West Virginia Department of Environmental Protection
Division of Air Quality

Earl Ray Tomblin
Governor

Randy C. Huffman
Cabinet Secretary

Permit to Operate

Pursuant to

Title V

of the Clean Air Act

Issued to:

Bayer MaterialScience LLC
South Charleston Plant
R30-03900102-2012

John A. Benedict
Director

Issued: June 11, 2012 • Effective: June 25, 2012
Expiration: June 11, 2017 • Renewal Application Due: December 11, 2016

Permit Number: **R30-03900102-2012**
Permittee: **Bayer MaterialScience LLC**
Facility Name: **South Charleston Plant**
Permittee Mailing Address: **501 Second Avenue, South Charleston, WV 25303**

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45CSR30 — Requirements for Operating Permits. The permittee identified at the above-referenced facility is authorized to operate the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Facility Location:	South Charleston, Kanawha County, West Virginia
Facility Mailing Address:	501 Second Avenue, South Charleston, WV 25303
Telephone Number:	304-746-8000
Type of Business Entity:	Corporation
Facility Description:	Chemical manufacturing facility for the production of polyols
SIC Codes:	2869
UTM Coordinates:	439.65 km Easting • 4,247.00 km Northing • Zone 17

Permit Writer: Denton McDerment

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.

Issuance of this Title V Operating Permit does not supersede or invalidate any existing permits under 45CSR13, 14 or 19, although all applicable requirements from such permits governing the facility's operation and compliance have been incorporated into the Title V Operating Permit.

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Attachment A - 45CSR21 and 45CSR27 Source List

1.0 Emission Units and Active R13, R14, and R19 Permits

1.1. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
POLYMER POLYOLS EMISSION GROUPS (PMPO)					
PMPO #1					
T-1459	E-1459	Catalyst/Flex Storage	1965	15,900 gal	atm vent
T-1460	E-1460	Catalyst/Flex Storage	1965	15,900 gal	atm vent
Ex-2134	NA	Condenser	N/A	N/A	Vents to H-2143 Vacuum Jet
H-2143	E-655	Vacuum Jets	1984	N/A	Vents to T.O. Y-2124 or 651 emergency bypass
T-2148	E-655	Jet Pot Decanter	N/A	N/A	vents to T.O. Y-2124
T-2148	E-651	Jet Pot Decanter	N/A	N/A	emergency vent
PMPO#1	E-651	PMPO #1 Jets	N/A	N/A	H-2143
T-1454	E-1454	Intermediate or make tank	1965	15,700 gal	atm vent
T-1455	E-1455	Intermediate or make tank	1967	15,700 gal	atm vent
T-1456	E-1456	Intermediate or make tank	1967	15,700 gal	atm vent
T-2165	E-2165	Additive tank for BHP or PDDP	N/A	1,200 gal	atm vent
T-2265	E-2166	Additive tank	N/A	1,200 gal	atm vent
PMPO #2					
T-1461	E-1461	Catalyst/Flex Storage	1966	14,000 gal	atm vent
T-1462	E-1462	Catalyst/Flex Storage	1965	15,000 gal	atm vent
Ex-2224	NA	Condenser	N/A		Vents to H-2253 Vacuum Jet
H-2253	E-655	Vacuum Jets	N/A		Vents to T.O. Y-2124 or E-653 emergency bypass
T-2248	E-655	Jet Pot Decanter	1994	N/A	vents to T.O. Y-2124
T-2248	E-653	Jet Pot Decanter	N/A	N/A	emergency vent
PMPO #2	E-653	PMPO #2 Jets	N/A	N/A	Ex-2224 H-2253
T-1453	E-1453	Intermediate or make tank	1965	15,000 gal	atm vent
T-1463	E-1463	Intermediate or make tank	1974	14,000 gal	atm vent
T-1464	E-1464	Intermediate or make tank	1974	15,000 gal	atm vent
PMPO #3					
T-1467	E-1467	Catalyst/Flex Storage	1974	30,000 gal	atm vent
T-1468	E-1468	Catalyst/Flex Storage	1974	30,000 gal	atm vent
Ex-2324	NA	Condenser	N/A		Vents to H-2343 Vacuum Jet

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
H-2343	E-655	Vacuum Jets	N/A		Vents to T.O. Y-2124 or E-652 emergency bypass
T-2348	E-655	Jet Pot Decanter	1992	1,500 gal	vents to T.O. Y-2124
T-2348	E-652/ E-654	Jet Pot Decanter	1992	1,500 gal	emergency vent
PMPO #3	E-652/ E-654	PMPO #3 Jets	N/A	N/A	Ex-2324 H-2343 H-2353
H-2353	E-655	2nd Stage Vacuum Jets	N/A		vents to T.O. Y-2124 or E-654 emergency bypass
T-8480	E-8480	Intermediate or make tank	1963	30,000 gal	atm vent
T-8481	E-8481	Intermediate or make tank	1963	30,000 gal	atm vent
T-8482	E-8482	Intermediate or make tank	1991	30,000 gal	atm vent
T-8483	E-8483	Intermediate or make tank	1991	30,000 gal	atm vent
T-1451	E-1451	Preformed Stabilizer Tank	1964	14,950 gal	atm vent
PMPO #4					
Ex-2424	NA	Condenser	N/A		Vents to H-2443 Vacuum Jet
H-2443	E-655	Vacuum Jets	N/A		Vent to T.O. E-655 Y-2124
T-2405	E-657	Mix Tank Venting during Catalyst Addition	1990	950 gal	V-2493 venturi scrubber
T-2405	E-2405 and E-657	Cat mix tank AIBN / VAZO Catalyst Storage	1990	950 gal	Atm vent
V-2493	E-657	Venturi Scrubber	N/A		Air Pollution Control Device (APCD)
T-103	E-103	Cat/Flex Stg	1990	17,000 gal	atm vent
T-104	E-104	Cat/Flex Stg	1990	17,000 gal	atm vent
T-2448	E-655	Jet Pot Decanter	1990	N/A	vents to T.O. Y-2124
T-2448	E-658	Jet Pot Decanter	N/A	N/A	emergency vent
PMPO #4	E-658	PMPO #4 Jets	N/A	N/A	Ex-2424 H-2443
T-105	E-105	Intermediate or make tank	1962	27,000 gal	atm vent
T-106	E-106	Intermediate or make tank	1962	27,000 gal	atm vent
T-107	E-107	Intermediate or make tank	1962	27,000 gal	atm vent
T-108	E-108	Intermediate or make tank	1962	27,000 gal	atm vent
T-8484	E-8484	Intermediate or make tank	1962	30,000 gal	atm vent
T-8485	E-8485	Intermediate or make tank	1962	30,000 gal	atm vent
T-2465	E-2465	Cooling Brine	1990	N/A	atm vent

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
T-2496	E-2496	Hot oil system for evaporator	1990	400 gal	atm vent
T-109	E-655	Recycled alcohol (feed tank for PFS)	1954	21,000 gal	Vents to T.O. Y-2124
Preformed Stabilizers (PFS)					
C-2505	E-2505	#1Catalyst charge Preblend Pot	1994	N/A	Atm vent
T-1451	E-1451	#2 ISOP/ Polyol storage tank (bottom)	2002	15,000	Atm Vent
T-1452	E-1452	#2 ISOP/Polyol Storage Tank	1964	14,760 gal	Atm vent
T-1458	E-1458	#2 ISOP/Polyol Storage Tank	1960	28,000 gal	Atm vent
T-2501	E-2501	#1 ISOP/Catalyst Preblend Tank	1994	1,530 gal	Atm vent
T-2502	E-2502	#2 ISOP/Catalyst Preblend Tank	1994	1,530 gal	Atm vent
PFS Storage					
T-632	E-655	PFS Storage	1987	50,000 gal	Vents to T.O. Y-2124
T-684	E-655	PFS Storage	1997	39,620 gal	Vents to T.O. Y-2124
T-686	E-655	PFS Storage	1966	42,000 gal	Vents to T.O. Y-2124
PMPO Feed System					
T-2305	E-2305	Cat mix tank Feeds PMPO #1, #2 & #3.	2003	N/A	atm vent catalyst mix tank.
T-279	E-279	Inhibitor Storage	1943	3,800 gal	Atm Vent
T-8463	E-8463	Inhibitor Storage	1951	18,500 gal	atm vent
T-8465	E-8465	Polyol Raw material staging for blends	1951	18,500 gal	atm vent
T-626	E-655	Acrylonitrile Feeds all PMPO systems & PFS.	1986	47,200 gal	vents to T.O. Y-2124
T-633	E-633	Styrene Feeds all PMPO systems	1937	11,700 gal	atm vent
T-634	E-634	Styrene Feeds all PMPO systems	1937	11,700 gal	atm vent
T-683	E-683	Styrene Feeds all PMPO systems	2004	48,000 gal	atm vent
T-663	E-663D	Storage Tank	1984	15,500 gal	atm vent
T-631	E-655	Recovered alcohol (feed tank for PFS) Receives from PMPO #1,2&3 and feeds PFS.	1966	32,000 gal	vents to T.O. Y-2124
T-1457	E-1457	EPO	1965	12,200 gal	atm vent

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
PMPO Support Equipment					
C-2044	E-655	"MON" NESHAP Waste Water HAP Stripper w/ E-2045 Condenser and E-2057 feed preheater	2006	N/A	Y-2124 Incinerator
C-2016		C-2016 ACN Treater	1991		APCD
Y-2124	E-655	Thermal Oxidizer (TO)	1984	512 ft^3/min	APCD
T-616	E-655	Storage/decanting of wastewater	2010	32,000 gal	Vents to T.O. Y-2124
T-693	E-655	Waste monomer tank	2001	16,200 gal	vent to T.O. Y-2124
T-8464	E-8464	Rx vessel/blending	1951	18,500 gal	atm vent
T-8461	E-8461	Storage	1951	37,000 gal	atm vent
T-8466	E-8466	Storage	1951	18,500 gal	atm vent
T-8462	E-8462	Storage	1951	37,000 gal	atm vent
T-112	E-112	Storage	2007	28,000 gal	atm vent
Storage and Ancillary System					
T-70	E-70	Final Product Storage	1979	204,000 gal	atm vent
T-71	E-71	Final Product Storage	1979	204,000 gal	atm vent
T-72	E-72	Final Product Storage	1979	204,000 gal	atm vent
T-73	E-73	Final Product Storage	1979	204,000 gal	atm vent
T-74	E-74	Final Product Storage	1980	205,000 gal	atm vent
T-75	E-75	Final Product Storage	1979	205,000 gal	atm vent
T-76	E-76	Polyol blending	1990	8,400 gal	atm vent
T-77	E-77	Polyol blending	1990	7,100 gal	atm vent
T-78	E-78	Polyol blending	1990	3,800 gal	atm vent
T-79	E-79	Polyol blending	1990	10,500 gal	atm vent
T-80	E-80	Final Product Storage	1980	153,000 gal	atm vent
T-81	E-81	Final Product Storage	1979	105,000 gal	atm vent
T-82	E-82	Final Product Storage	1979	30,000 gal	atm vent
T-83	E-83	Final Product Storage	1979	28,000 gal	atm vent
T-84	E-84	Final Product Storage	1979	30,000 gal	atm vent
T-85	E-85	Final Product Storage	1979	28,000 gal	atm vent
T-86	E-86	Final Product Storage	1979	30,000 gal	atm vent
T-87	E-87	Final Product Storage	1979	28,000 gal	atm vent
T-88	E-88	Final Product Storage	1980	156,000 gal	atm vent

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
T-89	E-89	Final Product Storage	1980	156,000 gal	atm vent
T-90	E-90	Final Product Storage	1979	30,000 gal	atm vent
T-91	E-91	Final Product Storage	1979	28,000 gal	atm vent
T-92	E-92	Final Product Storage	1979	30,000 gal	atm vent
T-93	E-93	Final Product Storage	1979	28,000 gal	atm vent
T-94	E-94	Final Product Storage	1997	179,000 gal	atm vent
T-263	E-263	Final Product Storage	1961	52,000 gal	atm vent
T-264	E-264	Final Product Storage	1961	52,000 gal	atm vent
T-265	E-265	Final Product Storage	1961	52,000 gal	atm vent
T-266	E-266	Final Product Storage	2002	52,000 gal	atm vent
T-271	E-271	Final Product Storage	1964	30,300 gal	atm vent
T-272	E-272	Final Product Storage	1964	30,300 gal	atm vent
T-275	E-275	Final Product Storage	1967	19,700 gal	atm vent
T-276	E-276	Final Product Storage	1967	21,700 gal	atm vent
T-277	E-277	Final Product Storage	1967	19,700 gal	atm vent
T-278	E-278	Final Product Storage	1967	21,700 gal	atm vent
T-681	E-681	Final Product Storage	1960	48,000 gal	atm vent
T-682	E-682	Final Product Storage	1960	48,000 gal	atm vent
T-685	E-685	Final Product Storage	1960	48,000 gal	atm vent
T-687	E-687	Final Product Storage	2007	48,000 gal	atm vent
T-688	E-688	Final Product Storage	1960	48,000 gal	atm vent
T-695	E-695	Out of PMPO service	2003	280,000 gal	atm vent
T-696	E-696	Final Product Storage	1990	280,000 gal	atm vent
FLEXIBLE POLYOLS EMISSION GROUP					
B103					
#1 and #2 Feed System					
T-605	E-605	Polyol starter	1959	12,400 gal	atm vent
T-606	E-606	Polyol starter	1959	12,400 gal	atm vent
T-661	E-661T	Polyol starter	1953	11,000 gal	atm vent
T-662	E-662T	Polyol starter	1953	11,000 gal	atm vent
T-628	E-628	Propylene Glycol	2002	11,000 gal	atm vent
T-659	E-659T	Glycerin	1994	20,000gal	atm vent
C-3128	E-3128	Catalyst addition system (Rx #1)	2003	105 gal	atm vent
C-3228	E-3228	Catalyst addition system (Rx #2)	N/A	105 gal	atm vent
Y-3100	E-3100	Dust Collection (common) for RX #1, #2, and #3	2010	N/A	atm vent (dust)
#1 and #2 Reaction System					

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
C-3101	E-3101	Reactor Rx #1	1963	13,900 gal	vent to vacuum hogging jets H-3192
C-3201	E-3201	Reactor Rx #2	1950	14,280	vent to vacuum hogging jets H-3192
H-3192	E-3192	Hogging Vacuum Jets for #1 and #2 Reactors	N/A		Atm vent (receives flow from #1 and #2)
#1 and #2 Interim Storage					
T-613	E-613	Crude Polyol	1959	15,000 gal	atm vent
T-614	E-614	Crude Polyol	1959	15,000 gal	atm vent
T-667	E-667	Crude Polyol	1967	15,000 gal	atm vent
T-668	E-668	Crude Polyol	1967	15,000 gal	atm vent
T-643	E-643T	Crude Polyol	1958	15,000 gal	atm vent
T-644	E-644T	Crude Polyol	1958	15,000 gal	atm vent
Rx #3 Feed System Related					
T-647	E-647	Polyol starter or crude Polyol	1959	13,100 gal	atm vent
T-648	E-648	Polyol starter or crude Polyol	1959	13,100 gal	atm vent
T-1522	E-1522	Polyol starter	2011	50,500 gal	atm vent
T-269	E-269	Polyol starter	1961	49,000 gal	atm vent
T-273	E-273	Glycerine	1963	8,300 gal	atm vent
C-3328	E-3328	Catalyst addition system	N/A	105 gal	atm vent
K-5331	E-3100	Dust Collection (Common)	N/A		atm vent (dust)
#3 Reaction System					
C-3301	E-3301	Reactor Rx #3	1928		Can vent to Vacuum Pump and Jets H-3316 as well
H-3316	E-620	Vacuum system #3 reactor	N/A		atm vent
Rx #3 Storage & Ancillary System					
T-611	E-611	Crude Polyol	1959	14,100 gal	atm vent
T-612	E-612	Crude Polyol	1959	14,100 gal	atm vent
T-611	E-620	Crude Polyol Stripping	2006	14,100 gal	Steam jets for T-611, T-612 and Rx #3. Vents to H-3316
T-612	E-610	Crude Polyol Stripping	2006	14,100 gal	Steam jets for T-611, T-612 and Rx #3. Vents to H-3316
T-669	E-669	Crude Polyol	1967	14,100 gal	atm vent
T-670	E-670	Crude Polyol	1967	14,100 gal	atm vent
T-672	E-672	Polyol Product	2004	98,500 gal	atm vent
T-259	E-259	Polyol Product	1961	27,500 gal	atm vent
T-255	E-255	Polyol Product	1967	27,500 gal	atm vent
T-1526	E-1526	Polyol Product	1967	51,200 gal	atm vent
T-8467	E-8467	Polyol Product	2007	51,200 gal	atm vent
T-8469	E-8469	Polyol Product	2008	51,200 gal	atm vent
T-1519	E-1519	Polyol Product	1967	26,000 gal	atm vent
Refining System					

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
#1 System					
T-1465	E-1465	New ISOP feed (Common). Common to #1, 2 & 5 systems	2003	14,000 gal	atm vent
T-656	E-656	ISOP Feed (Common)	1953	14,800 gal	Atm vent
T-658	E-658T	ISOP Feed (Common)	1953	14,800 gal	Atm vent
T-610	E-610S	Sulfuric acid (Common)	2006	5,200 gal	Atm vent
C-3404	E-662	Cat Bed - Catalyst removal	1996	N/A	atm vent
C-3406	E-662	Mix Bed - Catalyst removal	1995	900 gal	atm vent
Ex-3475 / H-3477	E--608	Vacuum system (evaporation equipment) Condenser / Vacuum Jet off evaporators	N/A		Ex-3475 condenser
T-3478	E-608	Jet seal pot		170 gal	atm vent
T-3483	E-3483	Jet Pot Collection		130 gal	atm vent. For #1 and #2 systems
T-1466	E-1466	Used/recovered ISOP (Common)	2003	14,800 gallons	atm vent
T-649	E-649	Crude Polyol	1959	14,400 gal	atm vent
T-649	E-603S	Crude Polyol Stripping			Steam jets for T-604, T-603, T-649 and T-650. Vent to 600 Series Vacuum Jets.
T-650	E-650	Crude Polyol	1959	12,600 gal	atm vent
T-650	E-603S	Crude Polyol Stripping			Steam jets for T-604, T-603, T-649 and T-650. Vent to 600 Series Vacuum Jets.
T-604	E-604	Crude Polyol	1959	12,400 gal	atm vent
T-604	E-603S	Crude Polyol Stripping	1959	12,400 gal	Steam jets for T-604, T-603, T-649 and T-650. Vent to 600 Series Vacuum Jets.
600 Series Vacuum Jet Pot	E-603J	Jet seal pot			atm vent
#2 System					
C-3504	E-663	Cat Bed - Catalyst removal	1992	57,200 gal	atm vent
C-3506	E-663	Mix Bed - Catalyst removal	1992	750 gal	atm vent
EX-3575 / H-3577	E-609	Vacuum system (evaporation equipment) Condenser / Vacuum Jet	N/A		Condenser
T-3578	E-609	Jet seal pot		170 gal	atm vent
T-261	E-261	Make tank	1961	13,500 gal	atm vent
T-262	E-262	Make tank	1961	13,500 gal	atm vent
T-257	E-257	Make tank	1961	13,500 gal	atm vent
T-258	E-258	Make tank	1961	13,400 gal	atm vent

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
#5 System					
C-3604	E-664	Cat Bed - Catalyst removal	1966	2,800 gal	atm vent
C-3606	E-664	Mix Bed - Catalyst removal	1966	830 gal	atm vent
Ex-3675 / H-3677	E-610	Vacuum system (evaporation equipment) Condenser / Vacuum Jet	N/A		Condenser
T-3678	E-610	Jet seal pot	1979	95 gal	atm vent
T-603	E-603	Crude Polyol	1959	12,100 gal	atm vent
T-603	E-603S	Crude Polyol Stripping			Steam jets for T-604, T-603, T-649 and T-650. Vent to 600 Series Vacuum Jets.
T-645	E-645	Crude Polyol	1958	14,100 gal	atm vent
T-646	E-603S	Crude Polyol Stripping	1958	14,100 gal	Steam jets for T-604, T-603, T-649 and T-650. Vent to 600 Series Vacuum Jets.
B103 Final Product Storage					
T-267	E-267	Product storage	1961	50,400 gal	atm vent
T-268	E-268	Product storage	1961	50,400 gal	atm vent
T-269	E-269	Product storage	1961	50,400 gal	atm vent
T-270	E-270	Product storage	1961	50,400 gal	atm vent
T-673	E-673	Product storage	2004	97,400 gal	atm vent
T-674	E-674	Product storage	2004	97,400 gal	atm vent
T-1517	E-1517	Product storage	2006	27,500 gal	atm vent
T-1518	E-1518	Product storage	1966	27,000 gal	atm vent
T-1520	E-1520	Product storage	1967	27,000 gal	atm vent
T-1521	E-1521	Product storage	1967	50,500 gal	atm vent
T-1523	E-1523	Product storage	1967	50,500 gal	atm vent
T-1524	E-1524	Product storage	1967	50,500 gal	atm vent
T-1527	E-1527	Product storage	1967	50,500 gal	atm vent
T-1528	E-1528	Product storage	2004	50,500 gal	atm vent
T-1529	E-1529	Product storage	1967	50,500 gal	atm vent
T-1530	E-1530	Product storage	1967	50,500 gal	atm vent
T-1525	E-1525	Product storage	1967	50,500 gal	atm vent
T-1531	E-1531	Product storage	1967	50,500 gal	atm vent
T-1532	E-1532	Product storage	1967	50,500 gal	atm vent
B196 Phase IV					
Rx #7, #8 and #9 Feed and Vacuum System					
T-1	E-1	Polyol starter	2004	25,200 gal	atm vent
T-2	E-2	Polyol starter	2004	25,200 gal	atm vent
T-9	E-9	Polyol starter	1967	25,200 gal	atm vent
T-10	E-10	Polyol starter or glycerine	1967	21,800 gal	atm vent
T-18	E-18	Polyol starter	1974	22,200 gal	atm vent
H-5416 H-5216	E-5416 or E-5216	Vacuum Jets Vacuum Pump	N/A		Receives flow from #7, 8 & 9.

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
Rx #7, #8 and #9 Reaction System					
C-5201	E-636	#7 Reactor	1974	22,300 gal	Can vent to Vacuum Jets H-5416 and H-5216 vacuum pump as well
T-5316	E-5316	Hot well (Common)		80 gal	atm vent
C-5301	E-637	#8 Reactor	1974	19,400 gal	Can vent to Vacuum Jets H-5416 and H-5216 vacuum pump as well
C-5401	E-638	#9 Reactor	1974	61,830 gal	Can vent to Vacuum Jets H-5416 and H-5216 vacuum pump as well
T-5340A	E-5340A	Liquid KOH addition	1992	4,680 gal	atm vent
T-5340B	E-5340B	Liquid KOH addition	1992	4,680 gal	atm vent
Interim Storage					
T-3	E-3	Crude storage	2003	25,300 gal	atm vent
T-4	E-4	Crude storage	2003	25,300 gal	atm vent
T-5	E-5	Crude storage	2003	25,300 gal	atm vent
T-6	E-6	Crude storage	2003	25,300 gal	atm vent
T-7	E-7	Crude storage	2003	25,300 gal	atm vent
T-8	E-8	Crude storage same as T-3 for all	2003	25,300 gal	atm vent
Rx #7, #8, #9 and #10 Refining System					
T-20	E-20	Fresh ISOP	1974	22,000 gal	atm vent
T-24	E-24	Fresh ISOP	1967	22,000 gal	atm vent
T-26	E-26	Fresh ISOP	1973	22,000 gal	atm vent
T-19	E-19	Use/recovered ISOP	1974	22,000 gal	atm vent
T-23	E-23	Use/recovered ISOP	1967	22,000 gal	atm vent
T-25	E-25	Use/recovered ISOP	1973	22,000 gal	atm vent
C-5504	E-640	#7 Cat Bed - Catalyst removal	1974	6,840 gal	atm vent
C-5506	E-643	#7 Mix Bed – Catalyst removal	1974	3,870 gal	Atm vent
T-17	E-17	H_2SO_4 storage	2002	6,500 gal	atm vent
T-5550	E-5550	#7 IX Surge Tank	1974	22,000 gal	atm vent
T-5650	E-5650	#8 IX Surge Tank	1974	22,000 gal	atm vent
T-5750	E-5750	#9 IX Surge Tank	1974	22,000 gal	atm vent
H-242	E-242	Evaporation vacuum system	N/A		atm vent
T-5678	E-5678	Jet seal pot	1965	260 gal	atm vent
T-11	E-11	Make tank	1974	26,000 gal	atm vent
T-12	E-12	Make tank	1974	26,000 gal	atm vent
T-310	E-310	Inhibitor Pot		N/A	atm vent
C-5604	E-641	#8 Cat Bed - Catalyst removal	1974	6,840 gal	atm vent
C-5606	E-644	#8 Mix Bed - Catalyst removal	1974	2,530 gal	atm vent

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
H-230	E-230	Evaporation vacuum system	N/A		atm vent
T-13	E-13	Make tank	1974	26,000 gal	atm vent
T-14	E-14	Make tank	1974	26,000 gal	atm vent
C-5704	E-642	#9 Cat Bed - Catalyst removal	1974	6,840 gal	atm vent
C-5706	E-645	#9 Mix Bed - Catalyst removal	1974	2,500 gal	atm vent
H-267	E-267	Evaporation vacuum system	N/A		atm vent
T-15	E-15	Make tank	1974	26,000 gal	atm vent
T-16	E-16	Make tank	1974	26,000 gal	atm vent
C-5804	E-5804	#10 Cat Bed – Catalyst removal	2004	9,600 gal	atm vent
C-5806	E-5806	#10 Mix Bed – Catalyst removal	2004	4,000 gal	atm vent
B196 Final Storage Tanks					
T-60	E-60	Product storage	1974	270,000 gal	atm vent
T-61	E-61	Product storage	1974	280,000 gal	atm vent
T-62	E-62	Product storage	1974	143,000 gal	atm vent
T-63	E-63	Product storage	2002	143,000 gal	atm vent
T-64	E-64	Product storage	2002	143,000 gal	atm vent
T-65	E-65	Product storage	1974	143,000 gal	atm vent
T-66	E-66	Product storage	1980	203,000 gal	atm vent
T-67	E-67	Product storage	1980	203,000 gal	atm vent
T-68	E-68	Product storage	1974	266,000 gal	atm vent
T-698	E-698	Product Storage	2004	280,000 gal	atm vent
T-6797	E-6797	Intermediate storage	1994	50,000 gal	atm vent
T-6798	E-6798	Product storage	1994	50,000 gal	atm vent
T-6799	E-6799	Intermediate storage	1994	50,000 gal	atm vent
Distillation Column					
C-5812/ C-5811 Column / Condenser	E-639	ISOP Distillation Column System	1961	4,980 gallons	atm vent
Supply Chain PO Distribution					
PO Distribution					

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device
C-2090A	E-25, E-26 & E-27	PO Carbon Treater No emissions until carbon bed is regenerated	1996		UCC Boiler 25, 26 or 27
C-2090B	E-25, E-26 & E-27	PO Carbon Treater No emissions until carbon bed is regenerated	1997		UCC Boiler 25, 26 or 27
C-101	N/A	PO Storage (South Sphere)	1942	168,000 gal	Vapor balanced
C-102	N/A	PO Storage (North Sphere)	1942	168,000 gal	Vapor balanced
T-9016	N/A	PO Storage (North Charleston Tank Farm)	1969	420,000 gal	Vapor balanced
T-9017	N/A	PO Storage (North Charleston Tank Farm)	1959	350,000 gal	Vapor balanced

1.2. Active R13, R14, and R19 Permits

The underlying authority for any conditions from R13, R14, and/or R19 permits contained in this operating permit is cited using the original permit number (e.g. R13-1234). The current applicable version of such permit(s) is listed below.

Permit Number	Date of Issuance
R13-2561H	3/5/2012

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 (45CSR§30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.1.4. Unless otherwise specified in a permit condition or underlying rule or regulation, all references to a "rolling yearly total" shall mean the sum of the monthly data, values or parameters being measured, monitored, or recorded, at any given time for the previous twelve (12) consecutive calendar months.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* CFR	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* CSR	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr *or* lb/hr	Pounds per Hour
LDAR	Leak Detection and Repair
m	Thousand
MACT	Maximum Achievable Control Technology
mm	Million
mmBtu/hr	Million British Thermal Units per Hour
mmft^3/hr *or* mmcf/hr	Million Cubic Feet Burned per Hour
NA *or* N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM_{10}	Particulate Matter less than 10μm in diameter
pph	Pounds per Hour
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds

2.3. Permit Expiration and Renewal

2.3.1. Permit duration. This permit is issued for a fixed term of five (5) years and shall expire on the date specified on the cover of this permit, except as provided in 45CSR§30-6.3.b. and 45CSR§30-6.3.c.
[45CSR§30-5.1.b.]

2.3.2. A permit renewal application is timely if it is submitted at least six (6) months prior to the date of permit expiration.
[45CSR§30-4.1.a.3.]

2.3.3. Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted consistent with 45CSR§30-6.2. and 45CSR§30-4.1.a.3.
[45CSR§30-6.3.b.]

2.3.4. If the Secretary fails to take final action to deny or approve a timely and complete permit application before the end of the term of the previous permit, the permit shall not expire until the renewal permit has been issued or denied, and any permit shield granted for the permit shall continue in effect during that time.
[45CSR§30-6.3.c.]

2.4. Permit Actions

2.4.1. This permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
[45CSR§30-5.1.f.3.]

2.5. Reopening for Cause

2.5.1. This permit shall be reopened and revised under any of the following circumstances:

a. Additional applicable requirements under the Clean Air Act or the Secretary's legislative rules become applicable to a major source with a remaining permit term of three (3) or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 45CSR§§30-6.6.a.1.A. or B.

b. Additional requirements (including excess emissions requirements) become applicable to an affected source under Title IV of the Clean Air Act (Acid Deposition Control) or other legislative rules of the Secretary. Upon approval by U.S. EPA, excess emissions offset plans shall be incorporated into the permit.

c. The Secretary or U.S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

d. The Secretary or U.S. EPA determines that the permit must be revised or revoked and reissued to assure compliance with the applicable requirements.

[45CSR§30-6.6.a.]

2.6. Administrative Permit Amendments

2.6.1. The permittee may request an administrative permit amendment as defined in and according to the procedures specified in 45CSR§30-6.4.
[45CSR§30-6.4.]

2.7. Minor Permit Modifications

2.7.1. The permittee may request a minor permit modification as defined in and according to the procedures specified in 45CSR§30-6.5.a.
[45CSR§30-6.5.a.]

2.8. Significant Permit Modification

2.8.1. The permittee may request a significant permit modification, in accordance with 45CSR§30-6.5.b., for permit modifications that do not qualify for minor permit modifications or as administrative amendments.
[45CSR§30-6.5.b.]

2.9. Emissions Trading

2.9.1. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in the permit and that are in accordance with all applicable requirements.
[45CSR§30-5.1.h.]

2.10. Off-Permit Changes

2.10.1. Except as provided below, a facility may make any change in its operations or emissions that is not addressed nor prohibited in its permit and which is not considered to be construction nor modification under any rule promulgated by the Secretary without obtaining an amendment or modification of its permit. Such changes shall be subject to the following requirements and restrictions:

a. The change must meet all applicable requirements and may not violate any existing permit term or condition.

b. The permittee must provide a written notice of the change to the Secretary and to U.S. EPA within two (2) business days following the date of the change. Such written notice shall describe each such change, including the date, any change in emissions, pollutants emitted, and any applicable requirement that would apply as a result of the change.

c. The change shall not qualify for the permit shield.

d. The permittee shall keep records describing all changes made at the source that result in emissions of regulated air pollutants, but not otherwise regulated under the permit, and the emissions resulting from those changes.

e. No permittee may make any change subject to any requirement under Title IV of the Clean Air Act (Acid Deposition Control) pursuant to the provisions of 45CSR§30-5.9.

f. No permittee may make any changes which would require preconstruction review under any provision of Title I of the Clean Air Act (including 45CSR14 and 45CSR19) pursuant to the provisions of 45CSR§30-5.9.

[45CSR§30-5.9.]

2.11. Operational Flexibility

2.11.1. The permittee may make changes within the facility as provided by § 502(b)(10) of the Clean Air Act. Such operational flexibility shall be provided in the permit in conformance with the permit application and applicable requirements. No such changes shall be a modification under any rule or any provision of Title I of the Clean Air Act (including 45CSR14 and 45CSR19) promulgated by the Secretary in accordance with Title I of the Clean Air Act and the change shall not result in a level of emissions exceeding the emissions allowable under the permit.
[45CSR§30-5.8]

2.11.2. Before making a change under 45CSR§30-5.8., the permittee shall provide advance written notice to the Secretary and to U.S. EPA, describing the change to be made, the date on which the change will occur, any changes in emissions, and any permit terms and conditions that are affected. The permittee shall thereafter maintain a copy of the notice with the permit, and the Secretary shall place a copy with the permit in the public file. The written notice shall be provided to the Secretary and U.S. EPA at least seven (7) days prior to the date that the change is to be made, except that this period may be shortened or eliminated as necessary for a change that must be implemented more quickly to address unanticipated conditions posing a significant health, safety, or environmental hazard. If less than seven (7) days notice is provided because of a need to respond more quickly to such unanticipated conditions, the permittee shall provide notice to the Secretary and U.S. EPA as soon as possible after learning of the need to make the change.
[45CSR§30-5.8.a.]

2.11.3. The permit shield shall not apply to changes made under 45CSR§30-5.8., except those provided for in 45CSR§30-5.8.d. However, the protection of the permit shield will continue to apply to operations and emissions that are not affected by the change, provided that the permittee complies with the terms and conditions of the permit applicable to such operations and emissions. The permit shield may be reinstated for emissions and operations affected by the change:

a. If subsequent changes cause the facility's operations and emissions to revert to those authorized in the permit and the permittee resumes compliance with the terms and conditions of the permit, or

b. If the permittee obtains final approval of a significant modification to the permit to incorporate the change in the permit.

[45CSR§30-5.8.c.]

2.11.4. "Section 502(b)(10) changes" are changes that contravene an express permit term. Such changes do not include changes that would violate applicable requirements or contravene enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.
[45CSR§30-2.39]

2.12. Reasonably Anticipated Operating Scenarios

2.12.1. The following are terms and conditions for reasonably anticipated operating scenarios identified in this permit.

a. Contemporaneously with making a change from one operating scenario to another, the permittee shall record in a log at the permitted facility a record of the scenario under which it is operating and to document the change in reports submitted pursuant to the terms of this permit and 45CSR30.

b. The permit shield shall extend to all terms and conditions under each such operating scenario; and

c. The terms and conditions of each such alternative scenario shall meet all applicable requirements and the requirements of 45CSR30.

[45CSR§30-5.1.i.]

2.13. Duty to Comply

2.13.1. 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; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
[45CSR§30-5.1.f.1.]

2.14. Inspection and Entry

2.14.1. 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.

[45CSR§30-5.3.b.]

2.15. Schedule of Compliance

2.15.1. For sources subject to a compliance schedule, certified progress reports shall be submitted consistent with the applicable schedule of compliance set forth in this permit and 45CSR§30-4.3.h., but at least every six (6) months, and no greater than once a month, and shall include the following:

a. Dates for achieving the activities, milestones, or compliance required in the schedule of compliance, and dates when such activities, milestones or compliance were achieved; and

b. An explanation of why any dates in the schedule of compliance were not or will not be met, and any preventative or corrective measure adopted.

[45CSR§30-5.3.d.]

2.16. Need to Halt or Reduce Activity not a Defense

2.16.1. It shall not be a defense for a permittee in an enforcement action that it would 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.
[45CSR§30-5.1.f.2.]

2.17. Emergency

2.17.1. An "emergency" means any situation arising from sudden and reasonably 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.
[45CSR§30-5.7.a.]

2.17.2. 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 45CSR§30-5.7.c. are met.
[45CSR§30-5.7.b.]

2.17.3. 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. Subject to the requirements of 45CSR§30-5.1.c.3.C.1, 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, report, and variance request fulfills the requirement of 45CSR§30-5.1.c.3.B. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

[45CSR§30-5.7.c.]

2.17.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
[45CSR§30-5.7.d.]

2.17.5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.
[45CSR§30-5.7.e.]

2.18. Federally-Enforceable Requirements

2.18.1. All terms and conditions in this permit, including any provisions designed to limit a source's potential to emit and excepting those provisions that are specifically designated in the permit as "State-enforceable only", are enforceable by the Secretary, USEPA, and citizens under the Clean Air Act.
[45CSR§30-5.2.a.]

2.18.2. Those provisions specifically designated in the permit as “State-enforceable only” shall become “Federally-enforceable” requirements upon SIP approval by the USEPA.

2.19. Duty to Provide Information

2.19.1. 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 modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records required 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.
[45CSR§30-5.1.f.5.]

2.20. Duty to Supplement and Correct Information

2.20.1. 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.
[45CSR§30-4.2.]

2.21. Permit Shield

2.21.1. Compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance provided that such applicable requirements are included and are specifically identified in this permit or the Secretary has determined that other requirements specifically identified are not applicable to the source and this permit includes such a determination or a concise summary thereof.
[45CSR§30-5.6.a.]

2.21.2. Nothing in this permit shall alter or affect the following:

a. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance; or

b. The applicable requirements of the Code of West Virginia and Title IV of the Clean Air Act (Acid Deposition Control), consistent with § 408 (a) of the Clean Air Act.

c. The authority of the Administrator of U.S. EPA to require information under § 114 of the Clean Air Act or to issue emergency orders under § 303 of the Clean Air Act.

[45CSR§30-5.6.c.]

2.22. Credible Evidence

2.22.1. 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 defenses otherwise available to the permittee including but not limited to any challenge to the credible evidence rule in the context of any future proceeding.
[45CSR§30-5.3.e.3.B. and 45CSR38]

2.23. Severability

2.23.1. The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid by a court of competent jurisdiction, the remaining permit terms and conditions or their application to other circumstances shall remain in full force and effect.
[45CSR§30-5.1.e.]

2.24. Property Rights

2.24.1. This permit does not convey any property rights of any sort or any exclusive privilege.
[45CSR§30-5.1.f.4]

2.25. Acid Deposition Control

2.25.1. Emissions shall not exceed any allowances that the source lawfully holds under Title IV of the Clean Air Act (Acid Deposition Control) or rules of the Secretary promulgated thereunder.

a. No permit revision shall be required for increases in emissions that are authorized by allowances acquired pursuant to the acid deposition control program, provided that such increases do not require a permit revision under any other applicable requirement.

b. No limit shall be placed on the number of allowances held by the source. The source may not, however, use allowances as a defense to noncompliance with any other applicable requirement.

c. Any such allowance shall be accounted for according to the procedures established in rules promulgated under Title IV of the Clean Air Act.

[45CSR§30-5.1.d.]

2.25.2. Where applicable requirements of the Clean Air Act are more stringent than any applicable requirement of regulations promulgated under Title IV of the Clean Air Act (Acid Deposition Control), both provisions shall be incorporated into the permit and shall be enforceable by the Secretary and U. S. EPA.
[45CSR§30-5.1.a.2.]

3.0 Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person 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 or allow 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.
[40 C.F.R. §61.145(b) and 45CSR34]

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. **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 45CSR11.
[45CSR§11-5.2]

3.1.6. **Emission inventory.** The permittee is responsible for submitting, on an annual basis, an emission inventory in accordance with the submittal requirements of the Division of Air Quality.
[W.Va. Code § 22-5-4(a)(14)]

3.1.7. **Ozone-depleting substances.** For those facilities performing maintenance, service, repair or disposal of appliances, the permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 C.F.R. Part 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:

a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the prohibitions and required practices pursuant to 40 C.F.R. §§ 82.154 and 82.156.

b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 C.F.R. § 82.158.

c. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 C.F.R. § 82.161.

[40 C.F.R. 82, Subpart F]

3.1.8. **Risk Management Plan.** This stationary source, as defined in 40 C.F.R. § 68.3, is subject to Part 68. This stationary source shall submit a risk management plan (RMP) by the date specified in 40 C.F.R. Part 68.10. This stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification as required by 40 C.F.R. Part 70 or 71.
[40 C.F.R. 68]

3.1.9. The owner or operator of a plant shall maintain particulate matter control of the plant premises, and plant owned, leased or controlled access roads, by paving, application of asphalt, chemical dust suppressants or other suitable dust control measures. Good operating practices shall be implemented and when necessary particulate matter suppressants shall be applied in relation to stockpiling and general material handling to minimize particulate matter generation and atmospheric entrainment.
[45CSR§7-5.2.]

3.2. Monitoring Requirements

3.2.1. Owners or operators required to carry out a leak detection monitoring program under 45CSR21 shall comply with the following requirements:

a. Monitoring shall be performed in accordance with Method 21 of 40 C.F.R. Part 60, Appendix A.

b. The detection instrument shall meet the performance criteria of Method 21.

c. The detection instrument shall be calibrated before and after use on each day of its use by the methods specified in Method 21. Failure to achieve a post-use calibration precision of 10 percent or less shall constitute grounds for rejecting all tests performed since the last pre-use calibration. In such cases, required leak tests shall be reperformed.

d. Calibration gases shall be:

1. Zero air (less than 10 parts per million [ppm] of hydrocarbon in air); and

2. A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

e. The detection instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21.

[45CSR§21-46.1]

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, if applicable, in accordance with the Secretary's delegated authority and any established equivalency determination methods which are 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.

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 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.

3. A statement of compliance or non-compliance with each permit or rule condition.

[WV Code §§ 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Monitoring information.** 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.

[45CSR§30-5.1.c.2.A.]
[45CSR13 – R13-2561, Conditions 4.4.1., 5.4.1., 6.4.1., 7.4.1., 8.4.1.]

3.4.2. **Retention of records.** The permittee shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of monitoring sample, measurement, report, application, or record creation date. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Where appropriate, records may be maintained in computerized form in lieu of the above records.
[45CSR§30-5.1.c.2.B.]

3.4.3. **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§30-5.1.c. 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.
[45CSR§§30-4.4. *and* 5.1.c.3.D.]

3.5.2. A permittee may request confidential treatment for the submission of reporting required under 45CSR§30-5.1.c.3. pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.
[45CSR§30-5.1.c.3.E.]

3.5.3. Except for the electronic submittal of the annual certification to the USEPA as required in 3.5.5 below, 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, mailed first class or by private carrier 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:	**If to the US EPA:**
Director WVDEP Division of Air Quality 601 57th Street SE Charleston, WV 25304 Phone: 304/926-0475 FAX: 304/926-0478	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. **Certified emissions statement.** The permittee shall submit a certified emissions statement and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality.
[45CSR§30-8.]

3.5.5. **Compliance certification.** The permittee shall certify compliance with the conditions of this permit on the forms provided by the DAQ. In addition to the annual compliance certification, the permittee may be required to submit certifications more frequently under an applicable requirement of this permit. The annual certification shall be submitted to the DAQ and USEPA on or before March 15 of each year, and shall certify compliance for the period ending December 31. The annual certification to the USEPA shall be submitted in electronic format only. It shall be submitted by e-mail to the following address: R3_APD_Permits@epa.gov. The permittee shall maintain a copy of the certification on site for five (5) years from submittal of the certification.
[45CSR§30-5.3.e.]

3.5.6. **Semi-annual monitoring reports.** The permittee shall submit reports of any required monitoring on or before September 15 for the reporting period January 1 to June 30 and on or before March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports. All required reports must be certified by a responsible official consistent with 45CSR§30-4.4.
[45CSR§30-5.1.c.3.A.]

3.5.7. **Emergencies.** For reporting emergency situations, refer to Section 2.17 of this permit.

3.5.8. **Deviations.**

a. In addition to monitoring reports required by this permit, the permittee shall promptly submit supplemental reports and notices in accordance with the following:

1. Any deviation resulting from an emergency or upset condition, as defined in 45CSR§30-5.7., shall be reported by telephone or telefax within one (1) working day of the date on which the permittee becomes aware of the deviation, if the permittee desires to assert the affirmative defense in accordance with 45CSR§30-5.7. A written report of such deviation, which shall include the probable cause of such deviations, and any corrective actions or preventative measures taken, shall be submitted and certified by a responsible official within ten (10) days of the deviation.

2. Any deviation that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to the Secretary immediately by telephone or telefax. A written

report of such deviation, which shall include the probable cause of such deviation, and any corrective actions or preventative measures taken, shall be submitted by the responsible official within ten (10) days of the deviation.

3. Deviations for which more frequent reporting is required under this permit shall be reported on the more frequent basis.

4. All reports of deviations shall identify the probable cause of the deviation and any corrective actions or preventative measures taken.

[45CSR§30-5.1.c.3.C.]

b. The permittee shall, in the reporting of deviations from permit requirements, including those attributable to upset conditions as defined in this permit, report the probable cause of such deviations and any corrective actions or preventive measures taken in accordance with any rules of the Secretary. **[45CSR§30-5.1.c.3.B.]**

3.5.9. **New applicable requirements.** If any applicable requirement is promulgated during the term of this permit, the permittee will meet such requirements on a timely basis, or in accordance with a more detailed schedule if required by the applicable requirement.
[45CSR§30-4.3.h.1.B.]

3.6. Compliance Plan

3.6.1. Reserved.

3.7. Permit Shield

3.7.1. The permittee is hereby granted a permit shield in accordance with 45CSR§30-5.6. The permit shield applies provided the permittee operates in accordance with the information contained within this permit.

3.7.2. The following requirements specifically identified are not applicable to the source based on the determinations set forth below. The permit shield shall apply to the following requirements provided the conditions of the determinations are met.

Regulation	Rationale
40 C.F.R. 60 Subpart Kb	All tanks except T-626 and T-632 were found not to be subject to NSPS Kb since all met one of the following exemption criteria: 1. Were built before July 23, 1984, and no physical modifications or reconstructions were performed since July 23, 1984 and/or 2. Are of capacity less than 19,813 gallons and/or 3. Are of a capacity greater than 39,890 gallons, and have a maximum true vapor pressure of 0.51 psia or less. 4. Are of a capacity greater than 19,813 gallons but less than 39,890, and have a maximum true vapor pressure of 2.2 psia or less.
40 C.F.R. 63 Subparts F, G, and H (Except as Subpart H is incorporated by	40 C.F.R. §63.100(b) states that the provisions of subparts F, G, and H apply to chemical manufacturing process units that meet all the criteria specified in paragraphs (b)(1), (b)(2), and (b)(3) of §63.100. According to the renewal application, the facility does not manufacture as a primary product one or more

Regulation	Rationale
reference in other applicable standards).	of the chemicals listed in (b)(1)(i) or (b)(1)(ii) of §63.100. Therefore, Subparts F, G, and H are not applicable. However, Subpart H requirements are applicable insofar as they are incorporated by reference into other applicable standards (e.g., permit R13-2561H).
40 C.F.R. 63 Subpart EEEE	40 C.F.R. §§ 63.2338(c) and (c)(1) state the following: "The equipment listed in paragraphs (c)(1) through (4) of this section and used in the identified operations is excluded from the affected source. (1) Storage tanks, transfer racks, transport vehicles, containers, and equipment leak components that are part of an affected source under another 40 CFR part 63 national emission standards for hazardous air pollutants (NESHAP)." The following equipment is subject to the applicable requirements of 40 C.F.R. 63 Subpart PPP – Polyether Polyols Production MACT: propylene oxide storage spheres (T-9016, T-9017, C-101 and C-102); carbon filtering vessels (C-2090A and C-2090B); North Charleston propylene oxide barge loading station; and piping and associated piping components in propylene oxide distribution service. Therefore, the aforementioned sources meet the criterion at 40 C.F.R. §63.2338(c)(1) and are not subject to 40 C.F.R. 63 Subpart EEEE.
40 C.F.R. 63 Subpart FFFF "MON"	The synthetic minor HAP status for wastewater treatment defined within section 6.0 was established through minor NSR permit number R13-2561C (issued April 9, 2007). Since permit R13-2561C established this limitation before the applicable compliance date of May 10, 2008 pertaining to the referenced "MON" standard, Bayer's South Charleston facility will not be subject to this Federal Standard.
40 C.F.R. 63 Subpart VVVVVV	Acetaldehyde (Table 1 HAP) is received as an impurity in propylene oxide and may under specific operating conditions be generated in the manufacturing process in low concentration. Acetaldehyde is a noncarcinogen and is not present in the process fluid at greater than 1.0%. Based upon these facts, the applicability criterion at 40 C.F.R. §63.11494(a)(3) is not met; therefore, Subpart VVVVVV does not apply to the facility.
40 C.F.R. 64 Compliance Assurance Monitoring (CAM)	(1) *Emission units controlled by thermal oxidizer Y-2124*. None of the pollutants controlled by Y-2124 emitted by emission sources PMPO#1, PMPO#2, PMPO#3, PMPO#4, T-616, T-626, T-631, T-632, T-684, T-686, T-663, T-693, and Switch Rack #8 have potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Since the applicability criterion at §64.2(a)(3) is not met, CAM does not apply to these emission units. (2) *Emission units controlled by Plug Flow Reactor C-2016*. None of the pollutants controlled by C-2016 emitted by T-2148, T-2248, T-2348, and T-2448 have potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Since the applicability criterion at §64.2(a)(3) is not met, CAM does not apply to these emission units. (3) *Emission units controlled by Steam Stripper with dual flow trays C-2044*. None of the pollutants controlled by C-2044 emitted by T-2148, T-2248, T-2348, and T-2448 have potential pre-control device emissions of the

Regulation	Rationale
	applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Since the applicability criterion at §64.2(a)(3) is not met, CAM does not apply to these emission units. (4) *Emission unit controlled by Condenser EX2424 and Vacuum Jet H-2443*. None of the pollutants controlled by EX2424 and H2443 emitted by PMPO #4 have potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Since the applicability criterion at §64.2(a)(3) is not met, CAM does not apply to this emission unit. (5) *Emission unit controlled by Wet Scrubber V-2493*. None of the pollutants controlled by V-2493 (PM_{10} only) emitted by T-2405 have potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. Since the applicability criterion at §64.2(a)(3) is not met, CAM does not apply to this emission unit.

4.0 Polymer Production Unit #1 (PP1), Polymer Production Unit #2 (PP2), Polymer Production Unit #3 (PP3), and Polymer Production Unit #4 (PP4); Emission Group: Polymer Polyols (PMPO)

4.1. Limitations and Standards

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

Emission Point ID	Source ID	Control ID	Pollutant	Emission Limit	
				pph	tpy
E-655	PMPO #1 PMPO #2 PMPO #3 PMPO #4 T-109 T-632 T-626 T-616 T-693 T-631 T-684 T-686 Switch Rack #8 T-2448	Y-2124	CO NO_X VOC Acrylonitrile Benzene Ethyl Benzene Xylene	0.18 1.65 0.39 0.01 0.1 0.1 0.1	0.71 6.51 0.32 0.01 0.01 0.01 0.01
E-657	T-2405	V-2493	PM_{10} VOC	-- 0.2	0.01 0.01
E-651(1)	PMPO #1 T-2148	H-2143	Acrylonitrile Styrene VOC	0.02 0.01 0.01	0.01 0.01 0.01
E-653(1)	PMPO #2 T-2248	Ex-2224 H-2253	Acrylonitrile Styrene VOC	0.02 0.01 0.01	0.01 0.01 0.01
E-652(1) E-654(1)	PMPO #3 T-2348	Ex-2324 H-2343 H-2253	Acrylonitrile Styrene VOC	0.02 0.01 0.01	0.01 0.01 0.01
E-658(1)	PMPO #4 T-2448	Ex-2424 H-2443	Acrylonitrile Styrene VOC	0.02 0.01 0.01	0.01 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.

[45CSR13 - R13-2561, Condition 4.1.1., Emission Points (listed above)]

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.
[45CSR13 - R13-2561, Condition 4.1.2., Equipment ID (Make Tanks [PP4]: T-105, T-106, T-107, T-108, T-8484, T-8485, Make Tanks [PP3]: T-8480, T-8481, T-8482, T-8483, Make Tanks [PP2]: T-1453, T-1463, T-1464, Make Tanks [PP1]: T-1454, T-1455, T-1456]

4.1.3. The following provisions only apply to the Polymer Polyol Production Unit #4 (PP4).

a. During normal operations, emissions from the Polymer Polyol Production Unit #4 vacuum jet condenser (H-2443) vent are to be routed to the thermal oxidizer (originally permitted under R13-1729A as ID: S-9, and within Title V as ID: Y-2124), and subsequently vented through emission point E-655.

b. The permittee shall vent tank T-2405 to a Ceilcote, EVS-3 Eductor System (ID V-2493).

1. The venturi scrubber shall be operated at all times during catalyst addition with a minimum liquor flow rate as required for proper operation.
2. The maximum number of catalyst make-up batches shall not exceed 700 in a calendar year. For compliance determination the permittee shall maintain records of all catalyst make-up batches.

[45CSR13 - R13-2561, Condition 4.1.3.]

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.

[45CSR13 - R13-2561, Condition 4.1.4., Condition 5.1.1. and 5.1.3., Equipment IDs (H-2143, H-2253, H-2343, H-2353, H-2443, T-632, T-663, T-626, T-616, T-693, T-631, T-109, and Switch Rack #8) also 40CFR§60.112b(3)(a)(i), 45CSR16, Equipment IDs (T-626 and T-632)]

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 shall not exceed a one hour average of 514 pounds per hour.

[45CSR13 - R13-2561, Condition 4.1.5., Equipment ID (Y-2124), Emission Point (E-655)]

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).

[45CSR13 – R13-2561, Condition 4.1.6]

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.
[45CSR13 - R13-2561, Condition 4.1.7]

4.1.8. Emission of Visible Particulate Matter from the Y-2124 thermal oxidizer – No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR§6-4.3., Emission Point (E-655)]

4.1.9. No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 45CSR§§7-3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1., Emission Point (E-657, E-2405, E-2505, E-3128, E-3228, E-3328, E-5331, E-310)]

4.1.10. No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1., Emission Point (E-2405, E-2505, E-3128, E-3228, E-3328, E-310)]

4.1.11. 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.
[45CSR13 - R13-2561, Condition 4.1.8, Equipment (Section 1.0 Polymer Polyols Emission Groups)]

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 production in pounds at any given time for the previous twelve (12) consecutive calendar months.
[45CSR13 - R13-2561, Condition 4.2.1., Emission Points (E-655, E-657)]

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. Liquor flow rate of the Ceilcote, EVS-3 Eductor System, V-2493
c. Emergency venting hours for E-651, E-653, E-652/E-654 (not additive), and E-658
d. Number of catalyst makeup batches, T-2405
e. The number of hours and dates the polymer polyols #4 unit was operated while not venting to thermal oxidizer Y-2124.

[45CSR13 - R13-2561, Condition 4.2.2.a-c., 45CSR§30-5.1.c.1.B., Equipment (H-2443, Y-2124, V-2493, T-2405)]

4.3. Testing Requirements

4.3.1. Upon request of the Director the permittee shall conduct Method 9 opacity testing in order to determine compliance with conditions 4.1.8, 4.1.9, and 4.1.10 of this Title V permit.
[45CSR§6-7.1., Emission Point (E-655) and 45CSR§7A., Emission Point (E-657, E-2405, E-2505, E-3128, E-3228, E-3328, E-5331, E-310)]

4.4. Recordkeeping Requirements

4.4.1. For 4.1.1., the permittee shall record all periods of shutdown or other disturbances in the normal operation of control equipment. Such records shall include the cause of shutdown in operation, (whether planned or unplanned) and length of time of occurrence. These records shall be maintained on site for at least one (1) year and the remaining required records will be made available to the Director or his/her duly authorized representative within five (5) working days.
[45CSR§30-5.1.c.1.B., Equipment (Y-2124, V-2493)]

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.
[45CSR13 - R13-2561, Condition 4.4.2.]

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.

[45CSR13 - R13-2561, Condition 4.4.3.]

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.
[45CSR13 - R13-2561, Condition 4.4.4., Emission Points (E-655, E-657) and Production units (PP1, PP2, PP3, and PP4)]

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. Liquor flow rate of the Ceilcote, EVS-3 Eductor System
c. Emergency venting hours for E-651, E-653, E-652/E-654 (not additive), and E-658
d. Number of catalyst makeup batches, T-2405

[45CSR13 - R13-2561, Condition 4.4.5.a-c., 45CSR§30-5.1.c., Equipment (H-2443, Y-2124, V-2493, T-2405)]

4.5. Reporting Requirements

4.5.1. In complying with Section 4.1.7, all notices and reports required to be submitted to the United States Environmental Protection Agency ("U.S. EPA") under 40 CFR 63 Subpart H shall be submitted to the Director (and the U.S. EPA Administrator, if appropriate) in accordance with the requirements of Subpart H.
[45CSR13 - R13-2561, Condition 4.1.7, 45CSR34]

4.6. Compliance Plan

4.6.1. Reserved.

5.0 Preformed Stabilizer Process Unit [emission point ID(s): T-632, T-686, T-684, T-2501, T-2502, T-1452, and T-1458]

5.1. Limitations and Standards

5.1.1. Emissions generated from Preformed Stabilizer storage tank T-632, 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.
[45CSR13 - R13-2561, Condition 5.1.1.]

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.
[45CSR13 - R13-2561, Condition 5.1.2.]

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.
[45CSR13 - R13-2561, Condition 5.1.3. (T-632)]

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.
[45CSR13 - R13-2561, Condition 5.1.4.; 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-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.
[45CSR13 - R13-2561, Condition 5.2.1., Equipment ID (T-684 and T-686)]

5.3. Testing Requirements

5.3.1. Reserved.

5.4. Recordkeeping Requirements

5.4.1. **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.
[45CSR13 - R13-2561, Condition 5.4.2.]

5.4.2. **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.

[45CSR13 - R13-2561, Condition 5.4.3.]

5.4.3. 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-684 and T-686. **[45CSR13 - R13-2561, Condition 5.4.4., Equipment ID (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

[45CSR13 - R13-2561, Condition 5.5.1]

5.6. Compliance Plan

5.6.1. Reserved.

6.0 PMPO Storage Tanks and Loading Racks (Storage tanks and loading racks listed within Section 1.0)

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-276
T-73	T-90	T-277
T-74	T-91	T-278
T-75	T-92	T-681
T-80	T-93	T-682
T-81	T-94	T-685
T-82	T-263	T-687
T-83	T-264	T-688
T-84	T-265	T-696
T-85	T-266	
T-86	T-271	

[45CSR13 - R13-2561, Condition 6.1.1]

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	

[45CSR13 - R13-2561, Condition 6.1.2]

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

[45CSR13 - R13-2561, Condition 6.1.3]

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(1)	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.

[45CSR13 - R13-2561, Condition 6.1.4]

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.
[45CSR13 - R13-2561, Condition 6.1.5]

6.1.6. Tanks T-651 and T-652 shall not be used to store any liquid that contains any volatile organic compounds, hazardous air pollutants, or toxic air pollutants.
[45CSR13 - R13-2561, Condition 6.1.6]

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-693, T-109, and T-631 to the portable storage vessel at switch rack #8.
[45CSR13 - R13-2561, Condition 6.1.7]

6.1.8. The permittee shall not vent uncontrolled emissions to the atmosphere from any tank car or any other portable storage vessel, which was used to transport acrylonitrile or styrene to this facility.
[45CSR13 - R13-2561, Condition 6.1.8]

6.1.9. Fugitive emissions from equipment (e.g. pipes, pumps, flanges, etc.) that are associated with the equipment listed in permit application R13-2429, (Storage tank ID No. T-70 through T-94, T-263, T-264, T-265, T-266, T-271, T-272, T-275, T-276, T-277, T-278, T-279, T-633, T-634, T-681, T-682, T-683, T-685, T-687, T-688, T-696, T-1457, T-8461, T-8462, T-8463, T-8464, T-8465, T-8466, and Switch Rack #7, #8, #9, and #12, and Styrene Tank car Unloading Rack, Polymer Polyol Wastewater Truck Loading 70 series TKs, Polymer Polyol Wastewater Truck Loading 80 series TKs, Phase IV Tank Truck Rack, #4 Barge Dock, and Tank T-616, T626, T-631, T-663, and T-693) which are placed in toxic air pollutant service, as defined by 45CSR§27-2.11, 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.
[45CSR13 - R13-2561, Condition 6.1.9]

6.1.10. During periods of malfunction that causes the acrylonitrile treater (C-2016) to shut down while wastewater transfer system operations are being conducted the permittee may operate an automatic control valve identified as HV-616-09 to relieve the pressure of Tank T-616 to a safe level. The operation of the vent valve HV-616-09 during periods of acrylonitrile treater malfunctions is required to avoid a potential shutdown of the thermal oxidizer if it is not already shutdown because of other causes. The total duration of each individual venting event from HV-616-09 shall not exceed one hour and the number of events over a 12 month period shall not exceed five (5). In the event that a sixth event occurred during a 12 month period, the permittee must submit to the Director a permit determination outlining a plan to control the emissions from this point source no later than the 30th day after which the sixth (6) event occurred.
[45CSR13 - R13-2561, Condition 6.1.10]

6.1.11. 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.

This Title V requirement along with the averaging times established within 6.2.3., streamline compliance with respect to 99% reduction of acrylonitrile (ACN) wastewater emissions and therefore 45CSR27.
[45CSR13 - R13-2561, Condition 6.1.12]

6.1.12. 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.
[45CSR13 - R13-2561, Condition 6.1.13]

6.1.13. 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.
[45CSR13 - R13-2561, Condition 6.1.14]

6.1.14. 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.
[45CSR13 - R13-2561, Condition 6.1.11 (T-626)]

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.
[45CSR13 - R13-2561, Condition 6.2.1]

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.
[45CSR13 - R13-2561, Condition 6.2.2]

6.2.3. For the purpose of determining wastewater treatment performance as set forth in Section 6.1.11. 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 to wastewater feed ratio
b. Wastewater feed temperature
c. Wastewater feed rate
d. Caustic to wastewater feed ratio
e. ACN treater feed temperature

In order to provide a continuous compliance measure for Title V, compliance with the established operating limits shall be based on a 3 hour rolling average for all operating parameter limits except the steam to wastewater feed ratio, this will be based on a 15 minute rolling average.
[45CSR§30-5.1.c., 45CSR27, 45CSR13 - R13-2561, Condition 6.2.3, Emission Unit ID(s) (C-2016, C-2044)]

6.2.4. The permittee shall monitor the contents of storage tanks T-651 and T-652 to assure compliance with the no VOC, HAP, TAP requirement specified by 6.1.6.
[45CSR§30-5.1.c.1.B, Equipment ID (T-651 and T-652)]

6.3. Testing Requirements

6.3.1. Reserved.

6.4. Recordkeeping Requirements

6.4.1. The permittee shall record all events as defined in 6.1.10. Such records shall include the cause of shutdown in operation, length of time of occurrence, and estimate of the emissions released. These records shall be maintained on site for at least one (1) year and the remaining required records will be made available to the Director or his/her duly authorized representative within five (5) working days.
[45CSR§30-5.1.c.1.B, Equipment ID (C-2016 and T-616)]

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.
[45CSR13 - R13-2561, Condition 6.4.2]

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.

[45CSR13 - R13-2561, Condition 6.4.3]

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.
[45CSR13 - R13-2561, Condition 6.4.4]

6.4.5. For the purpose of documenting synthetic minor status for HAPs and 45CSR27 compliance, the permittee shall maintain and record the monitoring parameters defined within 6.2.3. These records shall be maintained on site for at least one (1) year and upon request the remaining required records will be made available to the Director or his/her duly authorized representative within five (5) working days.
[45CSR§30-5.1.c., 45CSR27, 45CSR13 R13-2561, Condition 6.4.1., Emission Unit ID(s) (C-2016, C-2044)]

6.4.6. The permittee shall complete an operator checklist to assure compliance with 6.1.7 by verifying that portable storage vessels are vented to the thermal oxidizer (Y-2124) during waste monomer and/or recovered alcohol loading from tanks T-693, T-109, T-631 via switch rack #8.
[45CSR§30-5.1.c., 45CSR27, Emission Unit ID(s) (T-693, T-109, T-631, Switch Rack #8)]

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

[45CSR13 - R13-2561, Condition 6.5.1]

6.6. Compliance Plan

6.6.1. Reserved.

7.0 Propylene Oxide Carbon Filtration Media Regeneration Operations Equipment ID (C-2090, C-2090B, Dow Boilers B-25, B-26, and B27)

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 Boiler 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.
[45CSR13 - R13-2561, Condition 7.1.1., Equipment ID (C-2090, C-2090B)]

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.
[45CSR13 - R13-2561, Condition 7.1.2., Equipment ID (C-2090, C-2090B)]

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.
[45CSR13 - R13-2561, Condition 7.1.3., Equipment ID (C-2090, C-2090B)]

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 45CSR§27-2.11., shall be integrated into the existing (45CSR27) Leak Detection and Repair (LDAR) program, as defined by 40 CFR 63, Subpart H.
[45CSR13 - R13-2561, Condition 7.1.4]

7.1.5. The permitted facility shall comply with all applicable requirements of 40CFR63, Subpart PPP – Polyether Polyols Production, with the exception of any more stringent limitations set forth in this permit. Since the permittee uses epoxides in the production of polyether polyols the affected source is subject to 63.1425(b), process vent control requirements as follows:

(b) *Requirements for epoxide emissions.* The owner or operator of an affected source where polyether polyol products are produced using epoxides shall reduce epoxide emissions from process vents from batch unit operations and continuous unit operations within each PMPU in accordance with either paragraph (b)(2) of this section.

(2) For existing affected sources, the owner or operator shall comply with paragraph (b)(2)(ii)

(ii) Reduce the total epoxide emissions from the group of applicable process vents by an aggregated 98 percent;

[45CSR13 - R13-2561, Condition 7.1.5, 45CSR34 and 40 C.F.R. §63.1425(b)(2)(ii), Equipment ID (C-2090, C-2090B)]

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.
[**45CSR13 - R13-2561, Condition 7.1.6]**

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.
[45CSR13 - R13-2561, Condition 7.2.1., Equipment ID(s) (C-2090, C-2090B)]

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.
[45CSR13 - R13-2561, Condition 7.2.2., Equipment ID(s) (C-2090, C-2090B)]

7.3. Testing Requirements

7.3.1. Reserved.

7.4. Recordkeeping Requirements

7.4.1. 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.
[45CSR13 - R13-2561, Condition 7.4.2., Equipment ID(s) (B-25, B-26, B-27)]

7.4.2. 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.

[45CSR13 - R13-2561, Condition 7.4.3., Equipment ID(s) (B-25, B-26, B-27)]

7.4.3. 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.
[45CSR13 - R13-2561, Condition 7.4.4., Equipment ID(s) (C-2090, C-2090B)]

7.4.4. 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.
[45CSR13 - R13-2561, Condition 7.4.5., Equipment ID(s) (C-2090, C-2090B)]

7.5. Reporting Requirements

7.5.1. Reserved.

7.6. Compliance Plan

7.6.1. Reserved.

8.0 Flexible Polyols Production, Emission Groups [(#1 and #2 Feed System, Reactor, Interim Storage), (#3 Feed System, Reactor, Interim Storage & Ancillary), (#1, #2 and #5 IX Refining Systems), (B103 Final Product Storage Tanks), (#7, #8, and #9 Feed System, Reactors, and Interim Storage), (#7, #8, #9 and #10 IX and Refining System), (B196 Final Storage Tanks), (Distillation Column), and (PO Distribution System)]

8.1. Limitations and Standards

8.1.1. 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

[45CSR13 - R13-2561, Condition 8.1.1]

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			

[45CSR13 - R13-2561, Condition 8.1.2]

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:[1]	
			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.
[45CSR13 - R13-2561, Condition 8.1.3]

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 0.09 0.09 10.3	0.04 0.33 0.08 29.7
H-3477	E-608			
C-3504 C-3506	E-663			
H-3577	E-609			
C-3604 C-3606	E-664			
H-3677	E-610			

[45CSR13 - R13-2561, Condition 8.1.4]

8.1.5. Annual production from the B196 Flexible Polymer Polyols Production Units, including Reactor Systems #7, #8, and #9 shall not exceed 150,000 tons per year.
[45CSR13 - R13-2561, Condition 8.1.5]

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	139.5	1.4
Reactor #8 & Vacuum Systems C-5301 H-5216 H-5416	E-637 E-5216 E-5416	Ethylene Oxide	24.0	0.25
		Propionaldehyde	0.04	0.04
		Acetaldehyde	0.01	0.01
		VOC	163.6	1.71
Reactor #9 & Vacuum Systems C-5401 H-5216 H-5416	E-638 E-5216 E-5416			

[45CSR13 - R13-2561, Condition 8.1.6]

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[1] (hours)
C-5504	80,000	60,000	2,804
C-5604			
C-5704			
C-5804			

1 - Vent time considered only when system contains VOCs.

[45CSR13 - R13-2561, Condition 8.1.7]

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:[1]	
			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.

[45CSR13 - R13-2561, Condition 8.1.8]

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			

[45CSR13 - R13-2561, Condition 8.1.9]

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.
[45CSR13 - R13-2561, Condition 8.1.10]

8.1.11. **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.
[45CSR13 - R13-2561, Condition 8.1.12]

8.1.12. The permittee shall comply with all applicable requirements of 40 CFR 63 Subpart PPP "National Emission Standard for Hazardous Air Pollutants from Polyether Polyols Production". The enumerated requirements that follow address specific obligations taken from applicable sections of this regulation. However, the permittee shall comply with the Polyether Polyols Production MACT as referenced above in its entirety, which includes the specific requirements listed within this section of the Title V permit.

In the event applicable 40 CFR 63, Subpart PPP sections of the Regulation are revised during the term of the permit, the permittee shall comply with the applicable requirements in the most recently promulgated regulation(s) once they become effective. This clarification shall in no way alleviate the permittee from associated notice, recordkeeping or Title V permit revision requirements that may be associated with such changes.

[45CSR13 - R13-2561, Condition 8.1.11.]

8.1.13. The permittee shall comply with the standards established within 40 CFR §63.1424, as follows:

(a) Except as provided under §63.1424(b) of this section, the owner or operator of an existing or new affected source shall comply with the provisions in:

(1) Sections 63.1425 through 63.1430 for process vents;
(2) Section 63.1432 for storage vessels;
(3) Section 63.1433 for wastewater;
(4) Section 63.1434 for equipment leaks;
(5) Section 63.1435 for heat exchangers;
(6) Section 63.1437 for additional test methods and procedures;
(7) Section 63.1438 for monitoring levels and excursions; and
(8) Section 63.1439 for general reporting and recordkeeping requirements.

(b) When emissions of different kinds (i.e., emissions from process vents subject to §§63.1425 through 63.1430, storage vessels subject to §63.1432, process wastewater, and/or in-process equipment subject to §63.149) are combined, and at least one of the emission streams would require control according to the applicable provision in the absence of combination with other emission streams, the owner or operator shall comply with the requirements of either §63.1424(b)(1) or (2) of this section.

(1) Comply with the applicable requirements of this subpart for each kind of emission in the stream as specified in §63.1424(a)(1) through (5) of this section; or
(2) Comply with the most stringent set of requirements that applies to any individual emission stream that is included in the combined stream, where either that emission stream would be classified as requiring control in the absence of combination with other emission streams, or the owner chooses to consider that emission stream to require control for the purposes of this paragraph.

[45CSR34 and 40 C.F.R. §63.1424]

8.1.14. Since the permittee uses epoxides in the production of polyether polyols the affected source is subject to 63.1425(b), process vent control requirements as follows:

(b) *Requirements for epoxide emissions.* The owner or operator of an affected source where polyether polyol products are produced using epoxides shall reduce epoxide emissions from process vents from batch unit operations and continuous unit operations within each PMPU in accordance with §63.1425(b)(2).

(2) For existing affected sources, the owner or operator shall comply with either paragraph (b)(2)(i), (ii), (iii), or (iv) of this section. The owner or operator also has the option of complying with a combination of paragraphs (b)(2)(ii) and (iii) of this section. If the owner or operator chooses to comply with a combination of paragraphs (b)(2)(ii) and (iii) of this section, each process vent that is not controlled in accordance with paragraph (b)(2)(iii) of this section shall be part of the group of applicable process vents that shall then comply with paragraph (b)(2)(ii) of this section. The owner or operator also has the option of complying with a combination of paragraphs (b)(2)(i) and (iii) of this section.

(i) Reduce the total epoxide emission from each process vent using a flare;
(ii) Reduce the total epoxide emissions from the group of applicable process vents by an aggregated 98 percent;
(iii) Maintain an outlet concentration of total epoxides or TOC after each combustion, recapture or recovery devices of 20 ppmv or less;
(iv) Maintain an emission factor of no greater than 1.699×10^{-2} pounds of epoxide emissions per, 1,000 pounds of product for all process vents in the PMPU.

As of the effective date of this permit the permittee has demonstrated compliance solely in accordance with option (b)(2)(ii) as referenced above. It should be noted that the Title V interface with MACT compliance options (b)(2)(i) and (b)(2)(iii) may require a permit modification to incorporate any new applicable requirements associated with secondary pollutants generated from combustion control devices, Additionally, if option (b)(2)(iii), the 20ppm TOC concentration requirement, is utilized in the future proper monitoring shall be installed and maintained as well as proper notification(s) submitted to the DAQ in accordance with the applicable subpart.

If option (b)(2)(iv), the emission factor requirement, is utilized the permittee shall develop and implement an epoxides emission factor plan in accordance with 40 C.F.R.§63.1431. This section further states, within 40 C.F.R.§63.1431(d), that the owner or operator shall notify the Agency of the intent to use extended cookout to comply with the epoxide emission factor limitation in 40 C.F.R. §§63.1425(b)(1)(iii) or (b)(2)(iv). The owner or operator shall prepare an estimate of the annual epoxide emissions after the extended cookout. This notification and emission estimate shall be submitted within a Precompliance Report as specified in 40 C.F.R. §63.1439(e)(4), or in the operating permit application, as allowed in 40 C.F.R. §63.1439(e)(8).

[45CSR34 and 40 C.F.R. §63.1425(b)(2), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.15. It is important to note the exemption given to processes which employ extended cookout (ECO) from having to determine uncontrolled organic HAP emissions, which is stated as follows:

(d) *Determination of uncontrolled organic HAP emissions.* For each process vent at a PMPU that is complying with the process vent control requirements in §63.1425(b)(2)(ii) using a combustion, recovery, or recapture device, the owner or operator shall determine the uncontrolled organic HAP emissions in accordance with the provisions of this paragraph, with the exceptions noted in §63.1426(d)(1) of this section.

(1) *Exemptions.* The owner or operator is not required to determine uncontrolled organic HAP emissions for process vents in a PMPU if the conditions in §63.1426(d)(1)(i) are met.

(i) For PMPUs where all process vents subject to the epoxide emission reduction requirements of §63.1425(b) are controlled at all times using a combustion, recovery, or recapture device, or extended cookout, the owner or operator is not required to determine uncontrolled epoxide emissions.

[45CSR34 and 40 C.F.R. §63.1426(d)(1)(i), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.16. Determination of organic HAP emission reduction for a PMPU shall be determined in accordance with 63.1426(e) as follows:

e) Determination of organic HAP emission reduction for a PMPU.

(2) The control efficiency, R_i, shall be assigned as specified below in paragraph (e)(2)(iii) of this section.

(iii) If epoxide emissions from the process vent are controlled using extended cookout, the control efficiency shall be the efficiency determined in accordance with §**63**.1427(e) and thus 8.1.22 of this Title V permit.

[45CSR34 and 40 C.F.R. §63.1426(e)(2)(iii), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.17. (f) *Design evaluation.* A design evaluation is required for those control techniques that receive less than 10 tons per year (9.1 megagrams per year) of uncontrolled organic HAP emissions from one or more PMPU, if the owner or operator has chosen not to conduct a performance test for those control techniques in accordance with paragraph §63.1426(b)(6).

(2) For ECO, the design evaluation shall establish the minimum duration (time) of the ECO, the maximum pressure at the end of the ECO, or the maximum epoxide concentration in the reactor liquid at the end of the ECO for each product class.

[45CSR34 and 40 C.F.R. §63.1426(f)(2), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.18. The remainder of the process vent requirements specific to ECO are listed within 63.1427 as follows:

(a) *Applicability of extended cookout requirements.* Owners or operators of affected sources that produce polyether polyols using epoxides, and that are using ECO as a control technique to reduce epoxide

emissions in order to comply with percent emission reduction requirements in §**63**.1425(b)(1)(i) or (b)(2)(ii) shall comply with the provisions of this section.

(1) For each product class, the owner or operator shall determine the batch cycle percent epoxide emission reduction for the most difficult to control product in the product class, where the most difficult to control product is the polyether polyol that is manufactured with the slowest pressure decay curve.

(2) The owner or operator may determine the batch cycle percent epoxide emission reduction by directly measuring the concentration of the unreacted epoxide, or by using process knowledge, reaction kinetics, and engineering knowledge, in accordance with §63.1427 (a)(2)(i).

(i) If the owner or operator elects to use any method other than direct measurement, the epoxide concentration shall be determined by direct measurement for one product from each product class and compared with the epoxide concentration determined using the selected estimation method, with the exception noted in §63.1427 (a)(2)(ii). If the difference between the directly determined epoxide concentration and the calculated epoxide concentration is less than 25 percent, then the selected estimation method will be considered to be an acceptable alternative to direct measurement for that class.

(ii) If uncontrolled epoxide emissions prior to the end of the ECO are less than 10 tons per year (9.1 megagrams per year), the owner or operator is not required to perform the direct measurement required in paragraph (a)(2)(i) of this section. Uncontrolled epoxide emissions prior to the end of the ECO shall be determined by the procedures in §63.1427(d)(1).

(d) *Determine emissions at the end of the ECO.* The owner or operator shall calculate the epoxide emissions at the end of the ECO, where the end of the ECO is defined as the point immediately before the time when the reactor contents are emptied and/or the reactor vapor space purged to the atmosphere or to a combustion, recovery, or recapture device.

(d)(1) The epoxide emissions at the end of the ECO shall be determined using Equation 9

$E_{e,E} = (C_{liq,f})(V_{liq,f})(D_{liq,f}) + (C_{vap,f})(V_{vap,f})(D_{vap,f})$ [Equation 9]

Where:

$E_{e,E}$ = Epoxide emissions at the end of the ECO, kg.

$C_{liq,f}$ = Concentration of epoxide in the reactor liquid at the end of the ECO, determined in accordance with §63.1427 (f)(1) of this section, weight percent.

$V_{liq,f}$ = Volume of reactor liquid at the end of the ECO, liters.

$D_{liq,f}$ = Density of reactor liquid, kg/liter.

$C_{vap,f}$ = Concentration of epoxide in the reactor vapor space as it exits the reactor at the end of the ECO, determined in accordance with §63.1427 (f)(2), weight percent.

$V_{vap,f}$ = Volume of the reactor vapor space as it exits the reactor at the end of the ECO, liters.

$D_{vap,f}$ = Vapor density of reactor vapor space at the end of the ECO, kg/liter.

[45CSR34 and 40 C.F.R. §63.1427(a)(1), (a)(2)(i), (a)(2)(ii), (d)(1), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.19. (b) *Define the end of epoxide feed.* The owner or operator shall define the end of the epoxide feed in accordance with paragraph (b)(1) or (2) of this section.

(1) The owner or operator shall determine the concentration of epoxide in the reactor liquid at the point in time when all epoxide has been added to the reactor and prior to any venting. This concentration shall be determined in accordance with the procedures in §63.1427(f)(1)(i).

[45CSR34 and 40 C.F.R. §63.1427(b)(1), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.20. c) *Define the onset of the ECO.* The owner or operator shall calculate the uncontrolled emissions for the batch cycle by calculating the epoxide emissions, if any, prior to the onset of the ECO, plus the epoxide emissions at the onset of the ECO. The onset of the ECO is defined as the point in time when the combined unreacted epoxide concentration in the reactor liquid is equal to 25 percent of the concentration of epoxides at the end of the epoxide feed, which was determined in accordance with §63.1427(b).

(1) The uncontrolled epoxide emissions for the batch cycle shall be determined using Equation 8.

$E_{e,u} = (C_{liq,i})(V_{liq,i})(D_{liq,i}) + (C_{vap,i})(V_{vap,i})(D_{vap,i}) + (E_{epox,bef})$ [Equation 8]

Where:
$E_{e,u}$ = Uncontrolled epoxide emissions at the onset of the ECO, kilograms per (kg/)batch.
$C_{liq,i}$ = Concentration of epoxide in the reactor liquid at the onset of the ECO, which is equal to 25 percent of the concentration of epoxide at the end of the epoxide feed, determined in accordance with paragraph (b)(1) of this section, weight percent. Note: (f)(1) of this section is referenced by (b)(1) for determining epoxide concentration in the reactor liquid.
$V_{liq,i}$ = Volume of reactor liquid at the onset of the ECO, liters.
$D_{liq,i}$ = Density of reactor liquid, kg/liter.
$C_{vap,i}$ = Concentration of epoxide in the reactor vapor space at the onset of the ECO, determined in accordance with paragraph (f)(2) of this section, weight percent.
$V_{vap,i}$ = Volume of the reactor vapor space at the onset of the ECO, liters.
$D_{vap,i}$ = Vapor density of reactor vapor space at the onset of the ECO, kg/liter.
$E_{epox,bef}$ = Epoxide emissions that occur prior to the onset of the ECO, determined in accordance with the provisions of §**63**.1426(d), kilograms.

[45CSR34 and 40 C.F.R. §63.1427(c)(1), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.21. (d) *Determine emissions at the end of the ECO.* The owner or operator shall calculate the epoxide emissions at the end of the ECO, where the end of the ECO is defined as the point immediately before the time when the reactor contents are emptied and/or the reactor vapor space purged to the atmosphere or to a combustion, recovery, or recapture device.

(1) The epoxide emissions at the end of the ECO shall be determined using Equation 9.

$E_{e,E} = (C_{liq,f})(V_{liq,f})(D_{liq,f}) + (C_{vap,f})(V_{vap,f})(D_{vap,f})$ [Equation 9]

Where:
$E_{e,E}$ = Epoxide emissions at the end of the ECO, kg.
$C_{liq,f}$ = Concentration of epoxide in the reactor liquid at the end of the ECO, determined in accordance with paragraph (f)(1) of this section, weight percent.
$V_{liq,f}$ = Volume of reactor liquid at the end of the ECO, liters.
$D_{liq,f}$ = Density of reactor liquid, kg/liter.
$C_{vap,f}$ = Concentration of epoxide in the reactor vapor space as it exits the reactor at the end of the ECO, determined in accordance with paragraph (f)(2) of this section, weight percent.
$V_{vap,f}$ = Volume of the reactor vapor space as it exits the reactor at the end of the ECO, liters.
$D_{vap,f}$ = Vapor density of reactor vapor space at the end of the ECO, kg/liter.

[45CSR34 and 40 C.F.R. §63.1427(d)(1), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.22. e) *Determine percent epoxide emission reduction.* (1) The owner or operator shall determine the percent epoxide emission reduction for the batch cycle using Equation 10.

$$R_{batchcycle} = \left[\frac{E_{e,u} - \left(E_{e,E}\right)\left(1 - \frac{R_{addon,i}}{100}\right) - \left(E_{e,o}\right)\left(1 - \frac{R_{addon,j}}{100}\right)}{E_{e,u}} \right] * 100 \qquad [Equation\ 10]$$

Where:
$R_{batchcycle}$ = Epoxide emission reduction for the batch cycle, percent.
$E_{e,E}$ = Epoxide emissions at the end of the ECO determined in accordance with paragraph (d)(1) of this section, kilograms.
$R_{addon,i}$ = Control efficiency of combustion, recovery, or recapture device that is used to control epoxide emissions after the ECO, determined in accordance with the provisions of §63.1426(c), percent.
$E_{e,o}$ = Epoxide emissions that occur before the end of the ECO, determined in accordance with the provisions of §63.1426(d), kilograms.
$R_{addon,j}$ = Control efficiency of combustion, recovery, or recapture device that is used to control epoxide emissions that occur before the end of the ECO, determined in accordance with the provisions of §**63**.1426(c), percent.
$E_{e,u}$ = Uncontrolled epoxide emissions determined in accordance with paragraph (c)(1) of this section, kilograms.

[45CSR34 and 40 C.F.R. §63.1427(e)(1), Emission Point IDs (E-600, E-3192, E-3101, E-601, E-3201, E-620, E-3301, E-636, E-637, E-638, E-5216, E-5416)]

8.1.23. (f) *Determination of epoxide concentrations- liquid phase.* The owner or operator shall determine the epoxide concentrations in accordance with the procedures in this paragraph.

(1) The owner or operator shall determine the concentration of epoxide in the reactor liquid using either direct measurement in accordance with paragraph §63.1427(f)(1)(i) of this section, or reaction kinetics in accordance with paragraph §63.1427(f)(1)(ii) of this section. An owner or operator may also request to use an alternative methodology in accordance with paragraph §63.1427(f)(1)(iii) of this section.

(i) The owner or operator shall submit a standard operating procedure for obtaining the liquid sample, along with the test method used to determine the epoxide concentration. This information shall be submitted in the Precompliance Report.

(ii) Determine the epoxide concentration in the reactor liquid using Equation 12.

$C_{liq,f} = C_{liq,i}\, e^{-kt}$ [Equation 12]

$C_{liq,f}$ = Concentration of epoxide in the reactor liquid at the end of the time period, weight percent.
$C_{liq,i}$ = Concentration of epoxide in the reactor liquid at the beginning of the time period, weight percent.
k = Reaction rate constant, 1/hr.
t = Time, hours.
Note: This equation assumes a first order reaction with respect to epoxide concentration, where:

(iii) If the owner/operator deems that the methods listed in paragraphs §63.1427(f)(1)(i) and (ii) of this section are not appropriate for the reaction system for a PMPU, then the owner/operator may submit a request for the use of an alternative method.

[45CSR34 and 40 C.F.R. §63.1427(f)(1)(i), (ii), and (iii), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.1.24. (f)(2) *Determination of epoxide concentrations - vapor phase.* The owner or operator shall determine the concentration of epoxide in the reactor vapor space using either direct measurement in accordance with paragraph §63.1427(f)(2)(i) of this section, or by engineering estimation in accordance with paragraph §63.1427(f)(2)(ii) of this section. An owner or operator may also request to use an alternative methodology in accordance with paragraph §63.1427(f)(2)(iii).

ii) Determine the epoxide concentration in the vapor space using Raoult's Law or another appropriate phase equilibrium equation and the liquid epoxide concentration, determined in accordance with §63.1427 (f)(1) of this section.

[45CSR34 and 40 C.F.R. §63.1427(f)(2)(ii), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.1.25. *Determination of pressure.* The owner or operator shall determine the total pressure of the system using standard pressure measurement devices calibrated according to the manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.
[45CSR34 and 40 C.F.R. §63.1427(g), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.1.26. (h) *Determination if pressure decay curves are similar.* The owner or operator shall determine the pressure decay curve as defined in §63.1423. Products with similar pressure decay curves constitute a product class. To determine if two pressure decay curves are similar when the pressure decay curves for products have different starting and finishing pressures, the owner or operator shall determine the time when the pressure has fallen to half its total pressure by using Equation 13:

$$Time\ (P_{half}1) - Time\ (P_{half}2) < 20\%\ T_{AVG} \qquad [Equation\ 13]$$

Where:
$P_{half}1$ = Half the total pressure of the epoxide for product 1.
Time ($P_{half}1$) = Time when the pressure has fallen to half its total pressure for product 1.
$P_{half}2$ = Half the total pressure of the epoxide for product 2.
Time ($P_{half}2$) = Time when the pressure has fallen to half its total pressure for product 2.
T_{AVG} = The average time to cookout to the point where the epoxide pressure is 25 percent of the epoxide pressure at the end of the feed step for products 1 and 2.

[45CSR34 and 40 C.F.R. §63.1427(h), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

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

[45CSR13 - R13-2561, Condition 8.2.1, Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

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.
[45CSR13 - R13-2561, Condition 8.2.2, Emission Unit IDs (C-3404, C-3406, C-3504, C-3506, C-3604, C-3606, C-5504, C-5506, C-5604, C-5606, C-5704, C-5706, C-5804, C-5806)]

8.2.3. (i) *ECO monitoring requirements.* The owner or operator using ECO shall comply with the monitoring requirements of this paragraph to demonstrate continuous compliance with this subpart. Paragraphs (i)(1) through (3) of this section address monitoring of the extended cookout.

(1) To comply with the provisions of this section, the owner or operator <u>shall monitor one</u> of the parameters listed in paragraphs (i)(1)(i) through (iii) of this section, or may utilize the provision in paragraph (i)(1)(iv) of this section.

(i) Time from the end of the epoxide feed;
(ii) The epoxide partial pressure in the closed reactor;
(iii) Direct measurement of epoxide concentration in the reactor liquid at the end of the ECO, when the reactor liquid is still in the reactor, or after the reactor liquid has been transferred to another vessel; or
(iv) An owner or operator may submit a request to the Administrator to monitor a parameter other than the parameters listed in paragraphs (i)(1)(i) through (iii) of this section, as described in §**63**.1439(f).

(2) During the determination of the percent epoxide emission reduction in paragraphs §63.1427 (b) through (e) of this section, the owner or operator shall establish, as a level that shall be maintained during periods of operation, one of the parameters in paragraphs (i)(2)(i) through (iii) of this section, or may utilize the procedure in paragraph (i)(2)(iv) of this section, for each product class.

(i) The time from the end of the epoxide feed to the end of the ECO;
(ii) The reactor epoxide partial pressure at the end of the ECO;
(iii) The epoxide concentration in the reactor liquid at the end of the ECO, when the reactor liquid is still in the reactor, or after the reactor liquid has been transferred to another vessel; or
(iv) An owner or operator may submit a request to the Administrator to monitor a parameter other than the parameters listed in paragraphs (i)(2)(i) through (iii) of this section, as described in §**63**.1439(f).

(3) For each batch cycle where ECO is used to reduce epoxide emissions, the owner or operator shall record the value of the monitored parameter at the end of the ECO. This parameter is then compared with the level established in accordance with paragraph §63.1427(i)(2) of this section to determine if an excursion has occurred. An ECO excursion is defined as one of the situations described in §63.1427 (i)(3)(i) through (v) of this section.

(i) When the time from the end of the epoxide feed to the end of the ECO is less than the time established in paragraph (i)(2)(i) of this section;
(ii) When the reactor epoxide partial pressure at the end of the ECO is greater than the partial pressure established in paragraph (i)(2)(ii) of this section;
(iii) When the epoxide concentration in the reactor liquid at the end of the ECO is greater than the epoxide concentration established in paragraph (i)(2)(iii) of this section;
(iv) When the parameter is not measured and recorded at the end of the ECO; or
(v) When the alternative monitoring parameter is outside the range established under §**63**.1439(f) for proper operation of the ECO as a control technique.

[45CSR13 - R13-2561, Condition 8.2.3., 45CSR34 and 40 C.F.R. §63.1427(i), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.3. Testing Requirements

8.3.1. Reserved.

8.4. Recordkeeping Requirements

8.4.1. **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.
[45CSR13 - R13-2561, Condition 8.4.2]

8.4.2. **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.

[45CSR13 - R13-2561, Condition 8.4.3]

8.4.3. 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, the hours of operation associated with the flexible polyol production units 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.
[45CSR§30-5.1.c., 45CSR13 - R13-2561, Condition 8.4.4, Emission Unit IDs (C-3404, C-3406, C-3504, C-3506, C-3604, C-3606, C-5504, C-5506, C-5604, C-5606, C-5704, C-5706, C-5804, C-5806)]

8.4.4. 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.
[45CSR13 - R13-2561, Condition 8.4.5, Emission Unit IDs (C-3404, C-3406, C-3504, C-3506, C-3604, C-3606, C-5504, C-5506, C-5604, C-5606, C-5704, C-5706, C-5804, C-5806) and Emission Point IDs (E-5804, E-642, E-641, E-640, E-643, E-644, E-645, E-5806, E-662, E-663, E-664)]

8.4.5. (j) ECO *Recordkeeping requirements.*
(1) The owner or operator shall maintain the records specified in §63.1427(j)(1)(i) and (ii) of this section, for each product class. The owner or operator shall also maintain the records related to the initial determination of the percent epoxide emission reduction specified in §63.1427(j)(1)(iii) through (x), as applicable, for each product class.

(i) Operating conditions of the product class, including:

(A) Pressure decay curve;
(B) Minimum reaction temperature;
(C) Number of reactive hydrogens in the raw material;
(D) Minimum catalyst concentration;
(E) Ratio of EO/PO at the end of the epoxide feed; and
(F) Reaction conditions, including the size of the reactor or batch.

(ii) A listing of all products in the product class, along with the information specified in paragraphs §63.1427(j)(1)(i)(A) through (F) of this section, for each product.

(iii) The concentration of epoxide at the end of the epoxide feed, determined in accordance with paragraph §63.1427 (b)(1) of this section.

(iv) The concentration of epoxide at the onset of the ECO, determined in accordance with §63.1427 (c) of this section.

(v) The uncontrolled epoxide emissions at the onset of the ECO, determined in accordance with paragraph (c)(1) of this section. The records shall also include all the background data, measurements, and assumptions used to calculate the uncontrolled epoxide emissions.

(vi) The epoxide emissions at the end of the ECO, determined in accordance with §63.1427 (d)(1) of this section. The records shall also include all the background data, measurements, and assumptions used to calculate the epoxide emissions.

(vii) The percent epoxide reduction for the batch cycle, determined in accordance with §63.1427 (e)(1) of this section. The records shall also include all the background data, measurements, and assumptions used to calculate the percent reduction.

(viii) The parameter level, established in accordance with §63.1427 (i)(3) of this section.

(ix) If epoxide emissions occur before the end of the ECO, the owner or operator shall maintain records of the time and duration of all such emission episodes that occur during the initial demonstration of batch cycle efficiency.

(2) The owner or operator shall maintain the records specified in paragraphs §63.1427 (j)(2)(i) through (iv) of this section.

(i) For each batch cycle, the product being produced and the product class to which it belongs.

(ii) For each batch cycle, the owner or operator shall record the value of the parameter monitored in accordance with §63.1427 (i)(3).

(iii) If a combustion, recovery, or recapture device is used to reduce emission in conjunction with ECO, the owner or operator shall record the information specified in §63.1430(d) and comply with the monitoring provisions in §63.1429.

(iv) [Reserved]

(v) If epoxide emissions occur before the end of the ECO, the owner or operator shall maintain records of the time and duration of all such emission episodes.

[45CSR13 - R13-2561, Condition 8.4.6., 45CSR34 and 40 C.F.R. §63.1427(j), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.5. Reporting Requirements

8.5.1. (k) *Reporting requirements.* The owner or operator shall comply with the reporting requirements in this paragraph.

(1) The information specified in paragraphs §63.1427 (k)(1)(i) through (ii) of this section shall be provided in the Precompliance Report, as specified by 8.6.1 of this Title V Permit as well as §63.1439(e)(4).

(i) A standard operating procedure for obtaining the reactor liquid sample and a method that will be used to determine the epoxide concentration in the liquid, in accordance with paragraph §63.1427 (f)(1)(i) of this section.

(ii) A request to monitor a parameter other than those specified in paragraph §63.1427 (i)(1)(i), (ii), or (iii) of this section, as provided for in paragraph §63.1427 (i)(1)(iv) of this section.

(2) The information specified in paragraphs §63.1427 (k)(2)(i) through (iv) of this section shall be provided in the Notification of Compliance Status, as specified by 8.6.2 of this Title V Permit as well as §**63**.1439(e)(5).

(i) For each product class, the information specified in paragraphs §63.1427 (k)(2)(i)(A) through (C) of this section.

(A) The operating conditions of this product class, as specified in paragraph §63.1427 (j)(1)(i) of this section.

(B) A list of all products in the product class.

(C) The percent epoxide emission reduction, determined in accordance with §63.1427 (e).

(ii) The parameter for each product class, as determined in accordance with §63.1427 (i)(2) .

(iii) If a combustion, recovery, or recapture device is used in addition to ECO to reduce emissions, the information specified in §**63**.1430(g)(1).

(iv) If epoxide emissions occur before the end of the ECO, a listing of the time and duration of all such emission episodes that occur during the initial demonstration of batch cycle efficiency.

(3) The information specified in paragraphs §63.1427 (k)(3)(i) through (iii) of this section shall be provided in the Periodic Report, as specified in §**63**.1439(e)(6).

(i) Reports of each batch cycle for which an ECO excursion occurred, as defined in paragraph §63.1427 (i)(3).

(ii) Notification of each batch cycle when the time and duration of epoxide emissions before the end of the ECO, recorded in accordance with §63.1427(j)(2)(iv) of this section, exceed the time and duration of the emission episodes during the initial epoxide emission percentage reduction determination, as recorded in §63.1427(j)(1)(viii).

(iii) If a combustion, recovery, or recapture device is used to reduce emissions, the information specified in §**63**.1430(h).

[45CSR13 - R13-2561, Condition 8.5.1., 45CSR34 and 40 C.F.R. §63.1427(k), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.5.2. (l) *New polyether polyol products.* If an owner or operator wishes to utilize ECO as a control option for a polyether polyol not previously assigned to a product class and reported to the Agency in accordance with either paragraph (k)(2)(i)(B), (l)(1)(ii), or (l)(2)(iii) of this section, the owner or operator shall comply with the provisions of paragraph (l)(1) or (2) of this section.

(1) If the operating conditions of the new polyether polyol are consistent with the operating conditions for an existing product class, the owner or operator shall comply with the requirements in paragraphs (l)(1)(i) and (ii) of this section.

(i) The owner or operator shall update the list of products for the product class required by paragraph (j)(1)(ii) of this section, and shall record the information in paragraphs (j)(1)(i)(A) through (F) of this section for the new product.

(ii) Within 180 days after the production of the new polyether polyol, the owner or operator shall submit a report updating the product list previously submitted for the product class. This information may be submitted along with the next Periodic Report.

(2) If the operating conditions of the new polyether polyol do not conform with the operating characteristics of an existing product class, the owner or operator shall establish a new product class and shall comply with provisions of paragraphs (l)(2)(i) through (iii) of this section.

(i) The owner or operator shall establish the batch cycle percent epoxide emission reduction in accordance with paragraphs (b) through (g) of this section for the product class.

(ii) The owner or operator shall establish the records specified in paragraph (j)(1) of this section for the product class.

(iii) Within 180 days of the production of the new polyether polyol, the owner or operator shall submit a report containing the information specified in paragraphs (k)(2)(i) and (ii) of this section.

[45CSR13 - R13-2561, Condition 8.5.1., 45CSR34 and 40 C.F.R. §63.1427(l), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.5.3. (m) *Polyether polyol product changes.* If a change in operation, as defined in paragraph (m)(1) of this section, occurs for a polyether polyol that has been assigned to a product class and reported to the Agency in accordance with paragraph (k)(2)(i)(B), (l)(1)(ii), or (l)(2)(iii) of this section, the owner or operator shall comply with the provisions of paragraphs (m)(2) through (3) of this section.

(1) A change in operation for a polyether polyol is defined as a change in any one of the parameters listed in paragraphs (m)(1)(i) through (ix) of this section.

(i) A significant change in reaction kinetics;
(ii) Use of a different oxide reactant;
(iii) Use of a different EO/PO ratio;
(iv) A lower reaction temperature;
(v) A lower catalyst feed on a mole/mole fraction OH basis;
(vi) A shorter cookout;
(vii) A lower reactor pressure;
(viii) A different type of reaction, (e.g., a self-catalyzed vs. catalyzed reaction); or
(ix) A marked change in reaction conditions (e.g., a markedly different liquid level).

(2) If the operating conditions of the product after the change in operation remain within the operation conditions of the product class to which the product was assigned, the owner or operator shall update the records specified in paragraphs (j)(1)(i)(A) through (F) of this section for the product.

(3) If the operating conditions of the product after the change in operation are outside of the operating conditions of the product class to which the product was assigned, the owner or operator shall comply with the requirements in paragraph (m)(3)(i) or (ii) of this section, as appropriate.

(i) If the new operating conditions of the polyether polyol are consistent with the operating conditions for another existing product class, the owner or operator shall comply with the requirements in paragraphs (m)(3)(i)(A) and (B) of this section.

(A) The owner or operator shall update the list of products for the product class that the product is leaving, and for the product class that the product is entering, and shall record the new information in paragraphs (j)(1)(i)(A) through (F) of this section for the product.

(B) Within 180 days after the change in operating conditions for the polyether polyol product, the owner or operator shall submit a report updating the product lists previously submitted for the product class. This information may be submitted along with the next Periodic Report.

(ii) If the new operating conditions of the polyether polyol product do not conform with the operating characteristics of an existing product class, the owner or operator shall establish a new product class and shall comply with provisions of paragraphs (m)(3)(ii)(A) through (C) of this section.

(A) The owner or operator shall establish the batch cycle percent epoxide emission reduction in accordance with paragraphs (b) through (g) of this section for the product class.

(B) The owner or operator shall establish the records specified in paragraph (j)(1) of this section for the product class.

(C) Within 180 days of the change in operating conditions for the polyether polyol, the owner or operator shall submit a report containing the information specified in paragraphs (k)(2)(i) and (ii) of this section.

[45CSR13 - R13-2561, Condition 8.5.1., 45CSR34 and 40 C.F.R. §63.1427(m), Emission Unit IDs (C-5201, C-5301, C-5401, C-3101, C-3201, C-3301)]

8.6. Compliance Plan

8.6.1. Reserved.

9.0 Volatile Organic Compound (VOC) Sources and 45CSR21 Standards, IDs: Listed in Attachment A

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. **[45CSR13 - R13-2561, Condition 9.1.1]**

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 with 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, with the exception of any VOC source exhibiting a MTE greater than 6 lb/hr that is not controlled by the federal programs referenced herein.

[45CSR21, 45CSR13 - R13-2561, Condition 9.1.2]

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.
[45CSR13 - R13-2561, Condition 9.1.3]

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.
[45CSR13 - R13-2561, Condition 9.2.1]

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.
[45CSR13 - R13-2561, Condition 9.3.1]

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.

[45CSR13 - R13-2561, Condition 9.4.1]

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.
[45CSR13 - R13-2561, Condition 9.4.2]

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.

[45CSR13 - R13-2561, Condition 9.4.3]

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.
[45CSR13 - R13-2561, Condition 9.4.4]

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 include 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.
[45CSR13 - R13-2561, Condition 9.5.1]

9.6. Compliance Plan

9.6.1. Reserved.

10.0 Toxic Air Pollutant Sources and Incorporation of 45CSR27 Standards, IDs Listed in Attachment 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.

[45CSR13 - R13-2561, Condition 10.1.1]

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. However, 45CSR27 reserves the right to establish TAP requirements resulting from localized air quality issues.
[45CSR27, 45CSR13 - R13-2561, Condition 10.1.2]

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.
[45CSR13 - R13-2561, Condition 10.1.3]

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.
[45CSR13 - R13-2561, Condition 10.2.1]

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.
[45CSR13 - R13-2561, Condition 10.2.2]

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.
[45CSR13 - R13-2561, Condition 10.3.1]

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.

[45CSR13 - R13-2561, Condition 10.4.1]

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.
[45CSR13 - R13-2561, Condition 10.4.2]

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.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

[45CSR13 - R13-2561, Condition 10.4.3]

10.4.4. The permittee shall maintain records of the results of all monitoring and inspections, emission control measures applied and the nature, timing, and results of repair efforts conducted in accordance to 45CSR§27-10 and set forth in the affected 45CSR13 permits as identified in Attachment A of this permit.
[45CSR13 - R13-2561, Condition 10.4.4]

10.5. Reporting Requirements

10.5.1. 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

[45CSR13 - R13-2561, Condition 10.5.1]

10.6. Compliance Plan

10.6.1. Reserved.

11.0 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.

Table 11.1.1.

Pollutant	Annual Emissions[1] (TPY)
Acetaldehyde	0.62
Acrylic Acid	0.01
Acrylonitrile	0.43
Benzene	0.02
Ethylbenzene	0.02
Ethylene Oxide	0.52
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.

[45CSR13 - R13-2561, Condition 11.1.1.]

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 7.91 tons per year.
[45CSR13 - R13-2561, Condition 11.1.2.]

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 11.0 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.
[45CSR13 - R13-2561, Condition 11.1.3.]

11.2 Monitoring Requirements

11.2.1. Reserved.

11.3. Testing Requirements

11.3.1. 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.

[45CSR13 - R13-2561, Condition 11.4.1.]

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 11.0 of this permit, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
[45CSR13 - R13-2561, Condition 11.4.2.]

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 11.0 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.

[45CSR13 - R13-2561, Condition 11.4.3.]

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.
[45CSR13 - R13-2561, Condition 11.4.4.]

11.5. Reporting Requirements

11.5.1. Reserved.

11.6. Compliance Plan

11.6.1. Reserved.

Attachment A
45CSR21 and 45CSR27 Source List

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-600 E-3101 E-3192	C-3101	No. 1 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-601 E-3201 E-3192	C-3201	No. 2 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-620 E-3301	T-620	No. 3 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-636	C-5201	No. 7 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-637	C-5301	No. 8 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-638	C-5401	No. 9 Reactor System	Extended Cookout	VOC/HAP/TAP	R13-2561A	Yes	Yes	No	Yes	MACT Subpart PPP
E-647	C-5201	Stabilizer Reactor System	C-5340		None	Yes	No	No	No	C-5340 demolished
E-655		PMPO #1	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-651)
E-655		PMPO #2	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-653)
E-655		PMPO #3	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	Yes	Yes	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-652/E-654)
E-655		PMPO #4	Y-2124 (S-9)	VOC/HAP/TAP	R13-1182E	No	No	No	Yes	Normal vent mode is to Thermal Oxidizer, but can vent to atm (E-658)
E-5550	T-5550	Tank 7 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No	No	
E-5650	T-5650	Tank 8 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No	No	
E-5750	T-5750	Tank 9 Surge		VOC/HAP/TAP	R13-2561A	Yes	No	No	No	
E-655	T-626	Tank 626 (Acrylonitrile Tank)	Y-2124 (S-9)	HAP/TAP	R13-2429A	Yes	Yes	No	No	Vents to Thermal Oxidizer
E-686	T-686	Tank 686 (PFS Storage)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	Yes	No	No	No	Vents to Thermal Oxidizer

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45CSR21 and 45CSR27 Source List

Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-655	T-663	Tank 663	Y-2124 (S-9)		R13-2429A	Yes	Yes	No	No	Removed from HAP/TAP service
N/A	C-102	Tank North Sphere		HAP/TAP	R13-2561A	Yes	Yes	No	No	Exempted by 40 CFR 63.1423
N/A	C-101	Tank South Sphere		HAP/TAP	R13-2561A	Yes	Yes	No	No	Exempted by 40 CFR 63.1423
N/A	T-9016	Tank 9016 (PO Storage - NC)		HAP/TAP	R13-2561A	Yes	Yes	No	No	Exempted by 40 CFR 63.1423
N/A	T-9017	Tank 9017 (PO Storage - NC)		HAP/TAP	R13-2561A	Yes	Yes	No	No	Exempted by 40 CFR 63.1423
N/A	T-9018	Tank 9018		Removed From Service		Yes	Yes	No	No	Lyondell Chemical is the current owner.
E-662	C-3404	No. 1 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
	C-3406	No. 1 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-663	C-3504	No. 2 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
	C-3506	No. 2 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-664	C-3604	No. 5 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
	C-3606	No. 5 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-608	H-3477	No. 1 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	No	Yes	Deminimus TAP's
E-609	H-3577	No. 2 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	No	Yes	Deminimus TAP's
E-610	H-3677	No. 5 Refining System Vacuum Jets		VOC/HAP/TAP	R13-2561A	No	No	No	Yes	Deminimus TAP's
E-640	C-5504	No. 7 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	Yes	No	Deminimus TAP's
E-643	C-5506	No. 7 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-641	C-5604	No. 8 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	Yes	No	Deminimus TAP's
E-644	C-5606	No. 8 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-642	C-5704	No. 9 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	Yes	No	Deminimus TAP's
E-645	C-5706	No. 9 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's
E-5804	C-5804	No. 10 Refining System		VOC/HAP/TAP	R13-2561A	No	Yes	Yes	No	Deminimus TAP's
E-5806	C-5806	No. 10 Refining System		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus TAP's

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Emission Point Identification	Source Identification	Source Description	Control Device Identification	Service (VOC/HAP/TAP)	Original 45CSR13 Permit	Included in original R21 RACM Plan	Currently subject to:			Comments/Other Applicable Regulations (MACT/BACT/NSPS/NES HAP/etc)
							45CSR21	RACT	45CSR27	
E-658	H-2443	PMPO #4 Vacuum Jets			R13-1182E	No	No	No	Yes	Option to operate while not venting to TO removed. Covered by PMPO requirement now.
E-655	Y-2124	Thermal Oxidizer	S-9	VOC/HAP/TAP	R13-1182E	Yes	Yes	Yes	Yes	
	D-2124A	Scrubber	C-658		R13-1182E	No	No	No	No	Scrubber D-2124A [C-658] removed from service.
E-655	T-631	Tank 631	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	
E-655	T-632	Tank 632 (PFS Storage)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	No	Yes	Yes	Yes	
E-655	T-616	Tank 616 (Wastewater Storage/Decanter)	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	
E-655	T-693	Tank 693 (Waste Monomer Tank)	Y-2124 (S-9)	VOC/HAP/TAP	R13-2429A	No	No	No	Yes	
E-683	T-683	Tank 683 (Styrene)		HAP	R13-2429A	No	No	No	No	Not in acrylonitrile service
E-1463	T-1463	Tank 1463 (Intermediate or Make Tank)		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus HAP/TAP's
E-1464	T-1464	Tank 1464 (Intermediate or Make Tank)		VOC/HAP/TAP	R13-2561A	No	No	No	No	Deminimus HAP/TAP's
E-1458	T-1458	Tank 1458 (#2 ISOP/Polyol)		VOC	R13-1730B	No	No	No	No	No longer contains HAP/TAP's
E-684	T-684	Tank 684 (Preformed Stabilizer)	Y-2124 (S-9)	VOC/HAP/TAP	R13-1730B	No	No	No	No	Vents to Thermal Oxidizer

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