of Federal Regulations	NSPSNew Source Performance Standards
COcarbon monoxide	NSRNew Source Review
CO₂carbon dioxide	PMparticulate matter
CO_{2e}carbon dioxide equivalent	PM_{2.5}particulate matter less than 2.5 microns in aerodynamic diameter
COMSContinuous Opacity Monitoring System	PM₁₀particulate matter less than 10 microns in aerodynamic diameter
CSRCode of State Regulations	ppmparts per million
dscfdry standard cubic feet	PSDPrevention of Significant Deterioration
EQEmission Inventory Questionnaire	PTEpotential to emit
EPEmission Point	RACTReasonable Available Control Technology
EPAEnvironmental Protection Agency	RALRisk Assessment Level
EUEmission Unit	SCCSource Classification Code
fpsfeet per second	scfmstandard cubic feet per minute
ftfeet	SDSSafety Data Sheet
GACTGenerally Available Control Technology	SICStandard Industrial Classification
GHGGreenhouse Gas	SIPState Implementation Plan
gpmgallons per minute	SMALScreening Model Action Levels
grgrains	SO_xsulfur oxides
GWPGlobal Warming Potential	SO₂sulfur dioxide
HAPHazardous Air Pollutant	SSMStartup, Shutdown & Malfunction
hrhour	tphtons per hour
hphorsepower	tpytons per year
lbpound	VMTvehicle miles traveled
lbs/hrpounds per hour	VOCVolatile Organic Compound
MACTMaximum Achievable Control Technology	
µg/m³micrograms per cubic meter	
m/smeters per second	