

*West Virginia Department of Environmental Protection*

*Earl Ray Tomblin  
Governor*

*Division of Air Quality*

*Randy C. Huffman  
Cabinet Secretary*

# Permit to Update



**R13-2561K**

*This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.*

Issued to:

**Bayer MaterialScience, LLC**

**South Charleston, WV**

**039-00102**

A blue ink signature of William F. Durham, written in a cursive style, positioned above a horizontal line.

*William F. Durham*

*Director*

*Issued: August 19, 2015*

This permit will supercede and replace R13-2561J.

Facility Location: South Charleston, Kanawha County, West Virginia  
Mailing Address: 501 Second Avenue, South Charleston, WV 25303  
Facility Description: Chemical Manufacturing Facility  
NAICS Codes: 325199 - All Other Basic Organic Chemical Manufacturing  
UTM Coordinates: 439.65 km Easting • 4,247.00 km Northing • Zone 17  
Permit Type: Class II Administrative Update  
Description of Change(s): Make changes to the Polymer Polyols (PMPO) manufacturing units so a new liquid catalyst can be used to make polymer polyol products. Retain the ability to make polymer polyol products using the old solid catalyst.

The following list of proposed changes comprise R13-2561K:

- 1 - Change the service of seven (7) storage tanks.
- 2 - Use the new chemical/liquid catalyst to make polymer polyol products.
- 3 - Vent storage tank T-663 to the thermal oxidizer (Y-2124) instead of the atmosphere.
- 4 - Replace the catalyst mix tank (C-2405).
- 5 - Re-size the wastewater stripper column (C-2044) to handle reduced wastewater flows.
- 6 - Remove dust collector [venturi scrubber (V-2493)] requirement for PMPO catalyst addition.
- 7 - Removal the emergency vent (HV-616-09) for wastewater tank T-616.

*Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.*

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*The source is subject to 45CSR30. The permittee has the duty to update the facility's Title V (45CSR30) permit application to reflect the changes permitted herein.*

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## 1.0 Emission Units

**Table 1.1 - Polymer Polyols Emissions Group**

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
<b>PP1</b>			
T-2305	E-2305	Cat mix tank	atm vent
T-1459	E-1459	Cat/Flex Stg	atm vent
T-1460	E-1460	Cat/Flex Stg	atm vent
Ex-2134	NA	Condenser	Vents to H-2143 Vacuum Jet
H-2143	E-655	Vacuum Jets	Vents to T.O. E-655 or E-651 emergency bypass
T-2148	E-655	Jet Pot Decanter	vents to T.O. E-655
T-1454	E-1454	Intermediate or make tank	atm vent
T-1455	E-1455	Intermediate or make tank	atm vent
T-1456	E-1456	Intermediate or make tank	atm vent
T-2165	E-2165	Additive tank	atm vent
T-2265	E-2166	Additive tank	atm vent
PMPO #1	E-651	PMPO #1 Jets	H-2143
T-2148	E-651	Jet Pot Decanter	emergency vent
<b>PP2</b>			
Ex-2224	NA	Condenser	Vents to H-2253 Vacuum Jet
H-2253	E-655	Vacuum Jets	Vents to E-655 or E-653 emergency bypass
T-2248	E-655	Jet Pot Decanter	vents to T.O. E-655
T-1453	E-1453	Intermediate or make tank	atm vent
T-1463	E-1463	Intermediate or make tank	atm vent
T-1464	E-1464	Intermediate or make tank	atm vent
PMPO #2	E-653	PMPO #2 Jets	Ex-2224 H-2253
T-2248	E-653	Jet Pot Decanter	emergency vent
<b>PP3</b>			
Ex-2324	NA	Condenser	Vents to H-2343 Vacuum Jet

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
H-2343	E-655	Vacuum Jets	Vents to E-655 or E-652 emergency bypass
T-2348	E-655	Jet Pot Decanter	vents to T.O. E-655
H-2353	E-655	Evaporator Vacuum Jets	vents to T.O. E-655 or E-654 emergency bypass
T-8480	E-8480	Intermediate or make tank	atm vent
T-8481	E-8481	Intermediate or make tank	atm vent
T-8482	E-8482	Intermediate or make tank	atm vent
T-8483	E-8483	Intermediate or make tank	atm vent
T-1451	E-1451	Preformed Stabilizer Tank	atm vent
PMPO #3	E-652/E-654	PMPO #3 Jets	Ex-2324 H-2343 H-2353
T-2348	E-652/E-654	Jet Pot Decanter	emergency vent
<b>PP4</b>			
T-103	E-103	Storage	atm vent
T-104	E-104	Storage	atm vent
Ex-2424	NA	Condenser	Vents to H-2443 Vacuum Jet
H-2443	E-655	Vacuum Jets	Vent to T.O. E-655
T-2448	E-655	Jet Pot Decanter	Vents to T.O. E-655
T-105	E-105	Intermediate or make tank	atm vent
T-106	E-106	Intermediate or make tank	atm vent
T-107	E-107	Intermediate or make tank	atm vent
T-108	E-108	Intermediate or make tank	atm vent
T-8484	E-8484	Intermediate or make tank	atm vent
T-8485	E-8485	Intermediate or make tank	atm vent
T-2465	E-2465	Cooling Brine	atm vent
T-2496	E-2496	Hot oil system for evaporator	atm vent
T-109	E-655	Recycled alcohol (feed tank for PFS)	Vents to T.O. E-655
PMPO #4	E-658	PMPO #4 Jets	Ex-2424 H-2443
T-2448	E-658	Jet Pot Decanter	emergency vent
<b>Preformed Stabilizers (PFS)</b>			
C-2505	E-2505	#1 Catalyst charge Preblend Pot	Atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-1451	E-1451	#2 ISOP/Polyol	Atm vent
T-1452	E-1452	#2 ISOP/Polyol Storage Tank	Atm vent
T-1458	E-1458	#2 ISOP/Polyol	Atm vent
T-1461	E-1461	#2 ISOP/Polyol Storage Tank	Atm vent
T-2501	E-2501	#1 ISOP/Catalyst Preblend Tank	Atm vent
T-2502	E-2502	#1 ISOP/Catalyst Preblend Tank	Atm vent
<b>PFS Storage</b>			
T-632	E-655	PFS Storage	vents to T.O. E-655
T-663	E-655	PFS Storage	vents to T.O. E-655
T-684	E-655	PFS Storage	Vents to T.O. E-655
T-686	E-655	PFS Storage	Vents to T.O. E-655
<b>PMPO Feed System</b>			
T-2405	E-2405	Cat mix & feed tank (feeds liquid catalyst to PMPO #2, #3, & #4)	atm vent
T-279	E-279	Additive Storage	atm vent
T-8463	E-8463	Additive Storage	atm vent
T-8465	E-8465	Polyol Raw material staging for blends	atm vent
T-626	E-655	Acrylonitrile	vents to T.O. Feeds all PMPO systems & PFS.
T-633	E-633	Styrene	atm vent. Feeds all PMPO systems
T-634	E-634	Styrene	atm vent Feeds all PMPO systems
T-683	E-683	Styrene	atm vent. Feeds all PMPO systems.
T-687	E-687	Styrene	atm vent. Feeds all PMPO systems.
T-631	E-655	Recovered alcohol (feed tank for PFS)	vents to T.O. Receives matl from PMPO #1,2&3 and feeds PFS.
T-1457	E-1457	EPO	atm vent
<b>PMPO Support System</b>			
T-1462	E-1462	Storage (stabilizer)	atm vent
T-1467	E-1467	Storage (Polyol)	atm vent
T-1468	E-1468	Storage (Polyol)	atm vent
C-2044	E-655	"MON" NESHAP Waste Water HAP Stripper w/ E-2045 Condenser and E-2057 Feed Preheater	Y-2124 CTO Incinerator/ Scrubber

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
C-2016	n/a	C-2016 ACN treater	APCD
T-616	E-655	Storage/decanting of wastewater	Vents to T.O. E-655
T-693	E-655	Waste monomer tank	vent to T.O. E-655
Y-2124	E-655	Thermal Oxidizer/Scrubber	Vents to atm
T-8464	E-8464	Rx vessel/blending	VOC's, MDI low emissions
T-8461	E-8461	Storage	atm vent
T-8466	E-8466	Storage	atm vent
T-8462	E-8462	Storage	atm vent
T-112	E-112	Storage	atm vent
<b>PMPO Storage and Ancillary Equipment</b>			
T-70	E-70	Final Product Storage	atm vent
T-71	E-71	Final Product Storage	atm vent
T-72	E-72	Final Product Storage	atm vent
T-73	E-73	Final Product Storage	atm vent
T-74	E-74	Final Product Storage	atm vent
T-75	E-75	Final Product Storage	atm vent
T-76	E-76	Polyol blending	atm vent
T-77	E-77	Polyol blending	atm vent
T-78	E-78	Polyol blending	atm vent
T-79	E-79	Polyol blending	atm vent
T-80	E-80	Final Product Storage	atm vent
T-81	E-81	Final Product Storage	atm vent
T-82	E-82	Final Product Storage	atm vent
T-83	E-83	Final Product Storage	atm vent
T-84	E-84	Final Product Storage	atm vent
T-85	E-85	Final Product Storage	atm vent
T-86	E-86	Final Product Storage	atm vent
T-87	E-87	Final Product Storage	atm vent
T-88	E-88	Final Product Storage	atm vent
T-89	E-89	Final Product Storage	atm vent
T-90	E-90	Final Product Storage	atm vent
T-91	E-91	Final Product Storage	atm vent
T-92	E-92	Final Product Storage	atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-93	E-93	Final Product Storage	atm vent
T-94	E-94	Final Product Storage	atm vent
T-263	E-263	Final Product Storage	atm vent
T-264	E-264	Final Product Storage	atm vent
T-265	E-265	Final Product Storage	atm vent
T-266	E-266	Final Product Storage	atm vent
T-271	E-271	Final Product Storage	atm vent
T-272	E-272	Final Product Storage	atm vent
T-275	E-275	Final Product Storage	atm vent
T-277	E-277	Final Product Storage	atm vent
T-278	E-278	Final Product Storage	atm vent
T-681	E-681	Final Product Storage	atm vent
T-682	E-682	Final Product Storage	atm vent
T-685	E-685	Final Product Storage	atm vent
T-688	E-688	Final Product Storage	atm vent
T-695	E-695	Final Product Storage	atm vent
T-696	E-696	Final Product Storage	atm vent

**Table 1.2 - Flexible Polyols Emissions Group**

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
<b>Building 103 (Flex Polyols)</b>			
<b>#1 and #2 Feed System</b>			
T-276	E-276	Polyol starter	atm vent
T-605	E-605	Polyol starter	atm vent
T-606	E-606	Polyol starter	atm vent
T-661	E-661	Polyol starter	atm vent
T-662	E-662	Polyol starter	atm vent
T-628	E-628	Propylene Glycol	atm vent
T-659	E-659	Glycerine	atm vent
C-3128	E-3128	Catalyst addition system (Rx #1)	atm vent (polyol & dust)
C-3228	E-3228	Catalyst addition system (Rx #2)	atm vent (polyol & dust)

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
Y-3100	E-3100	Dust collection (common) for RX #1, #2, and #3	atm vent (dust)
<b>#1 and #2 Reaction System</b>			
C-3101	E-3101	Reactor Rx #1	vent to vacuum hogging jets H-3192
C-3201	E-3201	Reactor Rx #2	vent to vacuum hogging jets H-3192
H-3192	E-3192	Hogging Vac Jets for #1 and #2 Reactors	Atm vent (receives flow from #1 and #2)
<b>#1 and #2 Interim Storage</b>			
T-613	E-613	Crude Polyol	atm vent
T-614	E-614	Crude Polyol	atm vent
T-667	E-667	Crude Polyol	atm vent
T-668	E-668	Crude Polyol	atm vent
T-643	E-643	Crude Polyol	atm vent
T-644	E-644	Crude Polyol	Atm vent
<b>Reactor #3 Feed System</b>			
T-647	E-647	Polyol starter or crude Polyol	atm vent
T-648	E-648	Polyol starter or crude Polyol	atm vent
T-1522	E-1522	Polyol starter	atm vent
T-269	E-269	Polyol starter	atm vent
T-674	E-674	Polyol starter	atm vent
T-273	E-273	Glycerine	atm vent
C-3328	E-3328	Catalyst addition system	atm vent
<b>#3 Reaction System</b>			
C-3301	E-3301	Reactor Rx #3	vents to vacuum system H-3316 as well
H-3316	E-620	Vacuum system #3 reactor	atm vent
<b>#3 Reactor Storage and Ancillary System</b>			
T-611	E-611	Crude Polyol	atm vent
T-611	E-19A	Crude Polyol stripping	atm vent. Steam jets for T-611
T-612	E-612	Crude Polyol	atm vent
T-612	E-19A	Crude Polyol stripping	atm vent. Steam jets for T-612
T-669	E-669	Crude Polyol	atm vent
T-670	E-670	Crude Polyol	atm vent
T-672	E-672	Polyol Product	atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-259	E-259	Polyol Product	atm vent
T-255	E-255	Polyol Product	atm vent
T-1526	E-1526	Polyol Product	atm vent
T-8467	E-8467	Polyol Product	atm vent
T-8469	E-8469	Polyol Product	atm vent
T-1519	E-1519	Polyol Product	atm vent
<b>IX and Refining System #1</b>			
T-1465	E-1465	New ISOP feed (Common)	atm vent. Common to #1, 2 & 5 systems
T-656	E-656	ISOP Feed (Common)	
T-658	E-658T	ISOP Feed (Common)	
T-610	E-610S	Sulfuric acid (Common)	
C-3404	E-662	Refining System	atm vent
C-3406	E-662	Refining System	atm vent
Ex-3475 / H-3477	E--608	Vacuum system (evaporation equipment) Condenser / Vac Jet off evaporators	Ex-3475 condenser
T-3478	E-608	Jet seal pot	atm vent
T-3483	E-3483	Jet Pot Collection	atm vent. For #1 and #2 systems
T-1466	E-1466	Used/recovered ISOP (Common)	atm vent
T-649	E-649	Make tank	atm vent
T-650	E-650	Make tank	atm vent
T-604	E-604	Make tank	atm vent .Steam jets for T-604 can vent to E-603
T-604	E-603	Vacuum source on T-604 tank only	Steam jets for T-604, vents to E-603
T-603 jet pot	E-603J	Jet seal pot	atm vent
<b>IX and Refining System #2</b>			
C-3504	E-663	Refining System	atm vent
C-3506	E-663	Refining System	atm vent
EX-3575/ H-3577	E-609	Vacuum system (evaporation equipment) Condenser / Vac Jet	Condenser
T-3578	E-609	Jet seal pot	atm vent
T-261	E-261	Make tank	atm vent
T-262	E-262	Make tank	atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-257	E-257	Make tank	atm vent
T-258	E-258	Make tank	atm vent
<b>IX and Refining System #3</b>			
C-3604	E-664	Refining System	atm vent
C-3606	E-664	Refining System	atm vent
Ex-3675/ H-3677	E-610	Vacuum system (evaporation equipment) Condenser / Vac Jet	Condenser
T-3678	E-610	Jet seal pot	atm vent
T-603	E-603 or E-603S	Make tank Vacuum Jet	atm vent. Can vent to E-603S
T-645	E-645 or E-603S	Make tank Vacuum Jet	atm vent. Can vent to E-603S
T-646	E-646 or E-603S	Make tank Vacuum Jet	atm vent. Can vent to E-603S
<b>B103 Final Product Storage</b>			
T-267	E-267	Product storage	atm vent
T-268	E-268	Product storage	atm vent
T-269	E-268	Product storage	atm vent
T-270	E-270	Product storage	atm vent
T-673	E-673	Product storage	atm vent
T-674	E-674	Product storage	atm vent
T-1517	E-1517	Product storage	atm vent
T-1518	E-1518	Product storage	atm vent
T-1520	E-1520	Product storage	atm vent
T-1521	E-1521	Product storage	atm vent
T-1523	E-1523	Product storage	atm vent
T-1524	E-1524	Product storage	atm vent
T-1527	E-1527	Product storage	atm vent
T-1528	E-1528	Product storage	atm vent
T-1529	E-1529	Product storage	atm vent
T-1530	E-1530	Product storage	atm vent
T-1525	E-1525	Product storage	atm vent
T-1531	E-1531	Product storage	atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-1532	E-1532	Product storage	atm vent
<b>Building 196 (Flex Polyol)</b>			
Reactor #7, #8, and #9 Feed and Vacuum Systems			
T-1	E-1	Polyol starter	atm vent
T-2	E-2	Polyol starter	atm vent
T-9	E-9	Polyol starter	atm vent
T-10	E-10	Polyol starter or glycerine	atm vent
T-18	E-18	Polyol starter	atm vent
H-5416 H-5216	E-5416 or E-5216	Vacuum Jets Vacuum Pump	Receives flow from #7, 8 & 9.
Reactor #7, #8, and #9 Reaction Systems			
C-5201	E-636	#7 Reactor	can vent to vacuum jets H-5416 as well as vacuum pump H-5216
T-5316	E-5316	Hot well (Common)	atm vent
C-5301	E-637	#8 Reactor	can vent to vacuum jets H-5416 as well as vacuum pump H-5216
C-5401	E-638	#9 Reactor	can vent to vacuum jets H-5416 as well as vacuum pump H-5216
T-5340A	E-5340A	Liquid KOH addition	atm vent
T-5340B	E-5340B	Liquid KOH addition	atm vent
Interim Storage			
T-3	E-3	Crude storage	atm vent
T-4	E-4	Crude storage	atm vent
T-5	E-5	Crude storage	atm vent
T-6	E-6	Crude storage	atm vent
T-7	E-7	Crude storage	atm vent
T-8	E-8	Crude storage	atm vent
Reactor #7, #8, and #9 IX and Refining Systems			
T-20	E-20	Fresh ISOP	atm vent
T-24	E-24	Fresh ISOP	atm vent
T-26	E-26	Fresh ISOP	atm vent
T-19	E-19	Used/recovered ISOP	atm vent 5.6 MM gal/yr

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-23	E-23	Used/recovered ISOP	atm vent
T-25	E-25	Used/recovered ISOP	atm vent
C-5504	E-640	Refining System	atm vent
C-5506	E-643	Refining System	Atm vent
T-17	E-17	H2SO4 storage	atm vent
T-5650	E-5650	#8 Refining Surge Tank	atm vent
T-5750	E-5750	#9 Refining Surge Tank	atm vent
T-5550	E-5550	#7 Refining Surge Tank	atm vent
H-242	E-242	Evaporation vacuum system	atm vent
T-5678	E-5678	Jet seal pot	atm vent
T-11	E-11	Make tank	atm vent
T-12	E-12	Make tank	atm vent
T-310	E-310	Inhibitor Pot	atm vent (dust)
C-5604	E-641	Refining System	atm vent
C-5606	E-644	Refining System	atm vent
H-230	E-230	Evaporation vacuum system	atm vent
T-13	E-13	Make tank	atm vent
T-14	E-14	Make tank	atm vent
C-5704	E-642	Refining System	atm vent
C-5706	E-645	Refining System	atm vent
H-267	E-267	Evaporation vacuum system	atm vent
T-15	E-15	Make tank	atm vent
T-16	E-16	Make tank	atm vent
C-5804	E-5804	Refining System	atm vent
C-5806	E-5806	Refining System	atm vent
<b>B196 Final Storage Tanks</b>			
T-60	E-60	Product storage	atm vent
T-61	E-61	Product storage	atm vent
T-62	E-62	Product storage	atm vent
T-63	E-63	Product storage	atm vent
T-64	E-64	Product storage	atm vent
T-65	E-65	Product storage	atm vent
T-66	E-66	Product storage	atm vent

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
T-67	E-67	Product storage	atm vent
T-68	E-68	Product storage	atm vent
T-698	E-698	Final Product storage	atm vent
T-6797	E-6797	Product storage	atm vent
T-6798	E-6798	Product storage	atm vent
T-6799	E-6799	Product storage	atm vent
<b>Distillation Column</b>			
C-5812	E-639	Distillation Column System	atm vent (condenser)
<b>PO Distribution</b>			
C-2090A	E-25, E-26 & E-27	PO Carbon Treater No emissions until carbon bed is regenerated	UCC – DOW Boiler 25, 26 or 27
C-2090B	E-25, E-26 & E-27	PO Carbon Treater No emissions until carbon bed is regenerated	UCC – DOW Boiler 25, 26 or 27
C-101	N/A	PO Storage (South Sphere)	Vapor balanced
C-102	N/A	PO Storage (North Sphere)	Vapor balanced
T-9016	N/A	PO Storage (North Charleston Tank Farm)	Vapor balanced
T-9017	N/A	PO Storage (North Charleston Tank Farm)	Vapor balanced

Emissions Unit ID	Emission Point ID	Emissions Unit Description	Control Device
<b>EO Distribution</b>			
C-7000	Fugitive	EO Storage Tank	Vapor Balanced
Y-7101	E-7101	EO Scrubber	Y-7101
D-7102	E-7101	EO Reaction Tank	Y-7101
D-7103	E-7101	EO Reaction Tank	Y-7101
C-7203	E-7203	Chiller Tank	None
V-7200	None	Chiller	None

2.0. General Conditions

2.1. Definitions

- 2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.
- 2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.
- 2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

<b>CAAA</b>	Clean Air Act Amendments	<b>NSPS</b>	New Source Performance Standards
<b>CBI</b>	Confidential Business Information	<b>PM</b>	Particulate Matter
<b>CEM</b>	Continuous Emission Monitor	<b>PM<sub>2.5</sub></b>	Particulate Matter less than 2.5µm in diameter
<b>CES</b>	Certified Emission Statement	<b>PM<sub>10</sub></b>	Particulate Matter less than 10µm in diameter
<b>C.F.R. or CFR</b>	Code of Federal Regulations	<b>Ppb</b>	Pounds per Batch
<b>CO</b>	Carbon Monoxide	<b>pph</b>	Pounds per Hour
<b>C.S.R. or CSR</b>	Codes of State Rules	<b>ppm</b>	Parts per Million
<b>DAQ</b>	Division of Air Quality	<b>Ppmv or ppmv</b>	Parts per million by volume
<b>DEP</b>	Department of Environmental Protection	<b>PSD</b>	Prevention of Significant Deterioration
<b>dscm</b>	Dry Standard Cubic Meter	<b>psi</b>	Pounds per Square Inch
<b>FOIA</b>	Freedom of Information Act	<b>SIC</b>	Standard Industrial Classification
<b>HAP</b>	Hazardous Air Pollutant	<b>SIP</b>	State Implementation Plan
<b>HON</b>	Hazardous Organic NESHAP	<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>HP</b>	Horsepower	<b>TAP</b>	Toxic Air Pollutant
<b>lbs/hr</b>	Pounds per Hour	<b>TPY</b>	Tons per Year
<b>LDAR</b>	Leak Detection and Repair	<b>TRS</b>	Total Reduced Sulfur
<b>M</b>	Thousand	<b>TSP</b>	Total Suspended Particulate
<b>MACT</b>	Maximum Achievable Control Technology	<b>USEPA</b>	United States Environmental Protection Agency
<b>MDHI</b>	Maximum Design Heat Input	<b>UTM</b>	Universal Transverse Mercator
<b>MM</b>	Million	<b>VEE</b>	Visual Emissions Evaluation
<b>MMBtu/hr or mmbtu/hr</b>	Million British Thermal Units per Hour	<b>VOC</b>	Volatile Organic Compounds
<b>MMCF/hr or mmcf/hr</b>	Million Cubic Feet per Hour	<b>VOL</b>	Volatile Organic Liquids
<b>NA</b>	Not Applicable		
<b>NAAQS</b>	National Ambient Air Quality Standards		
<b>NESHAPS</b>	National Emissions Standards for Hazardous Air Pollutants		
<b>NO<sub>x</sub></b>	Nitrogen Oxides		

### **2.3. Authority**

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

- 2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation;*

### **2.4. Term and Renewal**

- 2.4.1. This permit supercedes and replaces previously issued 45CSR13 Permit R13-2561J. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

### **2.5. Duty to Comply**

- 2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R13-1182, A, B, C, D, and E, R13-1730, A, and B, R13-2429 and A, and, R13-2561, A, B, C, D, E, F, G, H, I, J and K, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;  
[45CSR§§13-5.11 and 13-10.3]
- 2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;
- 2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;
- 2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

### **2.6. Duty to Provide Information**

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

## **2.7. Duty to Supplement and Correct Information**

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

## **2.8. Administrative Permit Update**

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.  
[45CSR§13-4]

## **2.9. Permit Modification**

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.  
[45CSR§13-5.4.]

## **2.10. Major Permit Modification**

The permittee may request a major modification to this permit as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.  
[45CSR§14-7 or 45CSR§19-14]

## **2.11. Inspection and Entry**

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

- a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
- d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

## **2.12. Emergency**

- 2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency.

An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- 2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are not met.
- 2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;
  - b. The permitted facility was at the time being properly operated;
  - c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,
  - d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.
- 2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
- 2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

### **2.13. Need to Halt or Reduce Activity Not a Defense**

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

### **2.14. Suspension of Activities**

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

### **2.15. Property Rights**

This permit does not convey any property rights of any sort or any exclusive privilege.

### **2.16. Severability**

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

**2.17. Transferability**

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.  
[45CSR§13-10.1]

**2.18. Notification Requirements**

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

**2.19. Credible Evidence**

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

### 3.0. Facility-Wide Requirements

#### 3.1. Limitations and Standards

- 3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.  
[45CSR§6-3.1.]
- 3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.  
[45CSR§6-3.2.]
- 3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.  
[40CFR§61.145(b) and 45CSR§34]
- 3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.  
[45CSR§4-3.1 State-Enforceable only.]
- 3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.  
[45CSR§13-10.5.]
- 3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.  
[45CSR§11-5.2.]

#### 3.2. Monitoring Requirements

[Reserved]

### 3.3. Testing Requirements

- 3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:
- a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.
  - b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.
  - c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.
  - d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:
    1. The permit or rule evaluated, with the citation number and language;
    2. The result of the test for each permit or rule condition; and,

3. A statement of compliance or noncompliance with each permit or rule condition.  
[WV Code § 22-5-4(a)(14-15) and 45CSR13]

### 3.4. Recordkeeping Requirements

- 3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings or distributed control system (DCS) and Process Information (PI) for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, including DCS and PI, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.
- 3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.  
[45CSR§4. *State-Enforceable only.*]

### 3.5. Reporting Requirements

- 3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.
- 3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.
- 3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class with postage prepaid to the address(es) set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

**If to the DAQ:**

Director  
WVDEP  
Division of Air Quality  
601 57th Street, SE  
Charleston, WV 25304-2345

**If to the USEPA:**

Associate Director  
Office of Air Enforcement and Compliance  
Assistance  
(3AP20)  
U. S. Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

**3.5.4. Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

**4.0. Source-Specific Requirements**

Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production #3 (PP3), and Polymer Production #4 (PP4) formally permitted under R13-1182E

**4.1. Limitations and Standards**

4.1.1. Emissions to the atmosphere as point source emissions shall not exceed the following:

Table 4.1.1.

Emission Point ID	Source ID	Control Device ID	Pollutant	Emission Limit											
				PPH	TPY										
E-655	PMPO #1	Y-2124	CO	0.18	0.71										
	PMPO #2														
	PMPO #3														
	PMPO #4														
	T-109														
	T-632					NO <sub>x</sub>	1.65	6.51							
	T-626														
	T-616								VOC	0.39	0.32				
	T-693														
	T-631											Acrylonitrile	0.01	0.01	
	T-684														
T-686	Benzene	0.1	0.01												
T-663															
Switch Rack #8				Ethyl Benzene	0.1										0.01
T-2448															
E-651 <sup>(1)</sup>	PMPO #1 T-2148	H-2143	Acrylonitrile	0.02	0.01										
			Styrene	0.01	0.01										
			VOC	0.01	0.01										
E-653 <sup>(1)</sup>	PMPO #2 T-2248	Ex-2224 H-2253	Acrylonitrile	0.02	0.01										
			Styrene	0.01	0.01										
			VOC	0.01	0.01										
E-652 <sup>(1)</sup> E-654 <sup>(1)</sup>	PMPO #3 T-2348	Ex-2324 H-2343 H-2253	Acrylonitrile	0.02	0.01										
			Styrene	0.01	0.01										
			VOC	0.01	0.01										
E-658 <sup>(1)</sup>	PMPO #4 T-2448	Ex-2424 H-2443	Acrylonitrile	0.02	0.01										
			Styrene	0.01	0.01										
			VOC	0.01	0.01										

1- Emissions through emission points E-651, E-653, E-652/E-654, and E-658 are based on a total of no more than 2,800 hours combined of discharge per calendar year when organics are present.

4.1.2. Hourly and annual production rates from the combined Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production Unit #3 (PP3), and Polymer Production Unit #4 (PP4) shall not exceed 56,500 pounds per hour and 350 million pounds per year.

- 4.1.3. The following provision only applies to the Polymer Polyol Production Unit #4 production unit:
- During normal operations, emissions from the Polymer Polyol Production Unit #4 vacuum jet condenser vent are to be routed to the thermal oxidizer (File under R13-1729A; ID: S-9), and subsequently vented through emission point E-655.
- 4.1.4. During normal operations, the permittee shall vent emissions from the following sources at all times to the thermal oxidizer, prior to being released to the atmosphere through emission point E-655:
- a. Vacuum jet condenser vents from each of the Polymer Polyols process units (PP1, PP2, PP3, and PP4).
  - b. Acrylonitrile Storage Tank T-626, Wastewater Storage Tank T-616, Waste Monomer Storage Tank T-693, and the Recovered Alcohol Tanks T-631 and T-109.
  - c. Switch Rack #8 when loading waste monomer and recovered alcohol into portable storage vessels.
- 4.1.5. The following provisions only apply to the thermal oxidizer(Y-2124):
- a. The thermal oxidizer shall be operated and maintained in such a manner that this control device will have a destruction and/or removal efficiency of greater than 98% for hazardous air pollutants as defined by U.S. EPA and volatile organic compounds.
  - b. The thermal oxidizer shall be operated such that the combustion chamber temperature shall not fall more than 167°F (75°C) below the temperature monitored during the most recent performance test showing compliance with Section 4.1.1. of this permit for periods of time which do not exceed three (3) hours or 1832°F (1000°C); whichever is greater.
  - c. The flow rate of waste gas going to the thermal oxidizer and scrubber system shall not exceed an one hour average of 514 pounds per hour.
- 4.1.6. During periods of shutdown and/or malfunction of the waste gas thermal oxidizer or waste gas header, the permittee may utilize the emergency vents: E-651, E-653, E-652/E-654 and E-658 if all of the following conditions are met:
- a. Total vent time in a calendar year for the emergency vents does not exceed 2,800 hours for jet pots T-2148, T-2248, T-2348 and T-2448 when organic is present. (Note: if a jet pot is empty or only contains water then vent time does not count against the yearly limit).
- 4.1.7. Fugitive emissions from equipment (e.g. pipes, pumps, flanges, etc.) in the PP1, PP2, PP3, and PP4 process units, which is placed in toxic air pollutant service, as defined by 45CSR27-2.11, shall be integrated into the existing Leak Detection And Repair (LDAR) program. This LDAR program shall comply with the provision of 40CFR63 Subpart H. The permittee shall implement Phase III as prescribed in Subpart H.
- 4.1.8. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 4.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal

regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

#### **4.2. Monitoring Requirements**

- 4.2.1. For the purpose of demonstrating compliance with the limits set forth in Section 4.1.1. and 4.1.2. of this permit, the permittee shall monitor the production rates and the hours of operation of each of the polymer polyol production units, PP1, PP2, PP3, and PP4. Compliance with the annual limits set forth in Section 4.1. shall be determined using a 12-month rolling total. A 12-month rolling total shall mean the total throughput in gallons at any given time for the previous twelve (12) consecutive calendar months.
- 4.2.2. For the purpose of demonstrating compliance with the limits set forth in Section 4.1.3., 4.1.4., 4.1.5., and 4.1.6. of this permit, the permittee shall conduct the following parametric monitoring:
- a. Combustion chamber temperature of the thermal oxidizer, Y-2124, and the flow rate of waste gas into the thermal oxidizer
  - b. Emergency venting hours for E-651, E-653, E-652/E-654 (not additive), and E-658.

#### **4.3. Testing Requirements**

*[Reserved]*

#### **4.4. Recordkeeping Requirements**

- 4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:
- a. The date, place as defined in this permit and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;
  - e. The results of the analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
- 4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 4.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
- 4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 4.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
  - f. Steps taken to correct the malfunction.
  - g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 4.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 4.2.1. of this permit, the permittee shall record the production rates and the hours of operation of each of the polymer polyol production units, PP1, PP2, PP3, and PP4. Records of production for each individual unit and the total polymer polyol operation shall be maintained on a total monthly and average hourly rate.
- 4.4.5. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 4.2.2. of this permit, the permittee shall maintain the following records of operation on a daily basis:
- a. Combustion chamber temperature of the thermal oxidizer, Y-2124, and the flow rate of waste gas into the thermal oxidizer
  - b. Emergency venting hours for E-651, E-653, E-652/E-654 (not additive), and E-658.

#### **4.5. Reporting Requirements**

*[Reserved]*

## 5.0. Source-Specific Requirements

Preformed Stabilizer Process formally permitted under R13-1730B

### 5.1. Limitations and Standards

- 5.1.1. Emissions generated from Preformed Stabilizer storage tank T-632, T-663, T-684, and T-686 shall be vented to the waste gas thermal oxidizer (Y-2124) and vented to atmosphere through emission point E-655, covered in Section 4.0 of this permit.
- 5.1.2. Fugitive emissions from equipment (e.g. pipes, pumps, flanges, etc.) in the Preformed Stabilizer process unit, which will be placed in toxic air pollutant (TAP) service, shall be integrated into the facility's existing Leak Detection And Repair (LDAR) program and compliant with 40CFR63, Subpart H.
- 5.1.3. The permitted facility shall comply with all applicable provisions of 45CSR16, which, by incorporation, subjects the facility to the provisions of 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984.
- 5.1.4. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 5.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

### 5.2. Monitoring Requirements

- 5.2.1. For the purpose of demonstrating compliance with the limits set forth in Section 4.1.1. of this permit, the permittee shall monitor the tank throughput rates of the storage tanks T-632, T-663, T-684 and T-686. Compliance with the annual limits set forth in Section 5.1. shall be determined using a 12-month rolling total. A 12-month rolling total shall mean the total throughput in gallons at any given time for the previous twelve (12) consecutive calendar months.

### 5.3. Testing Requirements

*[Reserved]*

### 5.4. Recordkeeping Requirements

- 5.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:
  - a. The date, place as defined in this permit and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;

- e. The results of the analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
- 5.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 5.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
- 5.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 5.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:
- a. The equipment involved.
  - b. Steps taken to minimize emissions during the event.
  - c. The duration of the event.
  - d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
  - f. Steps taken to correct the malfunction.
  - g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 5.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 5.2.1. of this permit, the permittee shall record the tank throughput rates of the storage tanks T-632, T-663, T-684 and T-686.

## **5.5. Reporting Requirements**

- 5.5.1. For the purpose of demonstrating compliance with the requirements set forth in 45CSR27, the permittee shall file a written report with the Director documenting the emissions to the air of any toxic air pollutant resulting from an abnormal release or spill in excess of the following thresholds:
- a. Ethylene oxide - one (1) pound
  - b. Vinyl chloride - one (1) pound
  - c. Acrylonitrile - ten (10) pounds

- d. Butadiene - ten (10) pounds
- e. All other toxic air pollutants - fifty (50) pounds

**6.0. Source-Specific Requirements**

PMPO Storage Tank and Loading Racks formally permitted under R13-2429A.

**6.1. Limitations and Standards**

6.1.1. The Final Product Storage Tanks listed in Table 6.1.1. shall not exceed a maximum total combined annual throughput of 45,000,000 gallons per year.

**Table 6.1.1.**

Final Product Storage Tanks (Tank IDs)		
T-70	T-87	T-272
T-71	T-88	T-275
T-72	T-89	T-277
T-73	T-90	T-278
T-74	T-91	T-681
T-75	T-92	T-682
T-80	T-93	T-685
T-81	T-94	T-688
T-82	T-263	T-696
T-83	T-264	
T-84	T-265	
T-85	T-266	
T-86	T-271	

6.1.2. The Styrene Storage Tanks shall not exceed the maximum annual throughput rate and the maximum total combined annual styrene emissions limit identified in Table 6.1.2. of this permit.

**Table 6.1.2.**

Styrene Storage Tanks ID	Emission Point ID	Total Styrene Throughput (gallons/year)	Total Annual Styrene Emissions (pounds/year)
T-633	E-633	13,400,000	1,600
T-634	E-634		
T-683	E-683	13,400,000	
T-687	E-687		

6.1.3. The material loading racks and transfer stations listed in Table 6.1.3. shall not exceed the associated maximum annual throughput rates. Switch racks #7, 8, 9 and 12 are truck loading and unloading stations.

**Table 6.1.3.**

Description	Material	Annual Throughput (gallons/year)
Switch Rack #7, 8, 9 and 12; Phase IV Tank Truck, Phase IV Tank Car, and #4 Barge Dock	Polymer Polyol	45,000,000
Switch Rack #8	Waste Monomer	585,000
	Recovered Alcohol	1,330,000
	Styrene	13,400,000
Styrene Tank Car Unloading	Styrene	13,400,000
Polymer Polyol Wastewater Truck Loading (70 and 80 series TKs)	Wastewater (containing polymer polyol)	1,200,000

- 6.1.4. The storage tanks listed in Table 6.1.4. shall not exceed their associated maximum fill rates and annual throughput limits. All working and breathing losses from these tanks shall be vented to the thermal oxidizer(Y-2124) and released to atmosphere through emission point E-655, covered in Section 4.0 of this permit.

**Table 6.1.4.**

Tank ID	Material Storage	Maximum Fill Rate (gallons/minute)	Annual Throughput (gallons/year)
T-616 <sup>(1)</sup>	Process Wastewater	133	73,500,000
T-626	Acrylonitrile	225	10,400,000
T-631	Recovered Alcohol	18	2,300,000
T-693	Waste Monomer	100	585,000

(1) - Provisions for emergency pressure relief directly to atmosphere are provided in Section 6.1.10. of this permit.

- 6.1.5. Compliance with the annual throughput limits set forth in Sections 6.1.1., 6.1.2., 6.1.3., and 6.1.4. shall be determined using a 12-month rolling total. A 12-month rolling total shall mean the total throughput in gallons at any given time for the previous twelve (12) consecutive calendar months.
- 6.1.6. Tanks T-651 and T-652 shall not be used to storage any liquid that contains any volatile organic compounds, hazardous air pollutants, or toxic air pollutants.
- 6.1.7. The permittee shall vent the portable storage vessel to the thermal oxidizer (Y-2124) at all times when loading waste monomer and recovered alcohol from Tanks T-109, T-631 and T-693 to the portable storage vessel at switch rack #8.
- 6.1.8. The permittee shall not uncontrolledly vent to the atmosphere any tank truck, railcar or any other portable storage vessel, which was used to transport acrylonitrile or styrene to this facility.

- 6.1.9. Fugitive emissions from equipment (e.g. pipes, pumps, flanges, etc.) That is associated with the equipment listed in permit application R13-2429, which is placed in toxic air pollutant service, as defined by 45CSR27-2.11, shall be integrated into the existing Leak Detection And Repair program. This Leak Detection And Repair program shall comply with the provision of 40 CFR 63 Subpart H. The permittee shall implement Phase III as prescribed in Subpart H.
- 6.1.10. *[Reserved]*
- 6.1.11. The permitted facility shall comply with all applicable provisions of 45CSR16, which, by incorporation, subjects the facility to the provisions of 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984.
- 6.1.11.5. The permittee shall notify the DAQ in writing at least 30 days in advance of any performance test to be conducted on the wastewater stripper column. An application for a permit modification shall be submitted if performance test results show the requirements in 6.1.12 have changed as a result of re-sizing the wastewater stripper column.
- 6.1.12. The wastewater stream from the PMPO jet pots shall be transferred to and processed through the Wastewater Stripper [C-2044] and ACN Treater [C-2016] to meet the requirements set forth in 40CFR63.138. Except for startups, shutdowns and malfunctions the following conditions shall be met:
- a. Stripper steam to wastewater feed ratio shall be operated such that the average ratio does not drop below 4.49% for fifteen (15) consecutive minutes.
  - b. Wastewater feed temperature shall be controlled such that the average temperature does not drop below 86.1 °C for three (3) consecutive hours.
  - c. Wastewater feed rate to the stripper shall be operated such that the maximum average flow does not exceed 50,000 pounds per hour for three (3) consecutive hours.
  - d. The treater caustic to wastewater feed rate ratio shall be operated such that the average ratio does not drop below 0.099% for three (3) consecutive hours.
  - e. ACN treater feed temperature shall be controlled such that the average temperature does not drop below 135 °C for three (3) consecutive hours.
- 6.1.13. Emissions released from the Wastewater Steam Stripper [C-2044] and the Stripper Decanter [C-2046] shall be vented to the thermal oxidizer [Y-2124] and released through emission point E-655.
- 6.1.14. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 6.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary. [45CSR§13-5.11.]

## 6.2. Monitoring Requirements

- 6.2.1. For the purpose of demonstrating compliance with the limits set forth in Sections 6.1.1., 6.1.2., and 6.1.4. of this permit, the permittee shall monitor the tank throughput rates of the storage tanks as indicated in Tables 6.1.1., 6.1.2., and 6.1.4., respectively.
- 6.2.2. For the purpose of demonstrating compliance with the limits set forth in Section 6.1.3. of this permit, the permittee shall monitor the material throughputs of the loading and unloading stations identified in Table 6.1.3. of this permit.

6.2.3. For the purpose of determining the performance of the wastewater treatment as set forth in Section 6.1.12. of this permit, the permittee shall conduct the following parametric monitoring associated with the operation of the Wastewater Steam Stripper [C-2044] and ACN treater [C-2016].

- a. Stripper steam wastewater feed ratio
- b. Wastewater feed temperature
- c. Wastewater feed rate
- d. Caustic to wastewater feed ratio
- e. ACN treater feed temperature

### 6.3. Testing Requirements

*[Reserved]*

### 6.4. Recordkeeping Requirements

6.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

6.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 6.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

6.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 6.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.

- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
  - f. Steps taken to correct the malfunction.
  - g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 6.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Sections 6.2.1. and 6.2.2. of this permit, the permittee shall maintain monthly and annual records of the material throughput rates.

## **6.5. Reporting Requirements**

- 6.5.1. For the purpose of demonstrating compliance with the requirements set forth in 45CSR27, the permittee shall file a written report with the Director documenting the emissions to the air of any toxic air pollutant resulting from an abnormal release or spill in excess of the following thresholds:
- a. Ethylene oxide - one (1) pound
  - b. Vinyl chloride - one (1) pound
  - c. Acrylonitrile - ten (10) pounds
  - d. Butadiene - ten (10) pounds
  - e. All other toxic air pollutants - fifty (50) pounds

## 7.0. Source-Specific Requirements

Propylene Oxide Carbon Filtration Media Regeneration Operations formally permitted under R13-2561.

### 7.1. Limitations and Standards

- 7.1.1. All gaseous waste and off-gas generated during the activation/de-activation process associated with the carbon treater/propylene oxide filter system (C-2090 or C-2090B) shall be captured and transferred off-site to the Dow Powerhouse for thermal oxidation in No. 25 [B-25], Boiler No. 26 [B-26] and/or Boiler No. 27 [B-27], and released to atmosphere through emission points E-25, E-26 and E-27, respectively.
- 7.1.2. The vent line from the carbon treater to boilers B-25, B-26 and B-27 shall be equipped with a flow meter and digital control system designed for the purpose of measuring the maximum hourly and total annual flow of propylene oxide vented to the boilers for destruction.
- 7.1.3. The maximum propylene oxide emissions transferred from the activation/de-activation process to boilers B-25, B-26 and B-27 shall not exceed 2,000 pounds per hour and 57.6 tons per 12-month rolling total. A twelve month rolling total shall mean the sum of the monthly totals at any given time during the previous twelve (12) consecutive calendar months.
- 7.1.4. Fugitive emissions from equipment (e.g. pipes, pumps, flanges, etc.) in the carbon treater activation/de-activation process, which is placed in toxic air pollutant service, as defined by 45CSR27-2.11., shall be integrated into the existing Leak Detection and Repair (LDAR) program.
- 7.1.5. The permitted facility shall comply with all applicable requirements of 40CFR63, Subpart PPP - Polyethers Polyol Production, with the exception of any more stringent limitations set forth in this permit.
- 7.1.6. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 7.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

### 7.2. Monitoring Requirements

- 7.2.1. For the purpose of determining compliance with the requirements set forth in Section 7.1.3., the permittee shall monitor the flow rate of the off-gas vented from the activation/de-activation process to the Dow boiler units, B-25, B-26 and/or B-27.
- 7.2.2. For the purpose of determining compliance with Section 7.1.5. of this permit, the permittee shall conduct monitoring in accordance with the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

### 7.3. Testing Requirements

[Reserved]

#### 7.4. Recordkeeping Requirements

- 7.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:
- a. The date, place as defined in this permit and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;
  - e. The results of the analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
- 7.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 7.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
- 7.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 7.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:
- a. The equipment involved.
  - b. Steps taken to minimize emissions during the event.
  - c. The duration of the event.
  - d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
  - f. Steps taken to correct the malfunction.
  - g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 7.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 7.2.1., the permittee shall record and maintain records of the flow of the off-gas vented from the activation/de-activation process to the Dow boiler units, B-25, B-26 and/or B-27. Such records shall include, but not be limited to the total daily flow, the highest hourly flow rate per day, the highest hourly flow rate observed during the month, and the total monthly flow rate.

- 7.4.2. For the purpose of demonstrating compliance with Section 7.1.5. of this permit, the permittee shall maintain records in accordance to the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

## **7.5. Reporting Requirements**

- 7.5.1. For the purpose of demonstrating compliance with Section 7.1.5. of this permit, the permittee shall maintain records in accordance to the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

**8.0. Source-Specific Requirements**

Flexible Polyols Operations previously grandfathered from 45CSR13 requirements

**8.1. Limitations and Standards**

8.1.1. Hourly and annual production rates from the B103 Flexible Polymer Polyols Production Units, including Reactor Systems #1, #2, and #3 shall not **exceed** the following production rates:

- a. Polyether Polyol - 37,500 tons per year
- b. Polyether Polyol Starter - 5,000 tons per year
- c. Impact Polyether Polyol - 90,000 tons per year

8.1.2. The B103 Reactor Systems shall be limited to the total maximum combined emissions and associated rates set forth in Table 8.1.2. of this permit.

**Table 8.1.2.**

Equipment Identification	Emission Point ID	Chemical	Maximum (lb/hr)	Maximum (tons/yr)
Reactor #1 & Vacuum Systems C-3101 H-3116 H-3192	E-600 E-3101 E-3192	Propylene Oxide Ethylene Oxide Propionaldehyde Acetaldehyde VOC	70 11 1.0 1.0 84.0	1.53 0.25 0.05 0.01 1.94
Reactor #2 & Vacuum Systems C-3201 H-3216 H-3192	E-601 E-3201 E-3192			
Reactor #3 & Vacuum Systems C-3301 H-3316	E-620 E-3301			

8.1.3. The B103 Refining System shall be operated within the process parameters set forth in Table 8.1.3. of this permit.

**Table 8.1.3.**

Equipment ID	Maximum ISOP Flush Rate (pounds/hour)	Total Maximum Product Feed Rate (pounds/hour)	Total maximum vent time during: <sup>1</sup>	
			ISOP Flush (hours)	Normal Operation (hours)
C-3404 C-3406	12,000	18,000	5,525	20,310
C-3504 C-3506				
C-3604 C-3606				

1 - Vent time considered only when system contains VOCs.

8.1.4. The B103 Refining System shall be limited to the total maximum combined emissions and associated rates set forth in Table 8.1.4. of this permit.

**Table 8.1.4.**

Equipment Identification	Emission Point ID	Chemical	Maximum (lb/hr)	Maximum (tons/yr)
C-3404 C-3406	E-662	Propylene Oxide Propionaldehyde Acetaldehyde VOC	0.09	0.04
H-3477	E-608			
C-3504 C-3506	E-663			
H-3577	E-609			
C-3604 C-3606	E-664			
H-3677	E-610			

8.1.5. Hourly and annual production rates from the B196 Flexible Polymer Polyols Production Units, including Reactor Systems #7, #8, and #9 shall not exceed 150,000 tons per year.

8.1.6. The B196 Reactor Systems shall be limited to the total maximum combined emissions and associated rates set forth in Table 8.1.6. of this permit.

**Table 8.1.6.**

Equipment Identification	Emission Point ID	Chemical	Maximum (lb/hr)	Maximum (tons/yr)
Reactor #7 & Vacuum Systems C-5201 H-5216 H-5416	E-636 E-5216 E-5416	Propylene Oxide Ethylene Oxide Propionaldehyde Acetaldehyde VOC	139.5 24.0 0.04 0.01 163.6	1.4 0.25 0.04 0.01 1.71
Reactor #8 & Vacuum Systems C-5301 H-5216 H-5416	E-637 E-5216 E-5416			
Reactor #9 & Vacuum Systems C-5401 H-5216 H-5416	E-638 E-5216 E-5416			

8.1.7. The B196 Refining System shall be operated within the process parameters set forth in Table 8.1.7. of this permit.

**Table 8.1.7.**

Equipment ID	Maximum ISOP Flush Rate (pounds/hour)	Total Maximum Product Feed Rate (pounds/hour)	Total Maximum Vent Time <sup>1</sup> (hours)
C-5504	80,000	60,000	2,804
C-5604			
C-5704			
C-5804			

1 - Vent time considered only when system contains VOCs.

8.1.8. The B196 Refining System shall be operated within the process parameters set forth in Table 8.1.8. of this permit.

**Table 8.1.8.**

Equipment ID	Maximum ISOP Flush Rate (pounds/hour)	Total Maximum Product Feed Rate (pounds/hour)	Total maximum vent time during: <sup>1</sup>	
			ISOP Flush (hours)	Normal Operation (hours)
C-5506	80,000	60,000	2,492	14,985
C-5606				
C-5706				
C-5806				

1 - Vent time considered only when system contains VOCs.

8.1.9. The B196 Refining System shall be limited to the total maximum combined emissions and associated rates set forth in Table 8.1.9. of this permit.

**Table 8.1.9.**

Equipment Identification	Emission Point ID	Chemical	Maximum (lb/hr)	Maximum (tons/yr)
C-5504	E-640	Propylene Oxide Propionaldehyde Acetaldehyde VOC	4.1 4.4 4.4 109.1	0.03 0.52 0.52 48.0
C-5604	E-641			
C-5704	E-642			
C-5506	E-643			
C-5606	E-644			
C-5706	E-645			
C-5804	E-5804			
C-5806	E-5806			

8.1.10. Compliance with the annual limits set forth in Sections 8.1. of this permit shall be determined using a 12-month rolling total. A 12-month rolling total shall mean the total throughput in pounds at any given time for the previous twelve (12) consecutive calendar months.

8.1.11. The permitted facility shall comply with all applicable requirements of 40CFR63, Subpart PPP - Polyethers Polyol Production, with the exception of any more stringent limitations set forth in this permit.

8.1.12. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 8.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
**[45CSR§13-5.11.]**

## 8.2. Monitoring Requirements

- 8.2.1. For the purpose of determining compliance with the limits set forth in Sections 8.1.1. and 8.1.2., and Sections 8.1.5. and 8.1.6., the permittee shall monitor the production rates of the B103 and B196 reactor systems. In addition, the permittee shall monitor the following process specifications and activities:
- a. Time from the end of the epoxide feed
  - b. Minimum reactor temperature
  - c. Minimum catalyst concentration
  - d. Nominal batch size
- 8.2.2. For the purpose of determining compliance with the limits set forth in Sections 8.1.3. and 8.1.4., and Sections 8.1.7. through 8.1.9., the permittee shall monitor the time in which the vent valves of the systems are open and venting to atmosphere, the product feed rate to the beds, and the ISOP flush rate
- 8.2.3. For the purpose of demonstrating compliance with Section 8.1.11. of this permit, the permittee shall conduct monitoring in accordance with the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

## 8.3. Testing Requirements

*[Reserved]*

## 8.4. Recordkeeping Requirements

- 8.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:
- a. The date, place as defined in this permit and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;
  - e. The results of the analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
- 8.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 8.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
- 8.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 8.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution

control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
  - f. Steps taken to correct the malfunction.
  - g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.
- 8.4.4. For the purpose of demonstrating compliance with the monitoring requirements set forth in Section 8.2.1. of this permit, the permittee shall record the production rates, and the parametric monitoring identified in Section 8.2.1. Records of production for each individual unit and the total flexible polyol operation shall be maintained on a total monthly and 12-month rolling total basis.
- 8.4.5. For the purpose of demonstrating compliance with Section 8.2.2. of this permit, the permittee shall record the hours in which the vent valve of the refining systems are open and the hours of operation of each refining system associated with the flexible polyol production units . Such records shall be maintained in the facility's Process Information (PI) system. In addition, the permittee shall maintain records of the maximum product feed rates and the maximum ISOP flush rates of the refining systems.
- 8.4.6. For the purpose of demonstrating compliance with Section 8.1.11. of this permit, the permittee shall maintain records in accordance to the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

## **8.5. Reporting Requirements**

- 8.5.1. For the purpose of demonstrating compliance with Section 8.1.11. of this permit, the permittee shall submit all reports in accordance to the requirements set forth in 40CFR63, Subpart PPP - Polyethers Polyol Production.

## 9.0. Source-Specific Requirements

45CSR21 Requirements formally covered under Consent Order CO-R21-97-37

### 9.1. Limitations and Standards

- 9.1.1. The permittee shall comply with all hourly and annual emission limits set forth by the affected 45CSR13 permits, for each of the sources and associated emission points identified in Attachment A of this permit.
- 9.1.2. The permitted sources identified in Attachment A of this permit and recognized as being subject to 45CSR21 shall comply with all applicable requirements of 45CSR21 – “Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds” provided, however, that compliance with any more stringent requirements under the affected 45CSR13 permit identified in Attachment A of this permit, are also demonstrated. The applicable requirements set forth by 45CSR21 shall include, but not be limited to, the following:
- a. The permittee shall maintain the aggregated hourly and annual VOC control efficiency of 90% or greater, on a site-wide basis, for all existing sources listed or required to be listed as part of the original facility-wide Reasonably Available Control Measures (RACM) plan, as identified in Attachment A of this permit.
  - b. On or after May 01, 1996, construction or modification of any emission source resulting in a maximum theoretical emissions (MTE) of VOCs equaling or exceeding six (6) pounds per hour and not listed or required to be listed in the facility-wide RACM plan shall require the prior approval by the Director of an emission control plan that meets the definition of reasonable available control technology (RACT) on a case-by-case basis for both fugitive and non-fugitive VOC emissions from such source. All sources constructed or modified on or after May 01, 1996 shall be subject to the following:
    - (1) The RACT control plan(s) shall be embodied in a permit in accordance to 45CSR13.
    - (2) The MTE and associated emission reductions of the constructed or modified source will not be calculated into the site-wide aggregate hourly and annual emissions reduction requirements set forth in Section 9.1.2.a. of this permit.
  - c. If a modification to an existing source with current MTE below the threshold of six (6) pounds per hour of VOCs causes an increase in the MTE that results in the source exceeding the six (6) pounds per hour threshold for the first time, the source shall be subject to RACT in accordance to Section 9.1.2.b. of this permit.
  - d. Physical changes to or changes in the method of operation of an existing emission source listed or required to be listed as part of the facility-wide RACM plan, that results in an increase in VOC emissions of any amount, shall require the prior approval by the Director of an emission control plan that meets the definition of RACT on a case-by-case basis for both fugitive and non-fugitive VOC emissions from the source. All sources modified on or after May 01, 1996 shall be subject to the following:
    - (1) The RACT control plan(s) shall be embodied in a permit in accordance to 45CSR13.
    - (2) The facility-wide RACM plan shall be modified to include the RACT analysis conducted on the modified source(s).

(3) The MTE and associated emission reductions of the modified source shall be recalculated as part of the site-wide aggregate hourly and annual emissions reduction requirements to demonstrate compliance with the minimum 90% reduction rate as set forth in Section 9.1.2.a. of this permit.

- e. In the event the facility-wide RACM plan is modified to delete an existing emission source, and any associated pollution control equipment, due to the source being permanently removed from service, or reassigned to service not subject to the requirements of 45CSR21-40, the MTE shall be recalculated to demonstrate that the 90% facility-wide VOC reduction requirement set forth in Section 9.1.2.a. of this permit is still being met. In the event such a modification results in the site-wide aggregate hourly and annual emissions reduction being recalculated to a rate less than 90%, the RACM plan shall be revised to include all new and/or modified sources and their associated control technologies constructed on or after May 01, 1996, in order to meet the requirements set forth in Section 9.1.2.a. of this permit.
- f. In the event a source and associated emission point identified in Attachment A of this permit is subject to the New Source Performance Standards (NSPS) of 40CFR60, the National Emission Standards for Hazardous Air Pollutants (NESHAP) of 40CFR61, or the Maximum Achievable Control Technology (MACT) standards of 40CFR63, then compliance with such requirements as defined in the affected 45CSR13 permit shall demonstrate compliance with the RACT requirements set forth in this permit.

9.1.3. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 9.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

## 9.2. Monitoring Requirements

9.2.1. The permittee shall implement and maintain leak detection and repair (LDAR) programs for the reduction of fugitive VOC emissions in all manufacturing process units subject to 45CSR21-40 producing a product or products intermediate or final, in excess of 1,000 megagrams (1,100 tons) per year in accordance with the applicable methods and criteria of 45CSR21-37 or alternate procedures approved by the Director. Procedures approved by the Director include 40CFR60, Subpart VV, 40CFR61, Subpart V, 40CFR63, Subpart H, 40CFR63, Subpart TT, 40CFR63, Subpart UU, 40CFR65, Subpart F, and 40CFR265, Subpart CC. This requirement shall apply to all units identified in Attachment A of this permit irrespective of whether or not such units produce as intermediates or final products, substances on the lists contained with 40CFR60, 40CFR61, or 40CFR63.

## 9.3. Testing Requirements

9.3.1. Manufacturing process units may be exempted upon written request of the permittee to the Director. Exempted units are exempted from the frequency of testing as described in 45CSR21-37, however, LDAR testing of this unit or certification of emission using approved fugitive emission factors will be required every three years, or upon request by the Director or his duly authorized representative. Waiver or scheduling of LDAR testing every three years may be granted by the Director if written request and justification are submitted by the permittee. Units exempted from LDAR monitoring as required by C.S.R. §45-21-37, are not exempted from testing which may be required under any other

applicable State or Federal regulations, orders, or permits. The Director may periodically require verifications by the permittee that maintenance and repair procedures associated with approved exemptions are continued and practiced.

#### **9.4. Recordkeeping Requirements**

**9.4.1. Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

**9.4.2. Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 9.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

**9.4.3. Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 9.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
- f. Steps taken to correct the malfunction.
- g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

- 9.4.4. Unless granted a variance pursuant to 45CSR21, Section 9.3, or as approved by the Director as part of a required Start-up, Shutdown, and Malfunction (SSM) Plan mandated under 40CFR63.6(e) or another applicable Section of 40CFR63, the owner or operator of the facility shall operate all emission control equipment listed in Attachment A of this permit as part of the facility-wide control efficiency plan at all times the facilities are in operation or VOC emissions are occurring from these sources or activities. In the event of a malfunction, and a variance has not been granted, the production unit shall be shutdown or the activity discontinued as expeditiously as possible. The permittee shall comply with 45CSR21, Section 9.3 with respect to all periods of non-compliance with the emission limitations set forth in the affected 45CSR13 permits and the emissions reduction requests set forth in the facility-wide control efficiency plan resulting from unavoidable malfunctions of equipment.

## **9.5. Reporting Requirements**

- 9.5.1. The permittee shall submit to the DAQ a plan for complete, facility-wide implementation of RACT requirements within one hundred eighty (180) days of notification by the Director that a violation of the National Ambient Air Quality Standards (NAAQS) for ozone (that were in effect on or before May 01, 1996) has occurred. Such plan shall included those sources listed in Attachment A of this permit as part of the site-wide control efficiency requirement and may contain an update of existing RACT analyses. Full implementation of such plan shall be completed within two (2) years of approval of the RACT plan by the Director.

## 10.0. Source-Specific Requirements

45CSR27 Requirements formally covered under Consent Order CO-R27-92-22A(91) and CO-R27-98-36A(92)-A

### 10.1. Limitations and Standards

10.1.1. The permitted sources identified in Attachment A of this permit and recognized as being subject to 45CSR27 shall comply with all applicable requirements of 45CSR27 – “To Prevent and Control the Emissions of Toxic Air Pollutants” provided, however, that compliance with any more stringent requirements under the affected 45CSR13 permit identified in Attachment A of this permit, are also demonstrated. The applicable requirements set forth by 45CSR27 shall include, but not be limited to, the following:

- a. The permittee shall employ the best available technology (BAT) for the purpose of reducing toxic air pollutants (TAP) associated with the applicable sources and emission points identified in Attachment A of this permit.
- b. The permittee shall employ BAT for the purpose of preventing and controlling fugitive emissions of TAP to the atmosphere as a result of routine leakage from those sources and their associated equipment identified in Attachment A of this permit as operating in TAP service.

10.1.2. In the event a source and associated emission point identified in Attachment A of this permit are subject to the MACT standards of 40CFR63, then compliance with the applicable MACT requirements identified in the affected 45CSR13 permit shall demonstrate compliance with the BAT requirements set forth in Sections 10.1.1.a. and 10.1.1.b. of this permit.

10.1.3. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 10.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

### 10.2. Monitoring Requirements

10.2.1. The permittee shall implement and maintain a LDAR program for the applicable sources and emission points identified in Attachment A of this permit in order to reduce the emissions of TAP in accordance with the requirements of 40CFR63, Subpart H - National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks. Compliance with 40CFR63, Subpart H shall be considered demonstration of compliance with the provisions of 45CSR27-4. - Fugitive Emissions of Toxic Air Pollutants.

10.2.2. In the event a source and associated emission point identified in Attachment A of this permit are subject to the MACT standards of 40CFR63, then compliance with any applicable LDAR program set forth by the MACT and identified in the affected 45CSR13 permit shall demonstrate compliance with the monitoring requirements set forth in this permit.

### 10.3. Testing Requirements

- 10.3.1. In the event a source and associated emission point identified in Attachment A of this permit are subject to the MACT standards of 40CFR63, then compliance with the applicable LDAR testing requirements set forth by the MACT and identified in the affected 45CSR13 permit shall demonstrate compliance with the LDAR testing requirements set forth in this permit.

### 10.4. Recordkeeping Requirements

- 10.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

- 10.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

- 10.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
- f. Steps taken to correct the malfunction.



**11.0. Source-Specific Requirements**  
Synthetic Minor Status as a Major HAP Source

**11.1. Limitations and Standards**

11.1.1. Facility-wide HAP emissions shall be limited to the pollutants and associated annual emission rates as shown in Table 11.1.1.

Pollutant	Annual Emissions <sup>1</sup> (TPY)
Acetaldehyde	0.62
Acrylic Acid	0.01
Acrylonitrile	0.43
Benzene	0.02
Ethylbenzene	0.02
Ethylene Oxide	0.71
Propionaldehyde	0.94
Propylene Oxide	3.65
Styrene	1.68
Vinylidene Chloride	0.73
Xylene	0.02

1 - Annual emission limits shall be based on a 12-month rolling total.

11.1.2. Total facility-wide HAP emissions, including all point source and fugitive emissions, shall be limited to a maximum annual emission rate of 8.83 tons per year.

11.1.3. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment listed in Section 1.0 and affected by Section 10.0 of this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.  
[45CSR§13-5.11.]

**11.2. Monitoring Requirements**

[Reserved]

**11.3. Testing Requirements**

[Reserved]

## 11.4. Recordkeeping Requirements

11.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

11.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

11.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
- f. Steps taken to correct the malfunction.
- g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

11.4.4. For the purpose of demonstrating compliance with the emission limits set forth in Section 11.1.1. and 11.1.2. of this permit and maintaining a synthetic minor status as a major HAP source, the permittee shall maintain records of all HAP emissions released facility-wide. All records shall be maintained on a 12-month rolling total.

## **12.0. Source-Specific Requirements**

### **EO Distribution System**

#### **12.1. Limitations and Standards**

- 12.1.1. The amount of Ethylene Oxide delivered to the tank (C-7000) shall not exceed 7,389,474 gallons per year based on a rolling twelve month total.
- 12.1.2 A scrubber shall be used to reduce EO emissions from the two EO Reaction Tanks (D-7102 and D-7103) and from the purging of the system. Said scrubber shall be designed, constructed, operated, and maintained so as to achieve a minimum 98% reduction in EO emissions.
- 12.1.3 The permittee shall Reduce the total epoxide emissions from the group of applicable process vents by an aggregated 98 percent.  
[40 CFR §63.1425(b)(2)(ii)]
- 12.1.4 The pH of the scrubbing liquor shall be maintained at 1.0 or lower.

#### **12.2. Monitoring Requirements**

- 12.2.1 In order to determine compliance with 12.1.1 of this permit, the permittee shall monitor the throughput of Ethylene Oxide to tank C-7000 on at least a monthly basis.
- 12.2.2 The permittee shall monitor and continuously record the flow rate of the scrubbing liquid. Additionally, the pH of the scrubbing liquid shall be either monitored and recorded continuously or sampled and tested at least once per day.  
[40 CFR §63.1429(a)(4)]

#### **12.3. Testing Requirements**

- 12.3.1 In order to determine compliance with 12.1.2 and 12.1.3 of this permit, the permittee shall shall conduct a performance test using the applicable procedures in paragraphs (c)(1) through (4) of section §63.1426.  
[40 CFR §63.1426(c)]

#### **12.4. Recordkeeping Requirements**

- 12.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:
  - a. The date, place as defined in this permit and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;
  - e. The results of the analyses; and

- f. The operating conditions existing at the time of sampling or measurement.

12.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

12.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0 and affected by Section 10.0 of this permit, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

- a. The equipment involved.
- b. Steps taken to minimize emissions during the event.
- c. The duration of the event.
- d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

- e. The cause of the malfunction.
- f. Steps taken to correct the malfunction.
- g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

12.4.4 The permittee shall maintain records of the percent reduction of organic HAP or TOC achieved, as determined using the procedures specified in the process vent requirements in §63.1426;  
[40 CFR §63.1430(b)(2)(i)]

12.4.5 For each parameter monitored according to the process vent monitoring requirements in §63.1429(a) and Table 5 of 40 CFR 63 Subpart PPP, or for alternate parameters and/or parameters for alternate control techniques monitored according to the alternative parameter monitoring reporting requirements in §63.1439(f) as allowed under §63.1429(b), the permittee shall maintain documentation showing the establishment of the level that indicates that the combustion, recovery, or recapture device is operated in a manner to ensure compliance with the provisions of this subpart, as required by the process vent monitoring requirements in §63.1429(d).  
[40 CFR §63.1430(c)]

## 12.5. Reporting Requirements

12.5.1 When sampling of the pH is performed in accordance with 12.2.2 of this permit, the permittee shall report all values that are above 1.0 pH and all instances when monitoring data is not collected.

### CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached \_\_\_\_\_, representing the period beginning \_\_\_\_\_ and ending \_\_\_\_\_, and any supporting documents appended hereto, is true, accurate, and complete.

Signature<sup>1</sup> \_\_\_\_\_  
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title \_\_\_\_\_  
(please print or type) Name Title

Telephone No. \_\_\_\_\_ Fax No. \_\_\_\_\_

<sup>1</sup> This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

- a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
  - (i) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), or
  - (ii) the delegation of authority to such representative is approved in advance by the Director;
- b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or
- d. The designated representative delegated with such authority and approved in advance by the Director.