

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0002526

Owner: Bayer CropScience LP  
Address: 2 T.W. Alexander Dr., Research Triangle Park, NC 27709

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Bayer CropScience LP  
Facility Address: 8400 Hawthorne Road, Kansas City, MO 64120

Legal Description: See page two (2)  
Latitude/Longitude: See page two (2)

Receiving Stream: See page two (2)  
First Classified Stream and ID: See page two (2)  
USGS Basin & Sub-watershed No.: See page two (2)

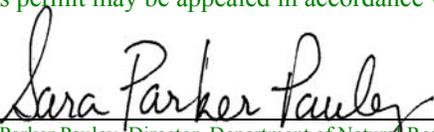
is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

See page two (2)

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

February 7, 2012  
Effective Date

  
Sara Parker Pauley, Director, Department of Natural Resources

February 6, 2017  
Expiration Date

  
John Madros, Director Water Protection Program

**FACILITY DESCRIPTION (continued)**

**Outfall #001 - Industrial - SIC #2879, #2819 - **Certified Operator Not Required****

Agricultural chemical manufacturing and formulation facility. Outfall #001 discharges wastewater that has been treated by pure oxygen activated sludge with equalization, pH adjustment, and other related treatment. Outfall #001 discharges via submerged pipe to the Missouri River. Additionally, this treatment system receives and treats contaminated groundwater and secondary containment water that is pumped to the treatment collection system.

Design flow is 2.8 MGD

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X=372630, Y=4331290  
Receiving Stream: Missouri River (P)  
First Classified Stream and ID: Missouri River (P) (00356)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #002 - Internal Monitoring Location**

Discharge from the thermal oxidizer unit. Flow from Outfall #002 goes to Outfall #001.

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X=372509, Y=4331397  
Receiving Stream: Missouri River (P)  
First Classified Stream and ID: Missouri River (P) (00356)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #003 - Storm water runoff outfall**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X = 372495, Y = 4331271  
Receiving Stream: Unnamed tributary to Blue River (P)  
First Classified Stream and ID: Blue River (P) (00417) 303(d)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #004 - Storm water runoff outfall**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X = 372492, Y = 4331260  
Receiving Stream: Unnamed tributary to Blue River (P)  
First Classified Stream and ID: Blue River (P) (00417) 303(d)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	once/week	24 hr. estimate
Biochemical Oxygen Demand <sub>5</sub>	mg/L	*		*	once/week	Note 4
	lbs/day***	8,659		1,972	once/week	Note 4
Total Suspended Solids	mg/L	*		*	once/week	Note 4
	lbs/day***	7,957		2,355	once/week	Note 4
pH – Units	SU	**		**	once/week	grab
Chemical Oxygen Demand	mg/L	*		*	once/week	Note 4
	lbs/day***	18,850		12,653	once/week	Note 4
Total Organic Pesticide Chemicals (Note 1)	mg/L	*		*	once/week	Note 4
	lbs/day	10.78		4.69	once/week	Note 4
Ammonia as N	mg/L	*		*	once/week	grab
Total Dissolved Solids	mg/L	*		*	once/week	Note 4

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE April 28, 2012. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

<u>Outfall #001</u>						
1,1,1-Trichloroethane	lbs/day	1.35		0.53	once/permit cycle	Note 4
1,1,2-Trichloroethane	lbs/day	0.28		0.11	once/permit cycle	Note 4
1,1-Dichloroethane	lbs/day	1.48		0.55	once/permit cycle	Note 4
1,1-Dichloroethylene	lbs/day	0.63		0.4	once/permit cycle	Note 4
1,2-Dichlorobenzene	lbs/day	4.08		1.93	once/permit cycle	Note 4
1,2-Dichloroethane	lbs/day	1.11		0.36	once/permit cycle	Note 4
1,2-Dichloropropane	lbs/day	5.75		3.83	once/permit cycle	Note 4

MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE IN FOURTH YEAR; THE FIRST REPORT IS DUE March 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

**B. STANDARD CONDITIONS**

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001 (continued)</u>						
1,2-trans_Dichloroethylene	lbs/day	1.35		0.53	once/permit cycle	Note 4
1,3-Dichlorobenzene	lbs/day	0.23		0.16	once/permit cycle	Note 4
1,3-Dichloropropylene	lbs/day	1.1		0.73	once/permit cycle	Note 4
1,4-Dichlorobenzene	lbs/day	0.7		0.38	once/permit cycle	Note 4
2,4-Dichlorophenol	lbs/day	2.8		0.98	once/permit cycle	Note 4
2,4-Dimethylphenol	lbs/day	0.9		0.45	once/permit cycle	Note 4
2,4-Dinitrophenol	lbs/day	0.65		0.37	once/permit cycle	Note 4
2,4-Dinitrotoluene	lbs/day	1.5		0.59	once/permit cycle	Note 4
2,6-Dinitrotoluene	lbs/day	3.36		1.34	once/permit cycle	Note 4
2-Chlorophenol	lbs/day	2.45		0.78	once/permit cycle	Note 4
2-Nitrophenol	lbs/day	0.36		0.22	once/permit cycle	Note 4
3,4-Benzofluoranthene	lbs/day	0.32		0.12	once/permit cycle	Note 4
4,6-Dinitro-o-cresol	lbs/day	1.45		0.41	once/permit cycle	Note 4
4-Nitrophenol	lbs/day	0.65		0.38	once/permit cycle	Note 4
Acenaphthene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Acenaphthylene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Acrylonitrile	lbs/day	1.27		0.5	once/permit cycle	Note 4
Anthracene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Benzene	lbs/day	3.4		0.93	once/permit cycle	Note 4
Benzo(a)anthracene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Benzo(a)pyrene	lbs/day	0.32		0.12	once/permit cycle	Note 4

MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE IN FOURTH YEAR; THE FIRST REPORT IS DUE March 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

**B. STANDARD CONDITIONS**

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001 (continued)</u>						
Benzo(k)fluoranthene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Bis(2-ethylhexyl) phthalate	lbs/day	1.46		0.54	once/permit cycle	Note 4
Bromodichloromethane	mg/L	0.38		0.142	once/permit cycle	Note 4
Bromomethane	mg/L	0.38		0.142	once/permit cycle	Note 4
Carbon Tetrachloride	lbs/day	0.95		0.45	once/permit cycle	Note 4
Chlorobenzene	lbs/day	0.7		0.38	once/permit cycle	Note 4
Chloroethane	lbs/day	1.56		0.55	once/permit cycle	Note 4
Chloroform	lbs/day	1.15		0.53	once/permit cycle	Note 4
Chrysene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Dibromochloromethane	mg/L	0.794		0.196	once/permit cycle	Note 4
Diethyl phthalate	lbs/day	1.06		0.42	once/permit cycle	Note 4
Dimethyl phthalate	lbs/day	0.25		0.1	once/permit cycle	Note 4
Di-n-butyl phthalate	lbs/day	0.3		0.14	once/permit cycle	Note 4
Ethylbenzene	lbs/day	2.7		0.8	once/permit cycle	Note 4
Fluoranthene	lbs/day	0.36		0.13	once/permit cycle	Note 4
Fluorene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Hexachlorobenzene	lbs/day	0.15		0.08	once/permit cycle	Note 4
Hexachlorobutadiene	lbs/day	0.26		0.1	once/permit cycle	Note 4
Hexachloroethene	lbs/day	0.28		0.11	once/permit cycle	Note 4

MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE IN FOURTH YEAR; THE FIRST REPORT IS DUE March 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

**B. STANDARD CONDITIONS**

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001 (continued)</u>						
Methyl Chloride	lbs/day	4.75		2.15	once/permit cycle	Note 4
Methylene Chloride	lbs/day	2.23		1.0	once/permit cycle	Note 4
Naphthalene	lbs/day	1.48		0.55	once/permit cycle	Note 4
Nitrobenzene	lbs/day	0.36		0.14	once/permit cycle	Note 4
Phenanthrene	lbs/day	0.31		0.12	once/permit cycle	Note 4
Phenol	mg/L	0.028		0.016	once/permit cycle	Note 4
Pyrene	lbs/day	0.35		0.13	once/permit cycle	Note 4
Tetrachloroethylene	lbs/day	1.4		0.55	once/permit cycle	Note 4
Toluene	lbs/day	2.0		0.65	once/permit cycle	Note 4
Bromoform	mg/L	0.794		0.196	once/permit cycle	Note 4
Chromium, Total Recoverable	lbs/day	14.53		5.82	once/permit cycle	Note 4
Copper, Total Recoverable	lbs/day	17.73		7.61	once/permit cycle	Note 4
Cyanide, Total	lbs/day	230.2		8.01	once/permit cycle	grab
Cyanide, Amenable to Chlorination	µg/L	*		*	once/permit cycle	Note 4
Lead, Total Recoverable	lbs/day	17.26		8.01	once/permit cycle	Note 4
Nickel, Total Recoverable	lbs/day	20.88		8.87	once/permit cycle	Note 4
Zinc, Total Recoverable	lbs/day	13.69		5.51	once/permit cycle	Note 4
Trichloroethylene	lbs/day	0.28		0.11	once/permit cycle	Note 4
Vinyl Chloride	lbs/day	1.41		0.55	once/permit cycle	Note 4

MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE IN FOURTH YEAR; THE FIRST REPORT IS DUE March 28, 2016. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

**B. STANDARD CONDITIONS**

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

PAGE NUMBER 7 of 15

PERMIT NUMBER MO-0002526

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #002 – Internal Monitoring Location</u>						
Flow	MGD	*		*	once/week	24 hr. estimate
Total Suspended Solids	lbs/day***	*		*	once/month	grab
Chemical Oxygen Demand	lbs/day***	*		*	once/month	grab
pH - Units	SU	*		*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE April 28, 2012. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Outfalls #003 & #004 – Storm Water Run-off  
See Special Conditions #7, 8, 9, 10, 11, 12, 13, & 14

**B. STANDARD CONDITIONS**

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 8 of 15	
					PERMIT NUMBER MO-0002526	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until two (2) years and 364 days after the effective date of this permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<b>Whole Effluent Toxicity (WET) Testing for OUTFALL #001</b>						
<i>Ceriodaphnia dubia</i> ****	TUc	*		*	once/year	24 hr. composite
<i>Pimephales promelas</i> **** (Note 3)	TUc	*		*	once/year	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY FOR 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> YEAR</u> ; THE FIRST REPORT IS DUE <u>October 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective <b>three (3) years</b> from the effective date of this permit and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<i>Ceriodaphnia dubia</i> ****	TUc	531		531	once/quarter***** (Note 2)	Note 4
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY FOR 4<sup>TH</sup> AND 5<sup>TH</sup> YEAR</u> ; THE FIRST REPORT IS DUE <u>April 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<i>Pimephales promelas</i> **** (Note 3)	TUc	531		531	once/year***** (Note 3)	Note 4
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY FOR 4<sup>TH</sup> AND 5<sup>TH</sup> YEAR</u> ; THE FIRST REPORT IS DUE <u>October 28, 2016</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Part I</u> STANDARD CONDITIONS DATED <u>October 1, 1980</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

- \* Monitoring requirement only.
- \*\* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5 – 9.0 pH units.
- \*\*\* Pounds per day = analyte concentration in mg/L \* 8.34 \* flow in MGD.
- \*\*\*\* Toxicity Limit applies for *Ceriodaphnia dubia* and *Pimephales promelas*. Limit is subject to a compliance schedule. Limit becomes effective three (3) years from the effective date of this operating permit. See Section D (page 12 of 15) for more information and specific requirements of WET testing.
- \*\*\*\*\* In past testing, *Ceriodaphnia* has been the most sensitive organism. Only annual monitoring is required for *Pimephales promelas*. If *Pimephales promelas* is ever the more sensitive organism (see Note 3), then quarterly monitoring for each species will be required in accordance with Note 2 below.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 1 – Please see Special Condition #3.

Note 2 – See table below for quarterly sampling and reporting:

Sample discharge at least once for the months of:	Report is due:
January, February, March (1st Quarter)	April 28
April, May, June (2nd Quarter)	July 28
July, August, September (3rd Quarter)	October 28
October, November, December (4th Quarter)	January 28

Note 3 – In addition to \*\*\*\*\* above, if *Pimephales promelas* becomes the more sensitive organism, then the monitoring requirement for *Pimephales promelas* will be increased to once/quarter in accordance with Note 2 above.

Note 4 – Sample type is 24 hr. composite. This facility uses a flow-proportional composite sampling regimen. The automatic sampler collects sample volumes of effluent at varying time intervals proportional to the effluent flow. A minimum of 48 aliquots (subsamples) is required.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
  - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri’s Water Quality Standards.
  - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri’s list of waters of the state not fully achieving the state’s water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
2. All outfalls must be clearly marked in the field.
3. Total Organic Pesticide Chemicals
  - (a) Pounds of Total Organic Pesticide Chemicals (chemicals) discharged shall be calculated by collecting a 24-hour composite sample at Outfall #001 and analyzing the composite for each pesticide that was manufactured and/or formulated at anytime within seven (7) days before the sample was collected. Pesticides that are manufactured and/or formulated that have zero discharge requirements will not be analyzed or included in the total. The sampling results for each pesticide analyzed for shall be added together and converted from concentrations units to pounds.
  - (b) Analytical results that are non-detects at or below detection limit shall not be included in the equation to convert concentrations units to pounds per day. Daily flow for the determination of pounds per day shall be the total million gallons of effluent discharged over the same 24-hour period the effluent composite sample was collected. The facility shall retain the method detection limit studies or similar documentation performed by the laboratory indicating the detection limits are reasonable.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
  - (1) One hundred micrograms per liter (100 µg/L);
  - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
  - (4) The level established in Part A of the permit by the Director.

C. SPECIAL CONDITIONS (continued)

- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.
6. Water Quality Standards
- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
- (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
  - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
  - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
  - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
  - (5) There shall be no significant human health hazard from incidental contact with the water;
  - (6) There shall be no acute toxicity to livestock or wildlife watering;
  - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
  - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Stormwater Pollution Prevention Plan

During normal rainfall events all stormwater is collected, treated in the waste treatment plant, and then discharged via Outfall #001. During heavy rainfall events, electric pumps in the stormwater collection sump reach their hydraulic capacities at which time the facility manages the excess stormwater by implementing one (1) of the following two (2) options. The facility typically collects the first stormwater "flush," which is typically 20 to 30 minutes of rain fall before implementing Option 1 or Option 2. The exact duration depends on many variables including duration of rainfall, intensity or rainfall, time since last rainfall, temperature, and other factors.

Option 1 – The Facility turns on two (2) 600-hp diesel pumps and pumps the stormwater to Outfall #001 at a location downstream of the monitoring and sampling location for Outfall #001 without treatment.

Option 2 – Gate valves of the stormwater collection system are opened and discharging stormwater.

- (a) The permittee shall modify its Storm Water Pollution Prevention Plan (SWPPP) to reflect the new storm water requirements of this permit. The SWPPP must be modified within 120 days and implemented within 180 days of permit issuance. The SWPPP must be kept on-site and should not be sent to Department of Natural Resources (DNR) unless specifically requested. The SWPPP must be reviewed and updated, if needed, every five (5) years or as site conditions change. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP in accordance with the concepts and methods described in the following document:

Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (USEPA) in February 2009.

The SWPPP should include the following:

- (1) A listing of specific Best Management Practices (BMPs) and a narrative explaining how BMPs will be implemented to control and minimize the amount of potential contaminants that may enter storm water. Minimum BMPs are listed in SPECIAL CONDITIONS #8 below.

C. SPECIAL CONDITIONS (continued)

7. Stormwater Pollution Prevention Plan (continued)

- (2) The SWPPP must include a schedule for a regular site inspections and a provision for documenting inspection findings. The inspections must include observation and evaluation of BMP effectiveness. Deficiencies must be corrected within (14) days (unless deficiency correction requires a construction permit) and the actions taken to correct the deficiencies shall be included with the written inspection records. For any deficiency that cannot be corrected in (14) days, the permittee is required to inform the Department that a deficiency will take longer than (14) days. The permittee is also required to provide a projected timeline that the deficiency will be corrected and must update the SWPPP with the correction. Any corrective measure that necessitates major construction may also need a construction permit. Inspection records must be kept on site with the SWPPP and maintained for a period of three (3) years. These must be made available to DNR personnel upon request.
- (3) A provision for designating an individual to be responsible for environmental matters.
- (4) A provision for providing training to all personnel involved in material handling and storage, and housekeeping of maintenance and cleaning areas. Proof of training shall be submitted on request of DNR.

8. Permittee shall adhere to the following minimum Best Management Practices:

- (a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of storm water from these substances.
- (b) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
- (c) Store all paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so that these materials are not exposed to storm water or provide other prescribed BMP's such as plastic lids and/or portable spill pans to prevent the commingling of storm water with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
- (d) Provide good housekeeping practices on the site to keep trash from entry into waters of the state.
- (e) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property. This could include the use of straw bales, silt fences, or sediment basins, if needed, to comply with effluent limits.

9. The purpose of the SWPPP and the BMPs listed herein is the prevention of pollution of waters of the state. A deficiency of a BMP means it may not have been effective in preventing pollution [10 CSR 20-2.010(56)] of waters of the state, and corrective actions means the facility took steps to eliminate the deficiency.

10. All fueling facilities present on the site shall adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers, including spill prevention, control and counter measures.

11. This facility has notified the Department of possible de minimis losses under the 40 CFR 261.3(a)(2)(iv)(D) Headworks Exemption.

- (a) The facility shall remove water that has accumulated in secondary containment areas by following the facility's Standard Operating Procedure (SOP) entitled "Sump Discharge." Groundwater extracted by the facility's production wells must be treated by this facility's treatment system or by an alternative permitted treatment system prior to being discharged.
- (b) If groundwater or water from the secondary containment area will cause or have reasons to believe it will cause an upset to this facility's treatment system or alternative permitted treatment system, the facility shall contact the Department for proper treatment and disposal. Because groundwater and water from the secondary containment area is pumped and treated by the facility's treatment system, once per permit cycle testing shall be conducted on the following constituents. The below constituents must be sampled and tested in accordance with 40 CFR 136, reported in µg/L, and submitted to the Department with the next following renewal or application for modification.

Dichlorodifluoromethane	Cis-1,2-Dichloroethene	Ethanol
Styrene	1,2,4-Trichlorobenzene	Xylenes, Total
Arsenic, Total Dissolved	Barium, Total Dissolved	Beryllium, Total Dissolved
Cobalt, Total Dissolved		

**C. SPECIAL CONDITIONS**

12. Substances, regulated by federal law under the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), that are transported, stored, or used for maintenance, cleaning or repair, shall be managed according to RCRA and CERCLA.
13. There are no regular reporting requirements in this permit for stormwater run-off discharges. However, the Department may require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or evidence of off site impacts from the activities of this facility with regard to stormwater run-off.
14. Benchmarks-  
 This permit stipulates pollutant Benchmarks applicable to stormwater run-off discharging points. Benchmarks do not constitute direct numeric effluent limitations. A Benchmark exceedance alone, therefore, is not a permit violation. Benchmark monitoring data are primarily for the permittee’s use and the Department’s use to determine effectiveness of Special Conditions #7 and #8 above to determine the overall effectiveness of the SWPPP and to assist the permittee in knowing when additional corrective actions may be necessary to protect water quality. If a sample exceeds a benchmark concentration, listed below, the permittee shall review their SWPPP and BMPs to determine whether any improvement or additional controls are needed to reduce that pollutant in the stormwater discharge(s). Failure to improve BMPs, update the SWPPP, and achieve compliance with Benchmarks is a violation of the terms and conditions of this operating permit.
  - (a) The following Benchmarks are considered necessary to protect water quality and shall not be exceeded during discharges resulting from a precipitation event exceeding 0.1 inches during a 24 hour period. The BMPs at the facility should be designed to meet these Benchmarks during rainfall events up to the 1-in-10 year, 24 hour rain event.

<b>Parameter</b>	<b>Benchmark Limits</b>
Biochemical Oxygen Demand 5-day (BOD <sub>5</sub> )	45 mg/L
Chemical Oxygen Demand	90 mg/L
Total Suspended Solids	50 mg/L
Settleable Solids	2.5 mL/L/hr
Oil & Grease	10 mg/L
pH	6.5-9.0 Standard Units

- (b) At no time shall any discharge result in a violation of Water Quality Standards. If a violation of Water Quality Standards exists, then the permit may be opened and modified to include the adding or activating of stormwater outfalls along with applicable limits, which may include the above parameters and any additional parameters the Department deems appropriate. If the permit is reopened and modified, the Department will give the permittee a thirty (30) day notification that the modification is occurring.
  - (c) In addition to the Benchmark parameters listed above, the permittee shall monitor for the following parameters of Chemical Oxygen Demand, Total Organic Pesticides Chemicals, Total Ammonia as N, Total Dissolved Solids, and the pollutants listed in 40 CFR 414.91 once per permit cycle. The monitoring sampling type shall be grab and shall recorded in mg/L. Upon the next renewal, the permittee shall submit the monitoring data as part of their operating permit renewal.
15. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

**D. COMPLIANCE SCHEDULE AND WET TESTING REQUIREMENTS**

This operating permit allows the maximum of three (3) years to comply with the new chronic WET limits. The method to attain compliance with these Water Quality-based Effluent Limits is to identify the toxic pollutants and reduce toxic effects in the effluent. As part of the three (3) year compliance for WET Limits, Bayer will be required to conduct a chronic Toxicity Identification Evaluation/Toxic Reduction Evaluation (TIE/TRE) at the beginning of the permit cycle. It is anticipated that it will take 18 -24 months to complete the TIE/TRE and may take 12 months to implement control or corrective measures necessary to reduce toxicity. This Compliance Schedule is established to ensure that the TIE/TRE will be conducted and that controls or corrective measures are taken to reduce the effluent toxicity. This combined with the installation of the multi-port diffuser is the mechanism for achieving compliance. All reports required by this compliance schedule shall be submitted to WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102.

1. Within three (3) months of the permits effective date, the permittee shall submit an application for a Construction Permit to the Missouri Department of Natural Resources, Kansas City Regional Office, for the construction of the multi-port diffuser.
2. Within one (1) year of the permit effective date, the permittee shall begin construction of the proposed multi-port diffuser. The permittee shall report when the construction has begun for the diffuser.
3. Within one (1) year of this permit’s effective date, the permittee shall prepare and submit a report summarizing the TIE/TRE status, and steps that will be taken to comply with final WET permit limits.

D. COMPLIANCE SCHEDULE AND WET TESTING REQUIREMENTS (continued)

4. Within two (2) years of this permit’s effective date, the permittee shall prepare and submit a report summarizing the TIE/TRE status, and steps that will be taken to comply with final WET permit limits.
5. Within three (3) years of this permit’s effective date, the facility shall achieve compliance with the chronic WET limits contained in Table A.
6. Within 14 calendar days following each of the above milestones, the permittee shall send written notification to the Department if a milestone is not met.

E. CHRONIC WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

Chronic Whole Effluent Toxicity (WET) test required in this NPDES permit shall use the following test conditions. Any future changes in methodology will be supplied to the permittee by the Department. Chronic WET test shall be conducted as follows:

SUMMARY OF CHRONIC WET TESTING FOR THIS PERMIT					
OUTFALL	Chronic AEC	Toxic Unit Limit	FREQUENCY	SAMPLE TYPE	MONTH
001	0.19%	531 TU <sub>c</sub>	Once per quarter	24 hr. composite*	See Note 2 of Part A – Effluent Limitations and Monitoring Requirements

\* This facility uses a flow-proportional composite sampling regimen. The automatic sampler collects sample volumes of effluent at varying time intervals proportional to the effluent flow. A minimum of 48 aliquots (subsamples) is required.

Dilution Series							
AEC %	0.75	0.38	0.19	0.09	0.05	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(1) Test Schedule and Follow-Up Requirements:

- (a) Perform a MULTIPLE-dilution chronic WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department’s WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
  - (1) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
  - (2) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
  - (3) A twenty-four hour composite sample shall be submitted for analysis of discharges.
  - (4) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
  - (5) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
  - (6) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
  - (7) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
  - (8) Analytical testing shall be performed on the effluent for parameters listed in, but not limited to, Missouri Department of Natural Resources WET Test form (WET Test form) #MO-780-1899 at the Chronic AEC of 0.19% only. However, if this facility should ever conduct a TIE, upstream sampling may be required as part of the evaluation. The parameters that analytical testing shall be conducted shall be consistent with those recommended by EPA’s “Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.” The results shall be recorded in the appropriate fields in the WET Test form #MO-780-1899. Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.

E. CHRONIC WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS (continued):

- (9) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
  - (10) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
  - (b) The WET test will be considered a failure if the Toxic Units Chronic exceed the limit in the table above. Toxic Units for Chronic is determined by  $TU_c = 1/IC_{25} \times 100$ , which is then compared to the  $TU_c$  limit in Table A.
  - (c) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TEST CONDUCTED UNDER CONDITION (d) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
  - (d) If the effluent fails the test for ONE or BOTH test species and the source of the toxicity is known (e.g., a temporary plant upset), then the permittee shall conduct one additional toxicity test using the same species and test method within 30 calendar days of receipt of the test results failing the test (for storm water, test shall be performed on the next and subsequent storm water discharge as they occur, but not less than 7 days apart). If the subsequent toxicity test does not fail for ONE or BOTH test species, then the permittee may return to their regular testing frequency (Note – Written request regarding single species multiple dilution accelerated testing will be addressed by the Water Protection Program on a case-by-case basis).
  - (e) If the subsequent test results in (1)(d) above indicate that the effluent fails the test for ONE or BOTH test species, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and 30 calendar days thereafter (for storm water, test shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) until one of the following conditions are met: (Note – Written request regarding single species multiple dilution accelerated testing will be addressed by the Water Protection Program on a case-by-case basis).
    - (1) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
    - (2) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
  - (f) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
  - (g) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
  - (h) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
  - (i) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
  - (j) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
  - (k) Submit a concise summary in tabular format of all WET test results with the annual report.
  - (l) If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant test and effluent toxicity test shall be conducted using the same test conditions (i.e., same test durations, etc.).
- (2) Test Conditions:
- (a) Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821/R-02/013, and Errata for the Effluent and Receiving Water Toxicity Testing Manuals: Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms; Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms; and Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms EPA-600/R-98/182.
  - (b) The test shall be a 3-Brood *Ceriodphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test. Testing with the green algae *Selenastrum* is not required.

E. CHRONIC WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS (continued):

- (c) Test species: *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines.
  - (d) Upstream receiving stream or synthetic shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, “reconstituted” water will be used as dilution water. Reconstituted dilution/control water used will be very hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms.
  - (e) Multiple-dilution tests will be run with:
    - (1) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, ½ AEC and ¼ AEC;
    - (2) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
    - (3) reconstituted water.
  - (f) If, in any control more than 10% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days. Furthermore, if the results do not meet the acceptability criteria in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.
  - (g) One set of analyses shall be completed from the initial composite sample used for the quarterly WET test. Parameters to be analyzed shall include Biochemical Oxygen Demand, Total Suspended Solids, Chemical Oxygen Demand, Total Organic Pesticide Chemicals, Total Dissolved Solids, Ammonia & pH. For Ammonia, and pH. Samples collected for concurrent sampling purposes are to be preserved with refrigeration only. For Ammonia, concurrent sampling shall be preserved in accordance with applicable preservation methods listed in the federal Clean Water Act. Concurrent sampling results can be used to meet monitoring requirements for the week that they are collected.
  - (h) Because this permit requires sublethal testing endpoints from Methods 1000.0, 1002.0, and 1003.0 in Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002), with-in test variability must be reviewed for acceptability and variability criteria (upper and lower PMSD bounds) must be applied as directed under Section 10.2.8 – *Test Variability* of the methods manual Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms. Under Section 10.2.8, the calculated percent minimum significant difference (PMSD) for both reference toxicant test and effluent toxicity results must be compared with the upper and lower PMSD bounds variability criteria specified in Table 6 – *Variability Criteria (Upper and Lower PMSD Bounds) for Sublethal Hypothesis Testing Endpoints Submitted Under NPDES Permits*, following the review criteria in Paragraphs 10.2.8.2.1 through 10.2.8.2.5 of the test methods manual. Based on this review, only accepted effluent toxicity test results shall be reported on the DMR form.
- (3) Initial Activities in the Interim Period prior to Chronic Limits are Final:
- (a) The permittee shall initiate a TRE using as guidance, based on the type of treatment facility, EPA manual Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants (EPA/ 833/B-99/002, 1999) or EPA manual Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (EPA/600/2-88/070, 1989). In conjunction, the permittee shall develop and implement a Detailed TRE Workplan which shall include: further actions undertaken by the permittee to investigate, identify, and correct the causes of toxicity; actions the permittee will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and a schedule for these actions.
  - (b) The permittee may initiate a Toxicity Identification Evaluation (TIE) as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA test method manuals: Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I (EPA/600/6-91/005F, 1992); Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/080, 1993); Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/081, 1993); and Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document (EPA/600/R-96-054, 1996).
- (4) Permit Reopener for Chronic Toxicity:
- (a) In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address chronic toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to chronic toxicity.

**Missouri Department of Natural Resources**  
**FACT SHEET**  
**FOR THE PURPOSE OF RENEWAL**  
**OF**  
**MO-0002526**  
**BAYER CROPSCIENCE LP**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This permit was internally modified on February 29, 2012 to change E. (1) (a) (8) requiring parameter analysis conducted during WET tests to follow that expressed in EPA's "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." This was based on request by the permittee.

This Factsheet is for a Major , Minor , Industrial Facility ; Variance ;  
Master General Permit ; General Permit Covered Facility ; and/or permit with widespread public interest .

**Part I – Facility Information**

Facility Type: IND  
Facility SIC Code(s): 2879, 2819

Facility Description:

The Bayer CropScience facility manufactures various agricultural chemicals. The process wastewater is treated by activated sludge or incineration. Sanitary waste is treated by activated sludge. Wastewater from the activated sludge treatment process is discharged through outfall 001 with a design flow of 2.8 MGD. Discharge from the thermal oxidizer is discharged through outfall 002 then to outfall 001. Outfall 001 discharges in to the Missouri River via a submerged effluent pipe. Bayer is going to construct a rapid diffuser along the floor of the Missouri River slightly downstream of the existing outfall structure to replace Outfall 001.

The most prevalent pollutants are biodegradable organic material, suspended solids, and pesticides. The physical and biological treatment processes at the treatment facility remove the pollutants found in their wastewater. This permit will establish discharge limits and monitoring requirements to ensure that the pollutant removal efficiency of the Bayer facility is adequate to meet Effluent Guidelines and to protect water quality. Additionally, contaminated groundwater and secondary containment water are pumped to the treatment systems collection line and are treated prior to being discharged.

Outfall #001:

This outfall discharges wastewater that has been treated by pure oxygen activated sludge with equalization, pH adjustment, and other related treatment. Outfall #001 discharges to the Missouri River via a submerged pipe.

Outfall #002:

This is an internal monitoring location in accordance with federal ELGs applicable to this type of industrial activity.

Outfall #003 and #004 Stormwater Run-off:

All precipitation at this facility, under normal rainfall events, is collected and treated at this facility’s waste treatment plant and discharged via Outfall #001. During heavy rainfall events, electric pumps in the stormwater collection sump can reach their hydraulic capacities. When this occurs, the permittee manages the excess stormwater by implementing one (1) of two (2) options. Typically the stormwater “first flush” (~20 to 30 min) is collected and treated and discharged to Outfall #001 during heavy rainfall events before implementing Option 1 or Option 2. The exact duration depends on many variables including duration of rainfall, intensity of rainfall, time since last rainfall, temperature, and other factors. Please see Outfalls #003 and #004 in Part V of this fact sheet for further details.

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	4.34	Industrial	Industrial	0.0
002	N/A	Industrial	Industrial	N/A

**Outfall #001**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X=372630, Y=4331290  
Receiving Stream: Missouri River (P)  
First Classified Stream and ID: Missouri River (P) (00356)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #002**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W, Jackson County  
UTM Coordinates: X=372509, Y=4331397  
Receiving Stream: Missouri River (P)  
First Classified Stream and ID: Missouri River (P) (00356)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #003 - Storm water runoff outfall**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W  
UTM Coordinates: X = 372495, Y = 4331271  
Receiving Stream: Unnamed tributary to Blue River (P)  
First Classified Stream and ID: Blue River (P) (00417) 303(d)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

**Outfall #004 - Storm water runoff outfall**

Legal Description: SW ¼, SW ¼, Section 29, T50N, R32W  
UTM Coordinates: X = 372492, Y = 4331260  
Receiving Stream: Unnamed tributary to Blue River (P)  
First Classified Stream and ID: Blue River (P) (00417) 303(d)  
USGS Basin & Sub-watershed No.: (10300101 – 0301)

Receiving Water Body’s Water Quality & Facility Performance History:

The Missouri River is a classified P stream, Waterbody ID #00356. The designated uses for the Missouri River, at this stretch, are Protections of Aquatic Life and Human Health – Fish Consumption, Livestock & Wildlife Watering, Drinking Water Supply, Industrial, Irrigation, Secondary Contact Recreation, and Whole Body Contact Recreation (B).

Discharge Monitoring Reports (DMRs) from January 2005 to October 2010 were reviewed for the Facility Performance. Missouri Clean Water Information System (MoCWIS) documents that there were several Discharging Monitoring Reports non-receipts for 2,4-Dichlorophenol for Outfall #001. MoCWIS also documented five (5) BOD<sub>5</sub> limit value exceedances, five (5) Total Oxygen Demand limit value exceedances, and four (4) TSS limit value exceedances for this time period.

In Bayer’s response to the Public Notice of this permit, Bayer respectfully disputes that several DMRs submitted by the facility between January 2005 to October 2010 were missing Outfall #001 sample results for the priority pollutant 2,4-dichlorophenol. Staff drafting this permit reviewed DMR records in the Department’s MoCWIS system and verified that the fact sheet correctly captures what is listed in MoCWIS (i.e., no DMRs). Because Bayer has potential issues with DMR data in MoCWIS, the letter and this fact sheet are urging Bayer to work with the Department’s KCRO to address and resolve this discrepancy.

Comments:

This draft permit was initially drafted by EPA Region VII staff prior to being received by the Department. In October 2010, Department staff conducted a site visit at this facility. Because of several issues discussed and negotiated between the permittee and Department staff, this permit has had several modifications to the original version drafted by EPA staff. Additionally, the Fact Sheet for this operating permit was modified to the Department's fact sheet template. This is so future permit writers will have a better understanding on the terms, conditions, and other requirements justified in the fact sheet and implemented in the permit.

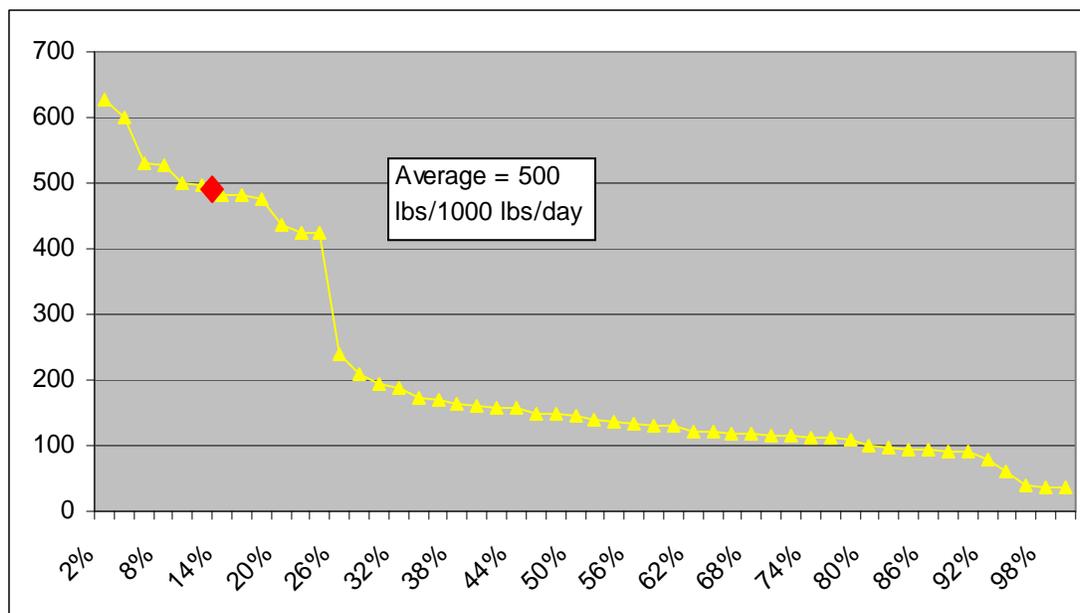
When developing effluent limits for a NPDES permit, the Department must consider limits based on both the technology available to treat the pollutants (technology based effluent limits) and limits that are protective of the designated use of the receiving water (water quality based effluent limits). Technology based effluent limits for industrial facilities, such as Bayer, are derived from effluent guidelines. The intent of effluent guidelines is to require a minimum level of treatment for industrial point sources based on currently available treatment technology. Water quality based effluent limits are developed by the State of Missouri to protect the beneficial uses of the receiving waters, such as the Missouri River. The technology-based limits are compared to the water quality based limits and the more stringent are chosen to develop the permit limits. The derived technology based limits identified above were compared to applicable water quality criteria. It was determined that the technology based limits will be protective of water quality.

Effluent guidelines are national regulations that control the discharge of pollutants to surface waters and to publicly owned treatment works (POTWs). Effluent guidelines are specific to an industry. Bayer is covered by, 40 CFR parts 455, 444 and 414. Biological treatment or incineration is used to treat process wastewater, and other various wastewater streams prior to discharge.

The only product produced by Bayer at this facility that is defined in §455.20(b) is Disulfoton. The remaining nine pesticides produced by Bayer are not defined by the effluent guideline; however, the total pounds of organic pesticide chemicals produced at this facility will be used to determine the organic pesticide chemical permit limit, because the nature of the chemicals produced by Bayer are similar to the chemicals identified in the effluent guideline.

Daily production values were derived from the annual production data provided by Bayer, because (weekly or monthly) may not be representative of Bayer's effluent. A "campaign" schedule is employed by the Bayer facility to produce its products. Bayer produces ten pesticides at the Kansas City facility throughout the year. The total pounds of organic pesticide chemicals produced in 2005 were 75,600,000. A production duration curve was developed (see figure 1 below) to determine if a natural break exists in the production data. Based on the 90th percentile production (meaning 90% of the time production is less than that value), the calculated long term daily average is 500 lbs/ 1000 lbs of production. In 2007 Bayer plans to add a new pesticide into full production. It is planned to produce an average of 97,000 pounds of this pesticide daily. This will bring the daily total to 597 lbs/ 1000 lbs per day for permit limit derivation. The NPDES regulations require the use of the long term average to compute limits, not maximum production values.

Figure 1. Production Derivation Curve



According to the U.S. EPA NPDES Permit Writer's Manual (EPA 833B96003, page 64)

To apply production/flow-based ELGs to a facility with varying production or flow rates, the permit writer should determine a single estimate of the long-term average rate that is expected to exist during the term of the permit being prepared. It is recommended that the permit writer establish this average from the past 5 years of facility data. This single value is then multiplied by the ELGs to obtain permit limits. In certain instances, the permit writer may find that fewer than 5 years of data

may better represent conditions that are anticipated for the next 5 years. This would be the case for a facility that has undergone major renovations that would impact production or flow; making use of data prior to this construction inappropriate to model future process options.

Comments (cont):

The objective in determining a production or flow estimate for a facility is to develop a single estimate of the long-term average production rate (in terms of mass of product per day or volume of process wastewater per day), which can reasonably be expected to prevail during the next term of the permit.

**Part II – Operator Certification Requirements**

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Not Applicable ; This facility is not required to have a certified operator.

**Part III – Receiving Stream Information**

**APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**

As per Missouri’s Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall’s Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]:
- Lake or Reservoir [10 CSR 20-7.015(3)]:
- Losing [10 CSR 20-7.015(4)]:
- Metropolitan No-Discharge [10 CSR 20-7.015(5)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1<sup>st</sup> classified receiving stream’s beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

**RECEIVING STREAM(S) TABLE:**

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Missouri River	P	00356	AQL, LWW, IRR, IND, DWS, WBC(B)	10300101	Central Plains

\* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

\*\* - Ecological Drainage Unit

**RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:**

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Missouri River	--	17,659*	--

\* - Low flow values obtained from diffuser study using CORMIX™.

**MIXING CONSIDERATIONS TABLE:**

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(a)]	
7Q10	30Q10
4,414.75	--

**MIXING CONSIDERATIONS:**

Bayer is constructing an effluent diffuser to increase dilution in the Missouri River. Bayer submitted construction plans to EPA and the Army Corps of Engineers, and a report showing CORMIX modeling predictions for effluent as discharged from the new diffuser. (The ACE issued a 404 permit for construction of the diffuser in the Waters of the U.S.) The construction permit for the rapid diffuser was approved by the Department of Natural Resources by letter dated July 01, 2009.

The Mixing Zone Analysis predicted that a 20-Meter multi-port diffuser could achieve 531 to 1 dilution at the end of the regulatory mixing zone, and 446 to 1 dilution at the edge of the Zone of Initial Dilution (ZID).

Missouri Water Quality Standard 10 CSR 20-7.031(10), allows the Department to establish Interim/Final effluent limits based on Water Quality. The maximum allowable time that the Department can grant is three (3) years for compliance with Missouri's Water Quality Standards. The Interim WET testing requirement will be effective for two (2) years and 364 days from the effective date of the operating permit. Final WET testing limits will become effective three (3) years from the date of issuance of this permit. Therefore, the above listed dilutions for the regulatory Mixing Zone and Zone of Initial Dilution will become effective as soon as possible, but not to exceed three (3) years. This will allow the permittee the time necessary to construction a multi-port diffuser in the Missouri River.

**RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

**Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions**

**ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

**ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

**ANTIDegradation:**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- Renewal no degradation proposed and no further review necessary.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS, SLUDGE, & SEWAGE SLUDGE:**

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: <http://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

- This condition is not applicable to the permittee for this facility.

**COMPLIANCE AND ENFORCEMENT:**

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

- The permittee/facility is not currently under Water Protection Program enforcement action.

**PRETREATMENT PROGRAM:**

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

- The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

**REASONABLE POTENTIAL ANALYSIS (RPA):**

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

- A RPA was not conducted for this facility. EPA staff reviewed the permittee's renewal application to determine if this facility discharges any toxic parameter in levels to exceed Missouri's Water Quality Standards (applicable criteria) with considerations to mixing.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ [www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm](http://www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm).

- Influent monitoring is not being required to determine percent removal.

**SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):**

Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

- This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

**SCHEDULE OF COMPLIANCE (SOC):**

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

- The three (3) year time period allowed to construct a diffuser to meet TUC for WET testing is given under 10 CSR 20-7.031(10). The individual time periods for the steps to be taken to reach the three (3) end date are established based on 10 CSR 20-6.010(7).

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP):**

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

- A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

**VARIANCE:**

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

- This operating permit is not drafted under premises of a petition for variance.

**WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:**

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

Not Applicable ;  
Wasteload allocations were not calculated.

**WLA MODELING:**

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

- A WLA study was either not submitted or determined not applicable by Department staff.

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

**WHOLE EFFLUENT TOXICITY (WET) TEST:**

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Applicable .

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(3)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility (industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH<sub>3</sub>)
- Facility is a municipality or domestic discharger with a Design Flow ≥ 22,500 gpd.
- Other – please justify.

As part of the permit development process Bayer conducted a Phase I Toxicity Identification Evaluation (TIE) to assess the cause of acute toxicity in the effluent. A TIE is a set of WET tests that is run in parallel. Separate samples of effluent are treated in different ways (filtration, pH manipulation, aeration, activated carbon, etc.). These different treatments may reduce toxicity and show how the pollutant(s) can be removed, and gives clues to the type of pollutant(s) (metal, ammonia, organic chemical, etc.) causing the toxicity.

Bayer submitted the TIE report on January 16, 2008. The TIE went through the full list of treatment approaches used in the EPA guidance documents and **none** of these approaches significantly reduced toxicity. The series run with altered pH showed some increase in toxicity with higher pH. This may indicate there is some toxicity associated with ammonia.

The results from a second acute Phase I TIE were submitted by letter dated November 20, 2009. The TIE results give a strong indication that high concentrations of ions are causing acute osmotic toxicity. Bayer's production process uses complex organic chemistry to derive products. When molecules are built in organic chemical processes, two or more smaller molecules are joined into a larger product. The anionic or cationic molecules that serve as carriers of the building block molecules (Sodium, nitrate, chloride, etc.) are left as "salts". These ions can be measured indirectly as conductivity or, more precisely, as Total Dissolved Solids (TDS). Additionally, two other sources of salts are associated with the Bayer facility, one of which is from the reaction and neutralizations of acids and bases, which form salts. Secondly, the facility utilizes 14 wet scrubber air pollution control devices. The scrubbers' routine purpose is to pretreat air emissions prior to destruction in the facility's thermal oxidizer. The other purpose of the scrubbers is to control nuisance odors in the event the facility's primary air pollution control device, the thermal oxidizer, is temporally not available. The scrubbers' use and discharge high concentrations of sodium hydroxide and sodium hypochlorite. These chemicals add substantially to the facility's TDS loading.

WET Test continued:

In various WET tests, conductivity of the Bayer effluent ranged from 10,720 to 36,000 µmhos/cm. As a measure of comparison, samples of upstream water from the Missouri River had a conductivity of 640 to 762 µmhos/cm. Only one of the WET tests had concurrent monitoring of TDS: the sample with a conductivity of 10,720 µmhos/cm, had a TDS level of 12,000 mg/L. TDS concentration is proportional to conductivity, so the sample with conductivity of 25,000 µmhos/cm may have had a TDS ranging as high as 40,000 mg/L. The existing permit did not include TDS monitoring, but it will be required in the renewed permit.

Bayer submitted five chronic tests as part of permit development. In all tests, *Ceriodaphnia* was the most sensitive organism. The first test showed a No Observed Effect Concentration (NOEC) of 0.25% effluent for the endpoint of reproduction. This means that there was a measurable reduction in the reproduction rate for *Ceriodaphnia* until the effluent was diluted 400 to 1 with clean lab water. This equates to 400 Toxic Units – Chronic (TUc).

The second chronic test had a very wide range of dilutions, but the most dilute sample (0.1% effluent) still showed measurable reduction in the reproductive rate for *Ceriodaphnia*. Thus, the effluent still showed chronic toxicity at a dilution of 1,000 to one: this would be a level of **greater than** 1,000 TUc. Because the dilution series did not “bracket” the toxicity with a test dilution showing no effects (the NOEC) it is not possible to estimate the TUc level.

The third chronic test resulted in a reported IC25 value (for *Ceriodaphnia dubia*) of 0.31% effluent, which when translated to TUc units, where TUc = 100/IC25 was 323.6 TUc, or lower than the proposed TUc limit of 531. The third chronic test differed from the first two in that Missouri River water obtained immediately upstream of the discharge point was used for dilution water. As stated before, the LC50 is around 10% effluent (10 TUa), but NOEC concentrations are down around 0.25% (400 TUc) to less than 0.1% effluent (>1000 TUc). So observable chronic toxicity (impacts on *Ceriodaphnia* reproduction) occurs at effluent concentrations 40-100 times more dilute than acutely toxic effluent concentrations. This is a very high level of chronic toxicity. Comparison of acute and chronic toxicity results suggests that different toxins are causing the widely different levels of acute and chronic toxicity. The acute to chronic ratio (ACR) is extremely high.

During the drafting of this permit, Bayer indicated that they believe the March 2008 test result (>1000 TUc) may have been an outlier.

As the acute TRE shows, the source of acute toxicity is salts, but the chronic toxicity is likely due to the additive effects of other constituents, most likely associated with the pesticide components in the discharge. The chronic TRE will be used to identify the source(s) of chronic toxicity.

Bayer has requested the use of river water for toxicity testing. The permit will document that synthetic very hard dilution can be used. At the testing dilutions near the permit limit, the test water would be almost completely river water. This would create the potential for false positives of chronic toxicity due to unknown sources of toxicity, such as atrazine, present in the river water. Bayer also requested that the Fact Sheet include all currently available WET test data as the above mentions six test but only listed three. The additional results are as follows:

September 2009	324 TUc
March 2010	88.5 TUc
November 2010	610 TUc (dilution water, synthetic laboratory)
November 2010	351 TUc (dilution water, receiving stream)

Bayer requested the missing data to be placed into the Fact Sheet as it provides a more complete administrative record of the facility's Chronic WET testing; and adds weight to Bayer's argument that the 1,000 TUc is an outlier.

**40 CFR 122.41(M) - BYPASSES:**

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass, which includes blending, is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar.

- Not Applicable, this facility does not bypass.

**40 CFR 122.44(A)(2) WAIVER:**

40 CFR 122.44(a)(2) establishes that the Department can grant a permittee subject to ELGs in their NPDES permit to forego sampling of a pollutant found in 40 CFR Subchapter N, which includes 40 CFR Part 414.91. On January 17, 2011, Department staff sent correspondence to Bayer indicating that Bayer could request a pollutant waiver in accordance with 40 CFR 122.44(a)(2)(i). In response, Bayer indicated that “detailed analysis has not been performed, on-site laboratories likely have and used several part 414.91 pollutants we have reason to believe a handful of the pollutants might be present in the facility’s discharge. We therefore are not able to make claim with complete certainty that none of the Part 414.91 pollutants are present and therefore will not seek a Part 122.44(a)(2) waiver.

Please note that the Department is willing to work with Bayer on obtaining a 122.44 waiver, but Bayer is required to:

1. Demonstrate through sampling and other technical factors that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger [40 CFR 122.44(a)(2)(i)];
2. The request for waiver must be submitted when applying for a reissued permit or modification or a reissued permit [40 CFR 122.44(a)(2)(iii)]; and
3. The requester must demonstrate through sampling or other technical information including information generated during an earlier permit term, that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger [40 CFR 122.44(a)(2)(iii)].

Additionally, 40 CFR 122.44 waivers are only good for the term of the permit [40 CFR 122.44(a)(2)(ii)]; and 40 CFR 122.44(a)(2) does not supersede certification processes and requirements already established in existing effluent limitations and guidelines and standards [40 CFR 122.44(a)(2)(v)].

**40 CFR 261.3(A)(2)(IV)(D) – HEADWORK EXEMPTION AND DE MINIMIS LOSSES:**

Bayer’s response to the draft operating permit’s Public Notice, indicated that they are giving notice to the Department of the possible inadvertent release of *de minimis* quantities of hazardous waste in accordance with 40 CFR 261.3(a)(2)(iv)(D). *De minimis* losses are inadvertent releases to the wastewater treatment system (treated before discharging from Outfall #001), including those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer material); minor leaks or process equipment, storage tanks or containers; leaks from well-maintained pump packing and seals; sample purgings; relief devices discharges; discharges from safety showers and rinsing cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing.

In 2006, Bayer gave notice of this intent to the EPA; therefore, Bayer has satisfied 40 CFR 261.3(a)(2)(iv)(D), which clearly establishes that the facility must claim an exemption via their Clean Water Act operating permit application.

The Department’s Missouri Hazardous Waste Management Facility Permit Part I, Permit number MOD056389828 Corrective Action Conditions Part I – Identification of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) establishes three SWMU’s known as Disposal AreaS A, B and C. In discussion with Department Hazardous Waste Program staff, the facility description for this permit shall also include that contaminated groundwater from these SMWUs is pumped to the waste treatment system and treated in the wastewater treatment facility before discharging from Outfall #001. Additionally, Secondary Containment area(s) are pumped with the contaminated water being sent to the wastewater treatment system and treated before discharging from Outfall #001.

Below is a list of pollutants that have been detected in groundwater. Pollutants (and their synonyms) that were found in the groundwater and are (1) listed in the permit, and (2) not listed in Missouri’s Water Quality Standards are not listed below.

Dichlorodifluoromethane	Cis-1,2-Dichloroethene*	Ethanol
Styrene	1,2,4-Trichlorobenzene*	Xylenes, Total
Arsenic, Total Dissolved	Barium, Total Dissolved	Beryllium, Total Dissolved
Cobalt, Total Dissolved		

\* - These pollutants have been found in the groundwater above the Maximum Concentration Levels (MCL), Drinking Water Standards (DWS), or Regional Screening Levels (RSL) as indicated by the Department’s Hazardous Waste Program.

**303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

**Part V – Effluent Limits Determination**

**Outfall #001 – Main Facility Outfall**

**EFFLUENT LIMITATIONS TABLE:**

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
BOD <sub>5</sub>	MG/L	1,9	*		*	NO	
	LB/DAY	1	8,659		1,972	YES	7,436 / 1,347
TSS	MG/L	1,9	*		*	NO	
	LB/DAY	1	7,957		2,355	YES	6,139 / 1,518
pH	SU	2	6.5–9.0		6.5–9.0	YES	6.0–9.0
CHEMICAL OXYGEN DEMAND	MG/L	1,9	*		*	NO	
	LB/DAY	1	18,850		12,653	YES	TOD 20,006 / 11,569
TOTAL ORGANIC PESTICIDE CHEMICALS	MG/L	1,9	*		*	NO	
	LB/DAY	1	10.78		4.69	YES	10.05 / 1.52
TOTAL AMMONIA AS N	MG/L	9	*		*	YES	**
TOTAL DISSOLVED SOLIDS	MG/L	9	*		*	YES	***
40 CFR 414.91 & 40 CFR 455 – TABLE 4	LB/DAY	1,9	PLEASE SEE DERIVATION AND DISCUSSION BELOW.				
CYANIDE, AMENABLE TO CHLORINATION	µG/L	9	*		*	YES	****
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* - Monitoring requirement only.

\*\* - Previous permit contain Ammonia as N monitoring for lb/day and limitations of 51 mg/L (MDL & AML).

\*\*\* - Was not required in previous state operating permit.

\*\*\*\* - The specific pollutant Cyanide Amenable to Chlorination was not included in the previous operating permit, it is important to note that Bayer did test for Total Cyanide.

**Basis for Limitations Codes:**

- |  |                                    |
|--|------------------------------------|
| 1. State or Federal Regulation/Law       | 7. Antidegradation Policy          |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model             |
| 3. Water Quality Based Effluent Limits   | 9. Best Professional Judgment      |
| 4. Lagoon Policy                         | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 11. WET Test Policy                |
| 6. Dissolved Oxygen Policy               | 12. Antidegradation Review         |

**OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

- Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- Biochemical Oxygen Demand (BOD<sub>5</sub>).** The Biological Oxygen Demand (BOD) monitoring and limitations are continued in the permit based on the effluent guidelines set forth in 40 CFR part 455, subpart A. The facility also formulates a portion of its products on site with pollution prevention practices in place. 40 CRF § 455.41(e) allows for additional pounds of pollutants for rinsing of tanks, lines, bottling equipment, and other equipment used in the formulation of pesticides. An additional 488,000 pounds of organic pesticide chemicals will be considered in the development of the limit. The limits for BOD are calculated as follows:

$$\begin{aligned} \text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (1.6 \text{ lbs/day}) * (597 \text{ lbs/day}) = 955 \text{ lbs/day} \\ \text{Daily Maximum} &= (7.4 \text{ lbs/day}) * (597 \text{ lbs/day}) = 4,418 \text{ lbs/day} \end{aligned}$$

BOD<sub>5</sub> (continued):

BPJ limits for the contribution from the production of intermediates are based on the effluent guideline limits 40 CFR§ 414 for Organic Chemicals, Plastics and Synthetic Fibers subpart H. Bayer produces on average 296,132 pounds of intermediates per day, resulting in a wastewater flow of 0.629 MGD to the wastewater treatment facility.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{flow}) * (\text{Conversion factor}) \\ 30 \text{ day average} &= (45 \text{ mg/L}) * (0.629 \text{ MGD}) * (8.34) = 236 \text{ lbs/day} \\ \text{Daily Maximum} &= (120 \text{ mg/L}) * (0.629 \text{ MGD}) * (8.34) = 630 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the formulation of pesticides are based on the effluent guideline limits 40 CFR part 455, subpart A. Bayer formulates on average 488,000 pounds of organic pesticide chemicals per day now that the formulation activates at several facilities have been consolidated to the Kansas City plant.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (1.6 \text{ lbs/day}) * (488 \text{ lbs/day}) = 781 \text{ lbs/day} \\ \text{Daily Maximum} &= (7.4 \text{ lbs/day}) * (488 \text{ lbs/day}) = 3,611 \text{ lbs/day}\end{aligned}$$

Final Permit Limit

$$\begin{aligned}30 \text{ day average} &= 955 + 236 + 781 = 1,972 \text{ lbs/day} \\ \text{Daily Maximum} &= 4418 + 630 + 3611 = 8,659 \text{ lbs/day}\end{aligned}$$

- **Total Suspended Solids (TSS).** The Total Suspended Solids (TSS) monitoring and limitations are continued in the permit based on the effluent guidelines set forth in 40 CFR part 455, subpart A. The facility also formulates a portion of its products on site with pollution prevention practices in place. 40 CRF § 455.41(e) allows for additional pounds of pollutants for rinsing of tanks, lines, bottling equipment, and other equipment and activities used in the formulation of pesticides. An additional 488,000 pounds of organic pesticide chemicals will be considered in the development of the limit. The limits for TSS are calculated as follows:

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (1.8 \text{ lbs/day}) * (597 \text{ lbs/day}) = 1,075 \text{ lbs/day} \\ \text{Daily Maximum} &= (6.1 \text{ lbs/day}) * (597 \text{ lbs/day}) = 3,642 \text{ lbs/day}\end{aligned}$$

BPJ limits for the discharge from the thermal oxidizers to the wastewater treatment plant are based on the effluent guideline limits 40 CFR§ 444 for Commercial Hazardous Waste. Although Bayer does not operate a commercial hazardous waste incinerator, the following limits can be applied to the incinerator at the Bayer facility.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{flow}) * (\text{Conversion factor}) \\ 30 \text{ day average} &= (34.8 \text{ mg/L}) * (.29 \text{ MGD}) * (8.34) = 84 \text{ lbs/day} \\ \text{Daily Maximum} &= (113 \text{ mg/L}) * (.32 \text{ MGD}) * (8.34) = 302 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the production of intermediates are based on the effluent guideline limits 40 CFR§ 414 for Organic Chemicals, Plastics and Synthetic Fibers subpart H. Bayer produces on average 296,132 pounds of intermediates per day, resulting in a wastewater flow of 0.629 MGD to the wastewater treatment facility.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{flow}) * (\text{Conversion factor}) \\ 30 \text{ day average} &= (57 \text{ mg/L}) * (0.629 \text{ MGD}) * (8.34) = 299 \text{ lbs/day} \\ \text{Daily Maximum} &= (183 \text{ mg/L}) * (0.629 \text{ MGD}) * (8.34) = 960 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the formulation of pesticides are based on the effluent guideline limits 40 CFR part 455, subpart A. Starting in 2008, Bayer will formulate on average 488,000 pounds of organic pesticide chemicals per day now that the formulation activates at several facilities have been consolidated to the Kansas City plant.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (1.8 \text{ lbs/day}) * (488 \text{ lbs/day}) = 878 \text{ lbs/day} \\ \text{Daily Maximum} &= (6.1 \text{ lbs/day}) * (488 \text{ lbs/day}) = 2,977 \text{ lbs/day}\end{aligned}$$

TSS (continued):

BPJ limits for the contribution from the production of Sodium Hydrosulfide (NaSH) and Sodium Hypochlorite (NaClO) are based on 40 CFR § 415.542. Bayer produces an average of 34,000 pound per day NaSH and 202, 000 pound per day of NaClO.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (0.08 \text{ lbs/day}) * (236 \text{ lbs/day}) = 19 \text{ lbs/day} \\ \text{Daily Maximum} &= (0.32 \text{ lbs/day}) * (236 \text{ lbs/day}) = 76 \text{ lbs/day}\end{aligned}$$

Final Permit Limit

$$\begin{aligned}30 \text{ day average} &= 1075 + 84 + 299 + 878 + 19 = 2,355 \text{ lbs/day} \\ \text{Daily Maximum} &= 3642 + 302 + 960 + 2977 + 76 = 7,957 \text{ lbs/day}\end{aligned}$$

- **pH.** 6.5 – 9.0 pH SU in accordance with 10 CSR 20-7.031(4)(E). pH is not to be averaged.
- **Chemical Oxygen Demand.** The Chemical Oxygen Demand (COD) monitoring and limitations are continued in the permit based on the effluent guidelines set forth in 40 CFR part 455, subpart A. The facility also formulates a portion of its products on site with pollution prevention practices in place. 40 CRF § 455.41(e) allows for additional pounds of pollutants for rinsing of tanks, lines, bottling equipment, and other equipment used in the formulation of pesticides. An additional 488,000 pounds of organic pesticide chemicals will be considered in the development of the limit. The limits for COD are calculated as follows:

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (9 \text{ lbs/day}) * (597 \text{ lbs/day}) = 5,373 \text{ lbs/day} \\ \text{Daily Maximum} &= (13 \text{ lbs/day}) * (597 \text{ lbs/day}) = 7,761 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the production of intermediates are based on the effluent guideline limits 40 CFR part 455, subpart A. Bayer produces on average 296,132 pounds of intermediates per day, resulting in a wastewater flow of 0.629 MGD to the wastewater treatment facility.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (9 \text{ lbs/day}) * (296 \text{ lbs/day}) = 2664 \text{ lbs/day} \\ \text{Daily Maximum} &= (13 \text{ lbs/day}) * (296 \text{ lbs/day}) = 3848 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the formulation of pesticides are based on the effluent guideline limits 40 CFR part 455, subpart A. Bayer formulates on average 488,000 pounds of organic pesticide chemicals per day now that the formulation activates at several facilities have been consolidated to the Kansas City plant.

Permit Limit = (Guideline limit) \* (lbs production /1000)

$$\begin{aligned}30 \text{ day average} &= (9 \text{ lbs/day}) * (488 \text{ lbs/day}) = 4,392 \text{ lbs/day} \\ \text{Daily Maximum} &= (13 \text{ lbs/day}) * (488 \text{ lbs/day}) = 6,344 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the production of Sodium Hydrosulfide (NaSH) and Sodium Hypochlorite (NaClO) are based on 40 CFR § 415.542. Bayer produces an average of 34,000 pound per day NaSH and 202, 000 pound per day of NaClO.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ 30 \text{ day average} &= (0.95 \text{ lbs/day}) * (236 \text{ lbs/day}) = 224 \text{ lbs/day} \\ \text{Daily Maximum} &= (3.8 \text{ lbs/day}) * (236 \text{ lbs/day}) = 897 \text{ lbs/day}\end{aligned}$$

Final Permit Limit

$$\begin{aligned}\text{Monthly Average} &= (5373 + 2664 + 4392 + 224) \text{ lbs/day} = 12,653 \text{ lbs/day} \\ \text{Daily Maximum} &= (7761 + 3848 + 6344 + 897) \text{ lbs/day} = 18,850 \text{ lbs/day}\end{aligned}$$

The previous permit for Bayer had Total Oxygen Demand (TOD); however, Bayer has indicated they have purchased a new COD analyzer and developed a method to accurately measure COD in the treated wastewater effluent. Therefore, this permit will include COD limits rather than TOD limits.

- **Total Organic Pesticide Chemical.** The Total Pesticide Chemicals monitoring and limitations are continued in the permit based on the effluent guidelines set forth in 40 CFR part 455, Table 4 and Best Professional Judgment (BPJ). Only a portion of the products manufactured at Bayer is covered by the effluent guidelines. The facility also formulates a portion of its products on site with pollution prevention practices in place. 40 CFR § 455.41(e) allows for additional pounds of pollutants for rinsing of tanks, lines, bottling equipment, and other equipment used in the formulation of pesticides. An additional 226,000 pounds of organic pesticide chemicals will be considered in the development of the limit. The limits for total pesticides are calculated as follows:

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ \text{30 day average} &= (0.0018 \text{ lbs/day}) * (597 \text{ lbs/day}) = 1.07 \text{ lbs/day} \\ \text{Daily Maximum} &= (0.01 \text{ lbs/day}) * (597 \text{ lbs/day}) = 5.97 \text{ lbs/day}\end{aligned}$$

BPJ limits for the contribution from the formulation of pesticides are based on the effluent guideline limits 40 CFR part 455, subpart A and Table 2. The average of the Best Available Technology Economically Achievable (BAT) limitation for 80 different pesticides was used to determine the monthly average guideline limit. The average of the 80 lowest BAT values is 0.00743. . Bayer formulates on average 488,000 pounds of organic pesticide chemicals per day now that the formulation activates at several facilities have been consolidated to the Kansas City plant.

$$\begin{aligned}\text{Permit Limit} &= (\text{Guideline limit}) * (\text{lbs production} / 1000) \\ \text{30 day average} &= (0.00743 \text{ lbs/day}) * (488 \text{ lbs/day}) = 3.62 \text{ lbs/day} \\ \text{Daily Maximum} &= (0.01 \text{ lbs/day}) * (488 \text{ lbs/day}) = 4.88 \text{ lbs/day}\end{aligned}$$

Final Permit Limit

$$\begin{aligned}\text{30 day average} &= 1.07 + 3.62 = 4.69 \text{ lbs/day} \\ \text{Daily Maximum} &= 5.97 + 4.88 = 10.78 \text{ lbs/day}\end{aligned}$$

- **Total Ammonia Nitrogen.** Previous state operating permit contained effluent limitations for Ammonia. EPA staff that initially drafted the operating permit conducted a RPA and determined there is no reasonable potential to violate Missouri's WQS; therefore, Total Ammonia as Nitrogen will be reduced to a monitoring requirement only. Upon future permit renewals, staff will conduct additional RPA's for this facility to determine the fate of this parameter.
- **Total Dissolved Solids.** Missouri's WQS do not contain criteria for Total Dissolved Solids. TDS is being included as a monitoring requirement only for the life of this operating permit by request of the EPA due to TDS being an indicator of the salts in the facility's effluent. Upon future renewals, Department staff will review TDS data to determine if limits, continued monitoring, or the outright removal of this parameter is appropriate.
- **40 CFR 414.91 & 40 CFR 455 Table 4 Pollutants.** The establishing of the pollutants listed in federal ELG 40 CFR 414.91 are based on the BPJ considerations of the Department. BPJ limits for the contribution from the production of intermediates are based on 40 CFR 414 for Organic Chemicals, Plastics and Synthetic Fibers subpart H. In addition to the 414.91 pollutants, wastewater generated from pesticide active ingredient manufacturing at this facility also contains several pollutants listed in Table 4 of 40 CFR 455 (Table 4) in accordance with 40 CFR 455.24. Therefore, effluent limitations will use the Building Block approach for all pollutants listed in both 40 CFR 414.91 and Table 4. For pollutants listed in either 414.91 or Table 4, they will be calculated separately. The pollutants and their applicable BPJ and/or ELG concentrations are located in **Appendix A – Building Block and Separate TBEL.**

In addition, correspondences from Bayer indicated that while a detailed analysis has not been performed, it is Bayer's belief that on-site laboratories likely have and still use several pollutants listed in 40 CFR 414.91, and that for this reason Bayer can not make a claim with complete certainty that none of the pollutants are not present and do not wish to seek a 40 CFR 122.44(a)(2) waiver.

- **Cyanide, Amenable to Chlorination.** Total Cyanide is listed as one of the pollutants in 40 CFR 414.91; however, Missouri does not have a Water Quality Standard (WQS) for Total Cyanide specifically, but does have a WQS for Cyanide, Amenable to Chlorination. Therefore, this facility will be required to have a monitoring only requirement for Cyanide, Amenable to Chlorination. Upon future renewals of this operating permit, staff will conduct a Reasonable Potential Analysis to determine if Cyanide, Amenable to Chlorination has potential to exceed Missouri's WQS.

- **WET Test.** WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.  
 Chronic

Whole Effluent Toxicity (WET) testing is the use of representative, standardized organisms to assess instream toxic impacts from dischargers. There are two basic types of WET tests: acute and chronic. The 48-hour acute test measures toxicity where death of the test organisms is the measured endpoint. The 7-day chronic test measures reduction in growth or reproduction of test organisms.

WET tests use standardized lab organisms from several trophic levels to represent species found in the natural environment. The fathead minnow, a fish commonly found throughout North America, is used to represent other vertebrate species. A commonly found water flea, is used to represent aquatic invertebrates that serve as an important link in the food chain. Assessment of overall toxicity is based on the toxicity results for the most sensitive of the species tested.

Both acute and chronic tests are conducted in similar ways. In the tests, effluent is diluted into test chambers in a series from 100% effluent to more dilute samples. The dilution series is designed to "bracket" the observed type of toxicity. For instance, in an acute test, the dilution series would need to include dilutions where there is observable toxicity and more dilute samples where there is no observed mortality. (Note: Not all samples can be bracketed: many effluent samples do not show any acute toxicity in 100% undiluted effluent. Higher levels of toxicity are usually found with industrial discharges or cities with large industrial users.)

In the acute test, the measured endpoint is the calculated LC50. This is the level of dilution where 50% of the test organisms die. For the Bayer effluent, the LC50 for *Ceriodaphnia* tended to be around 10% effluent. This means that when the effluent is diluted 10 to one, 10% effluent and 90% clean lab water, it kills 50% of the test organisms. This endpoint can also be expressed in terms Toxic Units – Acute (TUa). Toxic units are multiples of the LC50 dose found in the undiluted effluent. So for this example, the effluent is diluted 10 to one to dilute to the LC50 dose, therefore the acute toxicity of the Bayer effluent is about 10 TUa for *Ceriodaphnia*.

#### Mixing Zone Effluent Diffuser

MDNR Water Quality Standards allow mixing zones for toxics at 10 CSR 20-7.031(4)(A)(4).

#### ACUTE WET LIMITS

MDNR Water Quality Standards require that Acute WET criteria (0.3 TUa) must be met at the edge of the Zone of Initial Dilution. CORMIX modeling provided by Bayer showed that with the new diffuser, dilution would be 446 to 1 at the edge of the ZID (defined as a point 125 feet downstream of the discharge location).

$$\text{The Calculated Acute WET Limit} = 0.3 \text{ TUa} \times 446 = 133.8 \text{ TUa}$$

The levels of acute toxicity in the Bayer effluent are about 10 TUa, so there is no reasonable potential to exceed the acute WET criteria at the edge of the ZID.

#### CHRONIC WET LIMITS

MDNR Water Quality Standards require that Chronic WET criteria (1 TUc) must be met at the edge of the Mixing Zone. CORMIX modeling provided by Bayer showed that with the new diffuser, dilution would be 531 to 1 at the edge of the Mixing Zone (one quarter mile downstream of the discharge location).

$$\text{The Calculated Chronic WET Limit} = 1.0 \text{ TUc} \times 531 = 531 \text{ TUc}$$

#### WET Test (continued):

The data provided by Bayer showed chronic toxicity of 324 TUc, 400 TUc, and greater than 1000 TUc. This demonstrates that there is reasonable potential for Bayer to exceed the applicable chronic criteria for Water Quality-based WET permit limits.

Chronic AEC% was calculated as follows:

$$\text{Chronic AEC\%} = (1/\text{TUc}) * 100$$

$$\text{Chronic AEC\%} = (1/531 \text{ TUc}) * 100 = 0.188\% \text{ (rounded up to 0.19\%)}$$

Run samples at AEC, and at 100% effluent, 50%, 25%, 12.5%, 6.25% If the AEC is less than 25%, then series is determined by the following 4X AEC, 2X AEC, AEC, ½ AEC, and ¼ AEC. **Thus, 0.75%, 0.38%, 0.019%, 0.09%, 0.05%.**

### Compliance Schedule and Required Activities

The reissued permit allows 3 years to comply with the new chronic WET limits. Bayer will be conducting a **chronic** TIE/TRE prior to and at the beginning of the permit cycle. While the permit will require a single chronic TIE/TRE exercise, Bayer may choose to conduct several assessments to cover the changing pollutants associated with different production campaigns. The permit will specify the test methods and protocols for assessing toxicity, but it the permittee's responsibility to assess the variability of toxicity and assure that permit limits are consistently met. It is anticipated that it will take 18 -24 months to complete the TIE/TRE and may take 12 months to implement control or corrective measures necessary to reduce toxicity.

In the second portion of the permit cycle, when final chronic WET limits are in place, the permit includes the requirement for additional testing and TIE/TRE exercises if permit limits are exceeded.

### WET MONITORING FREQUENCY

Several factors were considered to establish the appropriate frequency to perform chronic WET monitoring of the facility's treated wastewater effluent. These include: type of treatment process, design capacity of treatment system, size of discharge in relation to receiving water body, variability of facility's treated wastewater effluent, and chronic WET toxicity of facility's effluent.

The facility treats its wastewater by select point source treatment, zero discharge incineration, and operation of a site-wide wastewater treatment plant. The wastewater treatment plant includes primary, secondary, and tertiary treatment prior to discharge via Outfall 001. Treatment steps include primary clarification, equalization, hydrolysis, activated sludge biological treatment, secondary clarification, carbon adsorption, and pH adjustment.

The treatment plant's daily volume of effluent is fairly consistent throughout the year with changes in flow and loading occurring in alignment with the facility's two manufacturing campaign modes. The hydraulic residence time of the treatment plant is approximately five days. This residence time provides flow equalization to reduce variability of the facility's effluent even when the influent to the treatment plant changes.

Wastewater at the Bayer facility is generated from a variety of activities with the primary source the manufacture of pesticides. The facility utilizes two production campaigns per year to align each pesticide's availability with the seasonal needs of its agricultural customers. This saves money by limiting product inventory. The two campaign mode also decreases manufacturing costs because equipment is not dedicated to one product but instead used to make another pesticide during the alternate campaign. WET continued:

Each campaign is about 5 months long. Little wastewater is generated between each campaign when the facility performs maintenance, plant upgrades, equipment change outs, and employee training. Additional site asset utilization is realized by the similar chemistry of the site's various products. The facility does formulate pesticides in shorter production runs but formulation activities produce substantially less wastewater than manufacturing.

The permit will require **quarterly testing** for Chronic WET. During the chronic TIE/TRE process, Bayer will be conducting many additional chronic tests. At the end of that exercise, the facility will be taking actions to reduce toxicity. When the chronic limits become final, quarterly monitoring will confirm toxicity reductions. If the limit is violated, then additional, more frequent monitoring will be required until the situation is resolved.

In past testing, Ceriodaphnia has been the most sensitive organism, therefore, only annual monitoring is required for Pimephales promelas. However, if Pimephales promelas becomes the more sensitive organism, then quarterly monitoring for each species will be required.

- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit.

**Outfall #002 – Internal Monitoring Location**

**EFFLUENT LIMITATIONS TABLE:**

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
TSS	LB/DAY	1	*		*	NO	
pH	SU	1	*		*	NO	
CHEMICAL OXYGEN DEMAND	LB/DAY	1	*		*	YES	TOD
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

\* - Monitoring requirement only.

\*\* - Previous permit contain Ammonia as N monitoring for lb/day and limitations of 51 mg/L (MDL & AML).

\*\*\* - Was not required in previous state operating permit.

**Basis for Limitations Codes:**

- |  |                                    |
|--|------------------------------------|
| 1. State or Federal Regulation/Law       | 7. Antidegradation Policy          |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model             |
| 3. Water Quality Based Effluent Limits   | 9. Best Professional Judgment      |
| 4. Lagoon Policy                         | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 11. WET Test Policy                |
| 6. Dissolved Oxygen Policy               | 12. Antidegradation Review         |

**OUTFALL #002 – DERIVATION AND DISCUSSION OF LIMITS:**

Outfall #002 is an internal compliance monitoring location. Monitoring requirements for the appropriate parameters are being established in accordance with 40 CFR 122.45(h).

**Outfalls #003 and #004 – Storm Water Run-off and Benchmarks**

All precipitation at this facility, under normal rainfall events, is collected and treated at this facility’s waste treatment plant and discharged via Outfall #001. During heavy rainfall events, electric pumps in the stormwater collection sump can reach their hydraulic capacities. When this occurs, the permittee manages the excess stormwater by implementing one (1) of the two (2) options. Typically the stormwater “first flush” (~20 to 30 min) is collected and treated and discharged to Outfall #001 during heavy rainfall events before implementing Option 1 or Option 2. The exact duration depends on many variables including duration of rainfall, intensity of rainfall, time since last rainfall, temperature, and other factors.

Option 1 – The facility turns on two (2) 600-hp diesel pumps and pumps the stormwater to Outfall #001 at a location downstream of the monitoring and sampling location for Outfall #001 without treatment.

Option 2 – Gate valves of the stormwater collection system are opened and stormwater is discharged.

There are three discharging locations of stormwater run-off from this facility; however, the Department is not going to assign stormwater outfalls at this time to these discharging locations. Because of the toxic nature of the process wastewater it is piped above ground with daily inspections to determine if any process wastewater is discharging onto facility grounds. This permit will contain a site-specific Stormwater Pollution Prevention Plan, Best Management Practices, and Benchmarks to ensure that stormwater discharges from this facility are not causing negative impacts to the receiving stream and degrading the receiving stream’s designated uses.

In addition to having a SWPPP with BMPs, the permittee will have Benchmarks. The Benchmarks below are common pollutant/parameters associated with storm water run-off. The concentration for each of the Benchmark pollutants below are based on concentrations needed to protect water quality and have been shown achievable by facilities utilizing applicable and appropriate SWPPP and BMPs.

<b>Parameter</b>	<b>Benchmark Limits</b>
Biochemical Oxygen Demand 5-day (BOD <sub>5</sub> )	45 mg/L
Chemical Oxygen Demand	120 mg/L
Total Suspended Solids	50 mg/L
Settleable Solids	2.5 mL/L/hr
Oil & Grease	10 mg/L
pH	6.5-9.0 Standard Units

Additionally, due to the flow structure at this facility (pipes being above ground), at least one storm event per year should be tested for all the applicable pollutants associated with Outfall #001 (i.e., Chemical Oxygen Demand, Total Organic Pesticides Chemicals, Total Ammonia as N, Total Dissolved Solids, and 40 CFR 414.91 Pollutants) with the result being established in mg/L. The permit will require that the monitored data be submitted to the Department upon the next renewal of this operating permit. This will allow the department to determine if stormwater contains any of the pollutants associated with pesticide production at this facility.

## **Part VI – Administrative Requirements**

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

### **PUBLIC NOTICE:**

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- The Public Notice period for this operating permit started on May 27, 2011, and was extended to July 15, 2011. Below are changes made to the draft permit due to comments received during the Public Notice period.

- Non-substantial edits to calculations in the fact sheet.
- Addition of four (4) pollutants from 40 CFR 455 Table 4.
- Removal of Chromium III and IV discussion in the fact sheet.
- IC25 established in the permit as the endpoint.
- Edit to the SWPPP in the permit.
- Edit to the Compliance Schedule in the permit with regards to the multi-port diffuser.
- AEC% corrected.
- Special condition #11 modified and *de minimis* language added.
- One species control testing added, but on a case-by-case basis.
- Part E, (1)(a)(8) of the WET test has been removed, but language requiring testing for specific parameters that were in the cited form are now required directly in the permit.
- Additional testing time (i.e., 30 days) has been established in applicable WET testing sections of the permit.
- Fact Sheet updated to note Bayer's comments regarding missing DMRs and WET testing Outliers.
- Fact Sheet updated to note Bayer's comments regarding Total Cyanide.
- Several typographical errors.
- TOD replaces COD in all section of the permit and fact sheet.

**DATE OF FACT SHEET:** DECEMBER 27, 2011,

**COMPLETED BY:**

**MICHAEL ABBOTT, ENVIRONMENTAL SPECIALIST III**  
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DATE OF INTERNAL MODIFICATION, FEBRUARY 29, 2012

**CHRIS WIEBERG, ENVIRONMENTAL SPECIALIST**  
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**Part VII – Appendices**

**APPENDIX A – BUILDING BLOCK AND SEPARATE TBEL**

The below MDLs and AMLs were calculated as follows:

$$\text{Limit in lb/day} = [(\text{FLOW}_{\text{MGD}})(\text{ELG} / 1000)(8.34 \text{ conversion factor})]$$

Whereas,

Flow is 2.8 MGD (design flow)

ELG / 1000 is needed due to the fact that the ELG list the concentration is µg/L. To determine lb/day using the above formula, the units must be converted to mg/L.

8.34 conversion factor unit needed to convert MGD and mg/L to lbs/day.

For ELGs listed in both 414.91 and Table 4 of 455, the Daily Maximum and Monthly Average concentrations were added (Building Block approach) prior to being divided by 1000.

**40 CFR 414.91 Pollutants only**

<b>Pollutant</b>	<b>MDL (lb/day)</b>	<b>AML (lb/day)</b>	<b>Pollutant</b>	<b>MDL (lb/day)</b>	<b>AML (lb/day)</b>
1,1,2-Trichloroethane	0.28	0.11	Chloroethane	1.56	0.55
1,2,4-Trichlorobenzene	0.73	0.36	Chrysene	0.31	0.12
1,2-Dichloroethane	1.11	0.36	Diethyl phthalate	1.06	0.42
1,3-Dichlorobenzene	0.23	0.16	Dimethyl phthalate	0.25	0.1
2,4-Dinitrophenol	0.65	0.37	Di-n-butyl phthalate	0.3	0.14
2,4-Dinitrotoluene	1.5	0.59	Fluoranthene	0.36	0.13
2,6-Dinitrotoluene	3.36	1.34	Fluorene	0.31	0.12
2-Nitrophenol	0.36	0.22	Hexachlorobenzene	0.15	0.08
3,4-Benzofluoranthene	0.32	0.12	Hexachlorobutadiene	0.26	0.1
4,6-Dinitro-o-cresol	1.45	0.41	Hexachloroethane	0.28	0.11
4-Nitrophenol	0.65	0.38	Nitrobenzene	0.36	0.14
Acenaphthene	0.31	0.12	Phenanthrene	0.31	0.12
Acenaphthylene	0.31	0.12	Pyrene	0.35	0.13
Acrylonitrile	1.27	0.5	Total Chromium	14.53	5.82
Anthracene	0.31	0.12	Total Copper	17.73	7.61
Benzo(a)anthracene	0.31	0.12	Total Nickel	20.88	8.87
Benzo(a)pyrene	0.32	0.12	Total Zinc	13.69	5.51
Benzo(k)fluoranthene	0.31	0.12	Trichloroethylene	0.28	0.11
Bis(2-ethylhexyl) phthalate	1.46	0.54	Vinyl Chloride	1.41	0.55

**APPENDIX A – BUILDING BLOCK AND SEPARATE TBEL (CONTINUED):**

**Table 4 of 455 Pollutants only**

Pollutant	MDL (mg/L)*	AML (mg/L)*	Pollutant	MDL (mg/L)*	AML (mg/L)*
Bromodichloromethane	0.38	0.142	Dibromochloromethane	0.794	0.196
Bromomethane	0.38	0.142	Tribromomethane**	0.794	0.196

\* - The federal database (ICIS) for tracking compliance does not list these pollutants in lb/day; therefore, the permit will have the units as mg/L.

\*\* - The synonym for Tribromomethane is Bromoform. Bromoform will be established as the parameter in the permit.

**40 CFR 414.91 and Table 4 of 455 pollutants**

Pollutant	MDL (lb/day)	AML (lb/day)	Pollutant	MDL (lb/day)	AML (lb/day)
1,1,1-Trichloroethane	1.35	0.53	Carbon Tetrachloride*	0.95	0.45
1,1-Dichloroethane	1.48	0.55	Chlorobenzene	0.7	0.38
1,1-Dichloroethylene	0.63	0.4	Chloroform*	1.15	0.53
1,2-Dichlorobenzene	4.08	1.93	Ethylbenzene	2.7	0.8
1,2-Dichloropropane	5.75	3.83	Methyl Chloride*	4.75	2.15
1,2-trans-Dichloroethylene	1.35	0.53	Methylene Chloride*	2.23	1
1,3-Dichloropropylene*	1.1	0.73	Naphthalene	1.48	0.55
1,4-Dichlorobenzene	0.7	0.38	Phenol**	<b>0.028 mg/L</b>	<b>0.016 mg/L</b>
2,4-Dichlorophenol	2.8	0.98	Tetrachloroethylene	1.4	0.55
2,4-Dimethylphenol	0.9	0.45	Toluene	2	0.65
2-Chlorophenol	2.45	0.78	Total Cyanide	23.02	8.01
Benzene	3.4	0.93	Total Lead	17.26	8.01

\* - For the pollutant of 1,3-Dichloropropene as listed in Table 4 of Part 455, the synonym is 1,3 Dichloropropylene, which is listed in 414.91.

\* - For the pollutant of Chloromethane as listed in Table 4 of Part 455, the synonym is Methyl Chloride, which is listed in 414.91.

\* - For the pollutant of Dichloromethane as listed in Table 4 of Part 455, the synonym is Methylene Chloride, which is listed in 414.91.

\* - For the pollutant of Tetrachloromethane as listed in Table 4 of Part 455, the synonym is Carbon Tetrachloride, which is listed in 414.91.

\* - For the pollutant of Trichloromethane as listed in Table 4 of Part 455, the synonym is Chloroform, which is listed in 414.91.

\*\* - For the pollutant Phenol, the building block approach was used to determine the lb/day, but then was converted back to mg/L for the Daily Maximum and Monthly Average due to the fact that ICIS does not have Phenols listed in lb/day.  $Mg/L = (lb/day)/(Flow\ in\ MGD * 8.34)$