

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL INDUSTRIAL WASTE (IW)
AND IW STORMWATER**

Application No. PA0051713
APS ID 1092692
Authorization ID 1447014

Applicant and Facility Information

Applicant Name	<u>Evonik Corporation</u>	Facility Name	<u>Evonik Chester PA Facility</u>
Applicant Address	<u>1200 West Front Street</u> <u>Chester, PA 19013-3438</u>	Facility Address	<u>1200 West Front Street</u> <u>Chester, PA 19013-3438</u>
Applicant Contact	<u>Gauthier Craig</u>	Facility Contact	<u>Craig Gauthier</u>
Applicant Phone	<u>(610) 990-8137</u>	Facility Phone	<u>(610) 990-8137</u>
Client ID	<u>128497</u>	Site ID	<u>2377</u>
SIC Code	<u>2819</u>	Municipality	<u>Chester City</u>
SIC Description	<u>Manufacturing - Industrial Inorganic Chemicals</u>	County	<u>Delaware</u>
Date Application Received	<u>May 26, 2023</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u></u>	If No, Reason	<u></u>
Purpose of Application	<u>Permit Renewal</u>		

Summary of Review

The permittee requests renewal of an NPDES permit to discharge treated industrial wastewater and stormwater from a silica manufacturing facility.

The facility manufactures precipitated silica (silicon dioxide) and is classified as an inorganic chemical facility (no ELGs for this process). In the manufacturing process liquid sodium silicate and sulfuric acid are mixed in precipitators. The produced silica suspension is pumped into suspension tanks and then to filter presses. The filter presses de-water the silica suspension into a filter cake. The filter presses are washed with fresh warm water to remove sodium sulfate from the product and the filtrate and wash water are pumped into the wastewater treatment system. The filter cake is then liquefied, and the resultant slurry is pumped to the spray dryers where the remaining moisture is removed. Dried silica is stored in silos and then shipped from the plant in either bulk form by rail or in packaged form by truck.

After the wastewater leaves the filter presses it is neutralized in a sump. The wastewater is then cooled in heat exchangers. Polymer is added in an in-line mixer, and the solids are precipitated from the wastewater in one of three cyclators. The solids (recovered silica) are recycled into the manufacturing process via the suspension tanks. The wastewater is further neutralized in one of three tanks and then passed through an equalization tank prior to being discharged to the Delaware River.

The following wastewater treatment chemicals are used at the facility:

Solenis Praestol K111 L-NA, Sodium Hydroxide and Sulfuric Acid.

No chemical additives are proposed to use at the facility.

Approve	Deny	Signatures	Date
X		<i>Sara Abraham</i> Sara Reji Abraham, E.I.T. / Project Manager	January 17, 2024
X		<i>Pravin Patel</i> Pravin C. Patel, P.E. / Environmental Engineer Manager	01/17/2024

Summary of Review

Based on the low PCB discharge concentration (averaged less than 50 pg/l during the last permit term) DRBC reduced the facility's PCB monitoring requirements to once every two years and recommended submission of PMP report every five years. Part C of the permit contains a special condition consistent with this requirement which also includes language for the resumption of annual monitoring along with submission of annual PMP if PCB concentration increases. This DRBC recommendation was received at the last permit renewal and continuing in the draft permit. If this determination is revised by DRBC, that change will be reflected in the final permit.

DRBC docket (D-1996-011-5, draft) for the facility is currently under the renewal process.

NPDES permit rating worksheet was completed at the last renewal and shows the facility is a minor industrial source.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Act 14 Notification:

City of Chester - May 6, 2023
Delaware County - May 6, 2023

Permit Conditions:

- A. Acquire Necessary Property Rights
- B. Proper Sludge Disposal
- C. WQM Permits Condition
- D. Applicable BAT if Developed
- E. TMDL/WLA Analysis
- F. TSS Removal per DRBC
- G. Thermal Requirement
- H. WET Testing
- I. Chemical Additives
- J. Stormwater Outfall Condition
- K. PCB/PMP Requirement

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>1.8</u>
Latitude	<u>39° 49' 50.61"</u>	Longitude	<u>-75° 22' 6.30"</u>
Quad Name	<u>Bridgeport</u>	Quad Code	<u>2043</u>
Wastewater Description: <u>IW Process Effluent without ELG</u>			
Receiving Waters	<u>Delaware River</u>	Stream Code	<u>00002</u>
NHD Com ID	<u>25591395</u>	RMI	<u>82.2</u>
Q7-10 Flow (cfs)	<u>Tidal Delaware River flow*</u>		
Watershed No.	<u>3-G</u>	Chapter 93 Class.	<u>WWF, MF</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>PCB</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>Final</u>	Name	<u>Delaware River Estuary PCB TMDLs</u>

There is one stormwater outfall 002 at the site which also discharges to the Delaware Estuary.

*Q7-10 flow from DRBC spreadsheet is 3997 cfs and 1% flow is considered as available for dilution.

Treatment Facility Summary				
Treatment Facility Name: Evonik Chester PA Facility				
WQM Permit No.		Issuance Date		
2312201		12/06/2012		
2396201		12/20/1996		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Chemical (Industrial Waste)	Chemical Precipitation	No Disinfection	1.8
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.8		Not Overloaded		

Compliance History

DMR Data for Outfall 001 (from November 1, 2022 to October 31, 2023)

Parameter	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22
Flow (MGD) Average Monthly		1.135	0.797	1.103	0.913	1.116	1.167	1.104	1.056	0.977	0.838	0.672
Flow (MGD) Daily Maximum		1.306	1.241	1.409	1.191	1.298	1.389	1.263	1.389	1.192	1.068	0.939
pH (S.U.) Instantaneous Minimum		7.0	7.0	6.7	8.2	7.0	6.7	6.8	6.8	6.8	6.8	7.0
pH (S.U.) Instantaneous Maximum		7.4	8.2	7.6	6.8	7.6	7.6	7.5	7.4	9.0	8.2	8.0
Temperature (°F) Instantaneous Maximum		100	100	101	96	92	89	95	93	91	93	98
TSS (lbs/day) Average Monthly		496	379	401	159	295	316	322	240	280	155	231
TSS (lbs/day) Daily Maximum		919	688	528	264	354	448	565	307	391	279	364
TSS (mg/L) Average Monthly		70	62	73	33	41	47	49	39	48	39	44
TSS (mg/L) Daily Maximum		135	100	101	47	49	57	72	47	58	50	65
Total Dissolved Solids (lbs/day) Average Monthly		142664	85683	108285	74901	135444	129458	125489	133631	108105	73572	74119
Total Dissolved Solids (lbs/day) Daily Maximum		203817	153901	125484	113409	170463	163737	157201	164915	164408	126351	107451
Total Dissolved Solids (mg/L) Average Monthly		19483.0	13622.0	19174.0	14263.0 0	20165.0 0	19161.0 0	20364.0	20688.0	17912.0	14710.0	14376.0
Total Dissolved Solids (mg/L) Daily Maximum		21742.0	20913.0	21875.0	18890.0 0	23254.0 0	21167.0 00	22386.0	22864.0	21944.0	21215.0	20279.0
Sulfate (mg/L) Average Monthly		13000	13000	10000	9100	13000	12000	14000	11000	11000	11000	11000

**NPDES Permit Fact Sheet
Evonik Chester PA Facility**

NPDES Permit No. PA0051713

PCBs (Dry Weather) (pg/L) Daily Maximum											70	
Acute WET - Ceriodaphnia Survival (TUa) Daily Maximum		GG			GG			8.3			GG	
Acute WET - Pimephales Survival (TUa) Daily Maximum		GG			GG			1.8			GG	

DMR Data for Outfall 002 (from November 1, 2022 to October 31, 2023)

Parameter	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22
pH (S.U.) Daily Maximum					7.06						7.22	
COD (mg/L) Daily Maximum					64						< 25	
TSS (mg/L) Daily Maximum					100						9.9	
Nitrate-Nitrite (mg/L) Daily Maximum					0.88						0.66	
Total Phosphorus (mg/L) Daily Maximum					0.10						0.12	
Total Aluminum (mg/L) Daily Maximum					1.3						0.250	
Total Iron (mg/L) Daily Maximum					2.1						0.500	
Total Lead (mg/L) Daily Maximum					0.0077						< 0.0071	
Total Zinc (mg/L) Daily Maximum					0.340						0.290	

Development of Effluent Limitations

Outfall No. 001 Design Flow (MGD) 1.8
 Latitude 39° 50' 8.00" Longitude -75° 22' 7.87"
 Wastewater Description: IW Process Effluent without ELG

Water Quality-Based Limitations

EFFLUENT PARAMETER	WATER QUALITY BASED LIMITS					BASIS FOR LIMIT
	Monthly AVERAGE		DAILY MAXIMUM		INST. MAX.	
	CONC. (MG/L)	LOAD (LBS/DAY)	CONC. (MG/L)	LOAD (LBS/DAY)	CONC. (MG/L)	
TSS	100		200		250	DRBC
TDS	30,000	450,360	32,000	480,384	33,000	DRBC docket D-1996-011-4
Temperature					110° F	DRBC
pH	6.0 to 9.0 std at all times					Chap. 95.2
WET acute	8.4 TUa					DRBC docket D-1996-011-4
PCB dry weather			Report			Existing/DRBC

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations/Monitoring:

Parameter	Maximum concentration reported (ug/l)	Most Stringent Criterion (ug/l) (1)	WQBEL (ug/l) (1x28)	recommendation
TDS	19000,000	500000		Existing limit to continue
Total Copper	12	9	252	No monitoring
Sulfate	16000,000	250000	7000000	Existing monitoring to continue*
Total Lead	12	2.5	70	Monitoring**
Total Mercury	0.11	0.05	1.4	No monitoring
Total Phenols	<10	5	140	No monitoring
Acrolein	<5.0	3	84	No monitoring
Chlorodibromomethane	0.58	0.8	22.4	No monitoring
Chloroform	2.9	5.7	159.6	No monitoring
Dichlorobromomethane	1.3	0.95	26.6	No monitoring

Dilution factor used is 28 (DRBC provided the acute dilution of 28:1 which is more conservative than chronic dilution)

*A TDS determination is approved by DRBC and effluent limit is established in the permit according to the DRBC docket D-1996-011-4. As sulfate is a major constituent in TDS and is controlled by the TDS limit in the permit. Monitoring is appropriate.

**Discharge concentration > than 10% of the calculated WQBE; Monitoring is recommended to collect data.

Anti-Backsliding

N/A

Development of Effluent Limitations

Outfall No.	<u>002</u>	Design Flow (MGD)	<u>0</u>
Latitude	<u>39° 50' 7.53"</u>	Longitude	<u>-75° 22' 16.32"</u>
Wastewater Description:	<u>Stormwater</u>		

For stormwater Outfall 002, the parameters consistent with the Appendix F of the General permit are included based on the SIC code.

Whole Effluent Toxicity (WET)

For Outfall 001, **Acute** **Chronic** WET Testing was completed:

- For the permit renewal application (4 tests).
- Quarterly throughout the permit term.
- Quarterly throughout the permit term and a TIE/TRE was conducted.
- Other: **Annually**

The dilution series used for the tests was: 100%, 56%, 12%, 6%, and 3%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 12%.

Summary of Four Most Recent Test Results

WET Summary and Evaluation

Facility Name	Evonik Corporation
Permit No.	PA0051713
Design Flow (MGD)	1.8
Q ₇₋₁₀ Flow (cfs)	3997
PMF _a	0.019
PMF _c	1

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Ceriodaphnia	Survival	9/15/21	12/10/21	4/23/22	2/24/23
		PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Pimephales	Survival	6/11/21	12/10/21	3/18/22	2/24/23
		PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date

Reasonable Potential? NO

Permit Recommendations

Test Type Chronic

TIWC 1 % Effluent

Dilution Series 1, 2, 30, 60, 100 % Effluent

Permit Limit None

Permit Limit Species

Facility submitted Chronic and Acute WET testing results. Current NPDES permit only requires reporting Acute WET testing results.

Based on the DRBC calculations, the Chronic dilution factor is 1436.2: 1 and the TIWCc is 0.07%. Considering the very high chronic dilution, chronic testing would not be as protective as acute testing for aquatic life.

Review of Acute Test results (past 4 Tests) using TST method shows no reasonable potential. However, there is a history of toxicity and test failures during the last 5 years of the permit term. As per DRBC, acute dilution factor is 28:1, the acute TIWC is 11.9 % rounded to 12 % and Acute Toxicity limit will be 8.4 similar to the existing Acute WET limit. As this is a tidal discharge the DRBC calculations are considered acceptable.

Acute Testing is recommended, and the dilution series will be **3%, 6%, 12%, 56% and 100%** based on PADEP WET SOP.

The standard condition from PADEP WET SOP is included in the part C of the permit.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the “NPDES Permit Writer’s Manual” (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Temperature (°F)	XXX	XXX	XXX	XXX	XXX	110	1/week	I-S
Total Suspended Solids	1501	3002	XXX	100	200	250	1/week	24-Hr Composite
Total Dissolved Solids	450360	480384	XXX	30000.0	32000.0	33000	2/week	24-Hr Composite
Lead, Total	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Sulfate, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
PCBs Dry Weather Analysis (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Acute - Ceriodaphnia Survival (TUa)	XXX	XXX	XXX	XXX	8.4	XXX	See Permit	24-Hr Composite
Toxicity, Acute - Pimephales Survival (TUa)	XXX	XXX	XXX	XXX	8.4	XXX	See Permit	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the “NPDES Permit Writer’s Manual” (362-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Calculation
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Lead, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

NPDES Permit Fact Sheet

**NPDES Permit No. PA0051713
Evonik Chester PA Facility**