

OPERATING AIR PERMIT

Pursuant to the Regulations of the Arkansas Operating Air Permit Program, Regulation #26:

Permit #: 873-AOP-R2

IS ISSUED TO:

Great Lakes Chemical Corporation – South Plant
Highway 167S, 324 Southfield Cutoff
El Dorado, AR 71730
Union County
CSN: 70-0037

THIS PERMIT AUTHORIZES THE ABOVE REFERENCED PERMITTEE TO INSTALL, OPERATE, AND MAINTAIN THE EQUIPMENT AND EMISSION UNITS DESCRIBED IN THE PERMIT APPLICATION AND ON THE FOLLOWING PAGES. THIS PERMIT IS VALID BETWEEN:

February 24, 2000

and

February 23, 2005

AND IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

Keith A. Michaels

Date Modified

SECTION I: FACILITY INFORMATION

PERMITTEE: Great Lakes Chemical Corporation – South
Plant

CSN: 70-0037

PERMIT NUMBER: 873-AOP-R2

FACILITY ADDRESS: Highway 167S, 324 Southfield Cutoff
El Dorado, AR 71730

COUNTY: Union

CONTACT POSITION: Pete Howard

TELEPHONE NUMBER: (870) 864-1543

REVIEWING ENGINEER: Bryan Leamons

UTM North-South (X): 3663.6

UTM East-West (Y): 530.2

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SECTION II: INTRODUCTION

Great Lakes Chemical Corporation (GLCC) operates a chemical manufacturing facility south of El Dorado. GLCC is subject to regulation under Regulation #18 (Air Code), Regulation #19 (SIP), and Regulation #26 (Title V). GLCC is also subject to the following New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP):

- 40 CFR Part 60 Subpart A – General Provisions
- 40 CFR Part 60 (NSPS) Subpart Dc – Small Steam Generating Units
- 40 CFR Part 60 (NSPS) Subpart Kb – VOL Storage Vessels
- 40 CFR Part 61 Subpart A – General Provisions
- 40 CFR Part 61 (NESHAP) Subpart M – National Emission Standard for Asbestos
- 40 CFR Part 61 (NESHAP) Subpart FF – Benzene Waste Operations
- 40 CFR Part 63 Subpart A – General Provisions
- 40 CFR Part 63 (NESHAP) Subparts F, G, and H – Hazardous Organic NESHAP (HON)

Process Description

This GLCC facility, known as the South Plant, consists of a number of process units. A wide variety of products are manufactured at this plant. These products can be generally classified into one of three categories: bromine, brominated organics, and brominated inorganics.

Summary of Proposed Modifications

The following is a summary of the modifications that are proposed as a part of this Title V permit modification to permit #873-AOP-R1:

- FF-680 Plant Minor Modification (submitted January 2001): GLCC proposed to install a new baghouse (SN-436) to control bagging operation emissions during TPB production.

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The following table is a summary of emissions from the facility. Specific conditions and emissions for each source can be found starting on the page cross referenced in the table.

EMISSION SUMMARY						
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page	
			lb/hr	tpy		
Total Allowable Emissions		PM	18.3	79.2	N/A	
		PM ₁₀	18.3	79.2		
		SO ₂	9.5	40.6		
		VOC	284.5	241.8		
		CO	56.2	142.7		
		NO _x	47.6	208.5		
		Acetone (non-VOC)	8.3	1.0		
		Allyl Chloride (HAP)	0.2	0.5		
		Ammonia (non-VOC)	0.1	0.5		
		BCP	3.4	15.0		
		BEB	0.1	0.5		
		Bromine (Br, Br ₂)	0.8	3.5		
		Bromophenols	0.1	0.4		
		Carbon Tetrachloride (HAP)	0.8	3.6		
		Chloroform (HAP)	0.1	0.5		
		Cl ₂	0.1	0.5		
		DBS	0.2	1.0		
		Ethanol	2.6	11.4		
		Ethylene Dichloride (HAP)	3.5	15.4		
		Freon 22	1.5	6.6		
		Freon 23 (non-VOC)	3.1	13.8		
		HBr	11.0	48.4		

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Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
		HCl (HAP)	5.8	25.4	
		HCFC 143a (non-VOC)	29.0	6.7	
		HCFC 152a (non-VOC)	10.8	2.6	
		HCFC 161	3.3	0.8	
		HF (HAP)	1.3	5.8	
		Hydrazine (HAP)	0.1	0.5	
		H ₂ SO ₄ Mist	0.1	0.6	
		Isopropyl Alcohol	3.2	2.9	
		Methanol	2.0	8.3	
		Methylene Chloride (HAP)	1.9	8.4	
		Phenol (HAP)	0.6	0.2	
		Phthalic Anhydride (HAP)	2.1	0.7	
		PBr ₃	0.1	0.5	
		PCl ₃	0.3	1.3	
		Styrene (HAP)	0.2	0.9	
		TFE	2.6	0.1	
		Toluene (HAP)	51.4	19.1	
		Tribromomethane	0.1	0.4	
		Vinyl Bromide (HAP)	0.1	0.5	
02, 03, 04	Utilities Section	PM	3.2	14.3	18
		PM ₁₀	3.2	14.3	
		SO ₂	0.3	1.0	
		VOC	1.4	5.9	
		CO	26.6	116.7	

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Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
		NO _x	38.5	168.7	
101, 138, 199	Bromine Production Section	Bromine	0.2	0.9	22
		non-VOC FRAP (includes Cl ₂ and H ₂ S)	0.9	3.9	
401, 412, 413, 416 thru 421, 427 thru 431, 433, 434, 436, 499	FF-680 Plant Section	PM	6.0	25.4	26
		PM ₁₀	6.0	25.4	
		SO ₂	0.2	0.2	
		VOC	8.2	29.7	
		CO	2.7	11.8	
		NO _x	2.7	11.8	
		Allyl Chloride (HAP)	0.2	0.5	
		Ammonia (non-VOC)	0.1	0.5	
		Bromine	0.2	1.0	
		Bromophenols	0.1	0.4	
		HBr	0.1	0.5	
		Hydrazine (HAP)	0.1	0.5	
		Isopropyl Alcohol	3.2	2.9	
		Methanol	2.0	8.3	
		non-VOC FRAP (includes Hydrazine)	1.142e-5	0.0001	
		Phenol (HAP)	0.6	0.2	
		Toluene	1.2	4.9	
		Tribromoethane	0.1	0.4	

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Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
		Vinyl Bromide (HAP)	0.1	0.5	
501, 503, 504, 505, 507 thru 510, 599	CD-75 Plant Section	PM	1.0	4.6	35
		PM ₁₀	1.0	4.6	
		VOC	6.9	30.0	
		Bromine	0.1	0.1	
		Ethanol	2.6	11.4	
		Ethylene Dichloride (HAP)	3.5	15.4	
604, 605, 606, 608 thru 611, and 699	PHT-4 Plant Section	PM	2.7	11.7	40
		PM ₁₀	2.7	11.7	
		SO ₂	8.6	37.8	
		VOC	52.1	14.0	
		Br ₂	0.2	1.0	
		H ₂ SO ₄ Mist	0.2	0.6	
		Phthalic Anhydride (HAP)	2.1	0.7	
		Toluene	49.3	10.2	
		non-VOC FRAP	0.6	2.6	
702, 703, 704, 706, 709, 711, 799	FCU North Plant Section	VOC	9.3	40.4	47
		CO	2.0	8.8	
		HF (HAP)	1.2	5.3	
		HCl (HAP)	1.3	5.8	
		Freon 23 (non-VOC)	3.1	13.8	
		Methylene Chloride (HAP)	0.1	0.5	
		Chloroform (HAP)	0.1	0.5	

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Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
		non-VOC FRAP (includes HF, Methylene Chloride, Freon 23)	1.3	5.5	
802, 803, 807, 808, 809, 817, 818, and 899	FCU South Plant Section	PM	0.2	1.0	53
		PM ₁₀	0.2	1.0	
		VOC	169.0	49.9	
		CO	24.1	1.7	
		NO _x	0.2	1.0	
		Carbon Tetrachloride (HAP)	0.4	1.8	
		HCl	0.7	3.2	
		Methylene Chloride	1.8	7.9	
		HBr	0.1	0.5	
		Br	0.1	0.5	
		non-VOC FRAP (includes HF, HCl, and Methylene Chloride)	1.142e-5	0.0001	
901, 902, 904, 908, 910, 916, 999	DBS Plant Section	VOC	5.3	23.2	62
		BCP	3.4	15.0	
		HBr	1.3	5.7	
		HCl (HAP)	0.6	2.6	
		PCl ₃	0.3	1.3	
		PBr ₃	0.1	0.5	
		Styrene (HAP)	0.2	0.9	
		BEB	0.1	0.5	
		DBS	0.1	0.5	

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Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
1001, 2001, 2099	Bromine Recovery Unit Section	PM	4.0	17.6	69
		PM ₁₀	4.0	17.6	
		SO ₂	0.2	1.0	
		VOC	0.5	2.0	
		CO	0.6	2.8	
		NO _x	5.2	22.8	
		HCl	2.6	11.4	
		HBr	9.5	41.7	
1101, 1104, 1106, 1199	PDBS Plant Section	PM	0.7	3.2	75
		PM ₁₀	0.7	3.2	
		VOC	1.2	5.2	
		Toluene (HAP)	0.9	4.0	
		DBS	0.1	0.5	
1201, 1202, 1204, 1299	Pharmaceutical Chemicals Unit	VOC	6.3	16.1	80
		TFE	2.6	0.1	
		Acetone	8.3	1.0	
		Freon 22	1.5	6.6	
		HCl (HAP)	0.1	0.5	
		Cl ₂ (HAP)	0.1	0.5	
		non-VOC FRAP (includes HCl, Cl ₂ , and Freon 22)	0.8	3.5	

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			lb/hr	tpy	
1301, 1303, 1399	TFP Plant Section	VOC	22.6 *	18.6	84
		Carbon Tetrachloride (HAP)	0.4	1.8	
		HCFC 143a (non-VOC)	28.6 *	5.3	
		HCFC 152a (non-VOC)	10.6 *	2.0	
		HCFC 161	3.2*	0.6	
1401 thru 1405, 1499	CN-1985 Plant Section	PM	0.5	1.4	88
		PM ₁₀	0.5	1.4	
		SO ₂	0.1	0.1	
		VOC	1.7	6.8	
		CO	0.2	0.9	
		NO _x	1.0	4.2	
		HCl (HAP)	0.5	1.9	

* The short term emissions from SN-1303 are based on lb/day.

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SECTION III: PERMIT HISTORY

This facility was originally a joint venture between Michigan Chemical Corporation and Murphy Oil. Operations started in March of 1957. Over the years ownership has changed several times. The last change was in 1981 when Great Lakes Chemical Corporation (GLCC) purchased the plant.

On January 16, 1976, Permit #319-A was issued to Michigan Chemical Corporation. The facility was permitted for controls for reducing H₂S emissions, controls for reducing Br₂ emissions, controls for reducing emissions from existing brominated products area, expansion to produce brominated aromatic ethers, and bromine expansion.

On September 24, 1976, Permit #319-AR-1 was issued to permit Michigan Chemical Corporation to install and operate a sour gas collection and flaring system.

On July 22, 1977, Permit #412-A was issued to Velsicol Chemical Corporation. This permit allowed the facility to install and operate the semi-works plant.

On March 24, 1978, Permit #458-A was issued to permit Velsicol Chemical Corporation to install and operate a facility for the manufacturing of tetrabromophthalic anhydride.

On August 3, 1979, Permit #458-AR-1 was issued to permit Velsicol Chemical Corporation to manufacture PHT-4 Diol.

On May 22, 1981, by Permit #319-AR-2, Great Lakes Chemical Corporation was permitted to take ownership of Velsicol Chemical Corporation.

On November 20, 1981, Permit #319-AR-3 was issued to allow GLCC is install equipment to flake TBP.

On January 28, 1983, Permit #701-A was issued to allow GLCC to install a plant which will manufacture Halon 1301 and Halon 1211.

On November 19, 1984, Permit #746-A was issued to permit GLCC to install an H₂S stripper.

On September 10, 1985, Permit #767-A was issued to allow GLCC to produce sodium bromate.

On January 20, 1988, by Permit #873-A, GLCC was permitted to consolidate all previous permits under one plant wide permit, install a chilsonator, add a halon plant, and construct and operate a TFP facility.

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On December 21, 1988, by Permit #873-AR-1, GLCC was permitted to install and operate the DBS unit.

On March 2, 1989, by Permit #873-AR-2, GLCC was permitted to install and operate a bromine recovery unit.

On November 21, 1989, Permit #873-AR-3 was issued to allow GLCC to install and operate a fluorosulfonic acid (FSA) facility.

On March 8, 1990, Permit #873-AR-4 was issued to allow GLCC to produce DE-79 at the semi-works plant.

On July 19, 1991, Permit #873-AR-5 was issued to allow GLCC to produce DBP, to modify the PHT-4 Plant, and to produce FM-100, FM-200, and BFE.

On June 29, 1992, by Permit #873-AR-6, GLCC was permitted to modify the BRU-II, to produce Geo-Brom at the semi-works plant, to produce PBr_3 and PDBS at the DBS plant, to construct and operate the PDBS plant, and to construct and operate a plant to recover Halon 1301, Halon 1211, and FM-100.

On September 15, 1993, by Permit #873-AR-7, GLCC was permitted to produce FM-200 and Freon 115, to modify the DBS process, and to remove processes no longer in operation.

On December 2, 1993, by Permit #873-AR-8, GLCC was permitted to allow for BCP production at the DBS plant and to allow for the use of PE68 in the chilsonator at the semi-works plant.

On October 12, 1994, Permit #873-AR-9 was issued to allow GLCC to modify the BCP process at the DBS plant.

On December 5, 1994, Permit #873-AR-10 was issued to allow GLCC to modify the production of PDBS and to construct and operate a plant to produce isoflurane.

On June 27, 1995, Permit #873-AR-11 was issued to allow GLCC to produce Freon 32 at the TFP plant.

On August 11, 1995, by Permit #873-AR-12, GLCC was permitted to produce Freon 13 at the Halon 1301 plant.

On November 27, 1995, by Permit #873-AR-13, GLCC was permitted to install a second BRU unit (BRU-III).

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On December 20, 1995, Permit #873-AR-14, GLCC was permitted to add a second PHT-4 train (Train II).

On January 29, 1996, Permit #873-AR-15 was issued to allow GLCC to pelletize ANOX PP18 and ANOX PP20 at the PDBS plant.

On March 12, 1996, Permit #873-AR-16 was issued to allow GLCC to use a reducing agent as an auxiliary fuel in BRU.

On July 11, 1996, Permit #873-AR-17 was issued to allow GLCC to install and operate a new boiler (SN-04).

On February 3, 1997, Permit #873-AR-18, GLCC was permitted to modify the FF-680 plant, the FCU North plant, and the FCU South plant.

On February 24, 2000, Permit #873-AOP-R0 was issued as the initial Title V permit for GLCC under Regulation #26. The following modifications were involved in this permitting action:

- PHT-4 Plant (submitted as a part of the Title V application in January of 1997): GLCC proposed to install an additional scrubber on the PHT-4 II process line. In addition, GLCC proposed to increase the permitted production rates of PHT-4 and PHT-4 Diol.
- FCU-North Plant (submitted as a part of the Title V application in January of 1997): GLCC proposed to increase the permitted emissions rates for SN-704.
- Utilities (submitted as a part of the Title V application in January of 1997): GLCC proposed to increase the permitted emissions rates for Boiler #5 (SN-02).
- FCU-South Plant (submitted as a part of the Title V application in January of 1997): First, GLCC proposed to increase the annual permitted emissions rates for SN-715 and SN-808 to the annual theoretical maximum for each source. Second, GLCC proposed to slightly increase the annual VOC emission rate from SN-802. Third, GLCC pointed out that a previously permitted source had been accidentally removed from the last permit. GLCC requested that the C-301T Vent Condenser (SN-809) be added to the Title V permit.
- Archive Section (submitted as a part of the Title V application in January of 1997): GLCC proposed to delete the archive section contained in Permit #873-AR-18.
- FF-680 Plant Minor Modification (submitted May of 1997): GLCC proposed to produce CN-1753 at the FF-680 Plant. New significant emission source will include a baghouse

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(SN-428) and a silo (SN-429). In addition, SN-418 was inadvertently left out of the last permit and needs to be added.

- FF-680 Plant Minor Modification (submitted November of 1997): Another baghouse (SN-430) will be included in the production of CN-1753. In addition, the dilute hydrazine tank will be the only new insignificant emission source.
- FF-680 Plant Minor Modification (submitted July of 1998): GLCC proposed to produce BE-51 at the FF-680 Plant. The process will use equipment already existing at the FF-680 Plant.
- PHT-4 Plant Minor Modification (submitted May of 1997): GLCC proposed to install a new source, known as the Train II Process SO₂ Scrubber Vent, to control emissions from the PHT-4 Plant. This source will not result in any increase in permitted emissions. The new scrubber (SN-611) will simply share the emissions control load that the present scrubber (SN-601) is now permitted for.
- TFP Plant Minor Modification (submitted October of 1997): GLCC proposed to produce TFP at the new TFP plant. Significant emission sources that will result from the production of TFP include the following: combined process vent (SN-1301), HCl scrubber vent (SN-1302), pressure control valve from distillation column (SN-1303), and fugitive emissions from equipment leaks (SN-1399).
- CN-1985 Plant Minor Modification (submitted December of 1997): GLCC proposed to construct a new unit which will manufacture CN-1985. Significant emission sources that will be present in the new CN-1985 plant include the following: scrubber vent (SN-1401), BPA conveying baghouse (SN-1402), BPA dryer baghouse (SN-1403), phenol storage tank scrubber (SN-1404), hot oil heater (SN-1405), and fugitive emissions from equipment leaks (SN-1499).
- FCU South Plant Minor Modification (submitted October of 1998): GLCC proposed to use a new method of production for FM 200. The process will use equipment that is already existing.
- PHT-4 Plant De Minimis Change (submitted April of 1999): GLCC proposed to add a new insignificant activity – a 4 MMBtu/hr natural gas fired hot oil unit, to increase the annual PHT-4 production for Train II, and to reduce the bromine emissions from SN-601 and SN-611.

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- FF-680 Plant De Minimis Change (submitted May of 1999): GLCC proposed to produce PE-68 at the FF-680 Plant, to add a new insignificant activity – a caustic scrubber tank, to modify an existing source – SN-429, and to add a new source – SN-435.
- TFP Plant De Minimis Change (submitted May of 1999): GLCC proposed to produce FM 200 at the TFP Plant. The emissions from the reactor shall be vented to the TFP Scrubber at the FCU Plant (SN-702). There will be no increase in the emission rate of SN-702.
- PDBS Plant De Minimis Change (submitted September of 1999): GLCC proposed to replace the existing 2,000 cfm blower on the dust collection system (SN-1104) with a 3,500 cfm blower. The proposed PM/PM₁₀ increase was 0.83 tons per year. The total PM/PM₁₀ emissions from this source is 2.63 tons per year.
- Bromine Production (submitted September of 1999): GLCC proposed to replace the two existing bromine towers with a new bromine tower and to replace the existing brine heat exchanger with a new heat exchanger. Neither changes affects permitted emissions.
- FCU-North Plant De Minimis Change (submitted December of 1999): GLCC proposed to add additional process equipment which will result in two production lines instead of one. No new emissions points will be added. There will be no increase in permitted emissions. Two separate products may be produced simultaneously, or a single product may be produced in both trains simultaneously.

On November 2, 2000, Permit #873-AOP-R1 was issued as the initial Title V permit for GLCC under Regulation #26. The following modifications were involved in this permitting action:

- FCU-South Plant (Minor Modification submitted in February of 2000): GLCC proposed to introduce the production of a new product, HFC245fa, to the FCU-South Plant. A small thermal oxidizer with a scrubber (SN-818) will be installed to control organics generated in the process.

Source Number	Description	Pollutant	change (ton/yr)
818	Thermal Oxidizer with Scrubber	PM/PM ₁₀	0.5
		SO ₂	0.5
		VOC	6.6
		CO	0.5
		NO _x	1.0
		HCl	1.8

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- FCU-North Plant (Administrative Amendment submitted in March of 2000): GLCC submitted information concerning some typographical errors in permit 873-AOP-R0.
- PHT-4 Plant (Minor Modification submitted in April of 2000): GLCC proposed that the vent scrubber for Train I (SN-601) will be removed and the Train I vent stream will be routed to the Train II vent header. The Train II vent header will be routed through a water scrubber and the caustic vent scrubber (SN-611). There are no emissions increases associated with this modification.
- Bromine Recovery Unit (Modification submitted in April of 2000): Modification to reflect stack test results for BRU-II (SN-1001). The permitted PM/PM₁₀ emissions rate of 1.0 lb/hr was exceeded so emissions from SN-1001 and SN-2001 were increased to reflect the results.

Source Number	Description	Pollutant	change (ton/yr)
1001 and 2001	Bromine Recovery Unit (BRU-II)	PM	8.8
		PM ₁₀	8.8

- Pharmaceutical Chemicals Unit (PCU) (Minor Modification submitted in May of 2000): GLCC proposed this modification to reflect the production of a new product, Pharma 227ea, at the PCU. The Pharma 227ea manufacturing process is a closed process and no emissions are vented to the atmosphere.

SECTION IV: EMISSION UNIT INFORMATION

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SN-02, 03, and 04
Utilities

Source Description

There are three boilers at the South Plant: Boiler #5 (SN-02, 127.8 MMBtu/hr), Boiler #6 (SN-03, 95.0 MMBtu/hr), and Boiler #1 (SN-04, 96.7 MMBtu/hr). Currently, all boilers only burn natural gas. The burners in Boiler #5 are capable of burning fuel oil; however, the ancillary equipment (storage tanks, pumps, feed lines, etc.) necessary to burn fuel oil is not present.

Boiler #1 was constructed in 1996. Boiler #1 is subject to and shall comply with applicable provisions of 40 CFR Part 60 Subpart A – General Provisions and 40 CFR Part 60 Subpart Dc – Small Steam Generating Units. Boiler #5 was installed in 1973 and therefore is not subject to NSPS Subpart Db. Boiler #6 was installed in 1985 and therefore is not subject to NSPS Subpart Dc.

Utilities Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	3.2	14.3
PM ₁₀	3.2	14.3
SO ₂	0.3	1.0
VOC	1.4	5.9
CO	26.6	116.7
NO _x	38.5	168.7

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Specific Conditions

- Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control, effective February 15, 1999 (Regulation #19), and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #4. These sources have been permitted at maximum capacity.

Source Number	Description	Pollutant	lb/hr	ton/yr
02	Boiler #5	PM ₁₀	0.6	2.8
		SO ₂	0.1	0.3
		VOC	0.2	1.0
		CO	5.1	22.4
		NO _x	17.9	78.4
03	Boiler #6	PM ₁₀	1.3	5.7
		SO ₂	0.1	0.3
		VOC	0.6	2.4
		CO	3.3	14.6
		NO _x	13.3	58.3
04	Boiler #1	PM ₁₀	1.3	5.8
		SO ₂	0.1	0.4
		VOC	0.6	2.5
		CO	18.2	79.7
		NO _x	7.3	32.0

- Pursuant to §18.801 of the Arkansas Air Pollution Control Code, effective February 15, 1999 (Regulation #18), and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #4. These sources have been permitted at maximum capacity.

Source Number	Description	Pollutant	lb/hr	ton/yr
02	Boiler #5	PM	0.6	2.8
03	Boiler #6	PM	1.3	5.7
04	Boiler #1	PM	1.3	5.8

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3. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from the Boiler #5, Boiler #6, or Boiler #1 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #4.
4. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, sweet natural gas shall be the only fuel used for Boiler #5, Boiler #6, and Boiler #1.
5. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with Specific Condition #4 – that only natural gas is being burned (records of natural gas fuel volume are not required by this condition, only a statement that only natural gas is being used is required by this condition). The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

Testing

6. Pursuant to §19.702 of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall annually test the exhaust from one of the three boilers for CO. Each boiler shall be tested at least every three years. Testing shall be performed in accordance with Plantwide Condition #3 and EPA Reference Method 10. During this test, the boiler shall be operated within 10 percent of the rated throughout capacity. Failure to test at the rated throughput capacity shall limit the boiler to 10 percent above the tested throughput.
7. Pursuant to §19.702 of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall annually test the exhaust from one of the three boilers for NO_x. Each boiler shall be tested at least every three years. Testing shall be performed in accordance with Plantwide Condition #3 and EPA Reference Method 7E. During this test, the boiler shall be operated within 10 percent of the rated throughout capacity. Failure to test at the rated throughput capacity shall limit the boiler to 10 percent above the tested throughput.

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NSPS Subpart Dc

8. Boiler #1 (SN-04) is subject to and shall comply with applicable provisions of 40 CFR Part 60 Subpart A – General Provisions and 40 CFR Part 60 Subpart Dc – Small Steam Generating Units. A copy of NSPS Subpart Dc is provided in Appendix A. Applicable provisions include, but are not limited to, the following:
 - (a) Pursuant to 40 CFR §60.48c(g), the permittee shall record and maintain records of the amounts of each fuel combusted during each day in the Boiler #1.

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SN-101, 138, and 199
Bromine Production

Source Description

Bromine occurs naturally in brines found in specific areas of South Arkansas. The brines are chlorinated in towers to release the bromine which is steam stripped and condensed. Each bromine tower vent has its own scrubber. These scrubbers are vented to a final scrubber which discharges to the atmosphere (SN-138).

In addition to bromine, the brine also contains sour gas. This gas is separated at the well site and piped to the Central Plant. The remaining gas is transported to the South Plant along with the brine where it is stripped in a vacuum stripper. This gas is also sent to the Central Plant. When the vacuum stripper is down, the brine will be stripped if the outage is a short-term one (less than 48 hours). If the vacuum stripper is down for more than 48 hours, Great Lakes will either send the brine directly to the bromine towers or shut in the brine wells.

Bromine Production Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
Bromine	0.2	0.9
non-VOC FRAP (includes Cl ₂ and H ₂ S)	0.9	3.9

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9. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, except as provided in Specific Condition #12, the permittee shall not exceed the emission rates set forth in the following table. Continuous compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #16.

Source Number	Description	Pollutant	lb/hr	ton/yr
101	Brine Receiving Tank	see Specific Condition #14		
138	Bromine Production Vent Scrubber	Bromine	0.2	0.9
199	Fugitive Emissions from Equipment Leaks	non-VOC FRAP (includes Cl ₂ and H ₂ S)	0.9	3.9

10. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-138 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #16.
11. Pursuant to §18.1004 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, when the vacuum stripper is down, the brine will be air stripped if the outage is a short-term one (less than 48 hours). If the vacuum stripper is down for more than 48 hours, Great Lakes will cease stripping and either send the brine directly to the bromine towers or discontinue operation of the brine wells.
12. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, during periods when one or both bromine towers are in the start-up mode, the allowable bromine emission rate for SN-138 shall be 5.0 pounds of bromine per hour. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #13.

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13. Pursuant to §18.1004 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, in order to demonstrate compliance with Specific Condition #12, the permittee shall fully document each start-up detailing the number, duration, and time of each start-up and the estimated amount of bromine released. This documentation shall be retained on site and made available to Department personnel upon request.
14. Pursuant to §19.601 of Regulation #19 and 40 CFR Part 52 Subpart E, the release of H₂S from the brine receiving tank (SN-101) shall be considered an upset condition and shall be documented and reported to the Department in accordance with Regulation #19.
15. Pursuant to §19.601 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the fact that contingency plans have been established to deal with periods when the vacuum stripper is down shall in no way be construed as relieving the permittee from meeting the requirements of §19.601 et seq of Regulation #19 or General Provision #8.

Control Equipment Operating Parameters

16. Pursuant to §18.1104 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the bromine tower scrubber (SN-138) shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rate and the caustic concentration shall be measured once per day. The results shall be kept on site and be available to Department personnel upon request.

Should the flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. Such actions shall be noted in the logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
138	scrubber	liquor flow rate	gal/min	24
		caustic concentration in scrubbing liquor	%	2.5

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Testing

17. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the bromine emissions from SN-138 every four years in accordance with an approved test procedure and Plantwide Condition #3. If the permittee fails to comply with the emission limit, then the permittee shall measure the bromine emissions annually during the next four years.

During the compliance test, the permittee shall measure the scrubber liquor flow rate and the caustic concentration of the scrubber liquid. During the test Great Lakes shall operate the plant within 10 percent of the rated throughput capacity. If 90 percent of the rated throughput capacity can not be achieved, the permittee shall be limited to 10 percent above the actual tested throughput.

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SN-401, 412, 413, 416 thru 421, 427 thru 431, 433, 434, 436 and 499
FF-680 Plant

Source Description

FF-680 Production: FF-680 is produced in three reaction steps. First, two reactants are reacted to form an intermediate. This intermediate is reacted with a reactant to form a second intermediate. The second intermediate is then reacted with a reactant to produce FF-680.

The crude FF-680 is washed and centrifuged. Emissions are controlled with condensers and a scrubber (SN-418). The wet product is initially dried. The dryer discharge is sent to a scrubber (SN-421). The product is next conveyed to another dryer and then to storage bins. The exhaust air from the dryer/storage bins is vented to a baghouse (SN-420). Dust emissions generated by the product handling and bagging system are also controlled by a baghouse (SN-419). The off gases from each reaction go to a scrubber (SN-413, SN-416, and SN-417).

TBP Production: Tribromophenol (TBP), an intermediate product when FF-680 is produced, can be sold as a product itself. This is done by running the first reaction described in the FF-680 section above. Instead of going to the next step, the liquid TBP is then sent to a flaker where it is solidified into flakes and bagged.

The flaker belt operation is vented to a packed scrubber (SN-427). The bagging operation is vented to a baghouse (SN-436). These sources are unique to TBP production; all other sources associated with the production of TBP (SN-413 and some storage tanks) will have the same allowable emission rates and be subject to the same conditions when producing TBP as when they are producing FF-680.

CN-1753 Production: A slurry of reactants are reacted to produce a slurry of CN-1753. The CN-1753 slurry is transferred to a spray dryer. Dry powder is discharged from the spray dryer chamber. The dryer emissions pass through a baghouse (SN-428).

CN-1753 powder conveyed to a storage silo, and the conveying air is passed through a baghouse prior to being vented to the atmosphere (SN-429). The stored product is then packaged at a loadout station prior to being transferred to the warehouse for shipment. This loadout process is controlled by a baghouse (SN-430).

BE-51 Production: In this process, the reactants are mixed and reacted to form BE-51. The BE-51 is separated from the slurry by centrifugation. The centrifuge cakes are washed with water and the wet cake is stored in tote bins or supersacs prior to drying. The wet cake is dried in a vacuum dryer. The BE-51 product is then bagged prior to shipment.

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VOC emissions from the reactor are controlled with a scrubber (SN-416). VOC emissions from the belt filter are controlled with a scrubber (SN-421). VOC emissions from the solvent recovery operations are controlled with a scrubber (SN-418). Particulate matter emissions from the vacuum dryer are controlled with a baghouse (SN-420). Particulate emissions from the product bagging operations are controlled with a baghouse (SN-419).

PE-68 Production: In this process, three reactants are pre-mixed and reacted with bromine to produce PE-68. Two materials are used to neutralize residual bromine, and the product PE-68 is recovered by precipitation followed by centrifugation. The wet cake from the centrifugation is reslurried and pumped to a closed cycle spray dryer for final drying. The PE-68 product is then pneumatically conveyed to the product silo area and discharged from a dust collector into a product silo. The PE-68 product is then bagged prior to shipment. All systems including the dryer used in the PE-68 process (except the existing storage tanks) are connected to a central vent header which vents through a scrubber followed by a thermal oxidizer flare. The vent header is maintained under a slight vacuum by a fan that feeds the flare.

VOC emissions from the PE-68 process are controlled by a thermal oxidizer flare (SN-435). The scrubber is used to protect the flare from undo corrosion in the event of abnormal bromine in the reactor vent. Under normal conditions, bromine emissions are expected to be zero. Therefore, the scrubber is not classified as an emission control device. Some VOC emissions are uncontrolled. These VOC emissions are emitted to the atmosphere at the silo baghouse (SN-429). SN-407 and SN-413 are existing storage tank emissions. Particulate emissions from the PE-68 pneumatic transport system are controlled by the silo baghouse (SN-429). Particulate emissions from the product bagging operations are controlled with a baghouse.

FF-680 Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	6.0	24.4
PM ₁₀	6.0	24.4
SO ₂	0.2	0.2
VOC	8.2	29.7
CO	2.7	11.8
NO _x	2.7	11.8
Allyl Chloride (HAP)	0.2	0.5

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FF-680 Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
Ammonia (non-VOC)	0.1	0.5
Bromine	0.2	1.0
Bromophenols	0.1	0.4
HBr	0.1	0.5
Hydrazine (HAP)	0.1	0.5
Isopropyl Alcohol	3.2	2.9
Methanol	2.0	8.3
non-VOC FRAP (includes Hydrazine)	1.142e-5	0.0001
Phenol (HAP)	0.6	0.2
Toluene	1.2	4.9
Tribromoethane	0.1	0.4
Vinyl Bromide (HAP)	0.1	0.5

Specific Conditions

18. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #22, #23, and #26.

Source Number	Description	Pollutant	lb/hr	ton/yr
401	T-3 and T-37 Phenol Tanks	VOC	0.1	0.1
412	T-34 Feed Tank for PC-9	VOC	1.0	1.0
413	PC-1 Scrubber	VOC	0.6	0.5
416	PC-4 Scrubber	VOC	2.0	8.9
417	PC-6 Scrubber	VOC	0.2	0.9
418	PC-10 Scrubber	VOC	0.1	0.5
419	Baghouse – Bagging	PM ₁₀	0.5	2.2

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Source Number	Description	Pollutant	lb/hr	ton/yr
420	Baghouse – Drying	PM ₁₀	0.7	3.1
421	PC-8 Scrubber	VOC	0.2	0.9
427	Flaker Scrubber Vent	PM ₁₀	0.7	3.1
428	Spray Dryer Baghouse	PM ₁₀	2.4	10.2
		SO ₂	0.1	0.1
		VOC	0.1	0.2
		CO	1.5	6.6
		NO _x	2.3	10.1
429	CN-1753 Silo Baghouse	PM ₁₀	0.3	1.2
		VOC	1.6	7.0
430	CN-1753 Loadout Baghouse	PM ₁₀	0.4	1.5
435	Thermal Oxidizer Flare	PM ₁₀	0.1	0.1
		SO ₂	0.1	0.1
		VOC	1.6	6.8
		CO	1.2	5.2
		NO _x	0.4	1.7
436	Baghouse - TPB Bagging	PM ₁₀	0.9	4.0
499	Fugitive Emissions from Equipment Leaks	VOC	0.7	2.9

19. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #22, #23, and #26.

Source Number	Description	Pollutant	lb/hr	ton/yr
401	T-3 and T-37 Phenol Tanks	Phenol (HAP)	0.1	0.1
412	T-34 Feed Tank for PC-9	Isopropyl Alcohol	1.0	1.0
413	PC-1 Scrubber	Bromine	0.1	0.5
		Bromophenols	0.1	0.4
		Phenol (HAP)	0.5	0.1
		HBr	0.1	0.5

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Source Number	Description	Pollutant	lb/hr	ton/yr
417	PC-6 Scrubber	Tribromoethane Bromine Vinyl Bromide (HAP)	0.1 0.1 0.1	0.4 0.5 0.5
418	PC-10 Scrubber	Isopropyl Alcohol	0.1	0.5
419	Baghouse – Bagging	PM	0.5	2.2
420	Baghouse – Drying	PM	0.7	3.1
421	PC-8 Scrubber	Isopropyl Alcohol	0.2	0.9
427	Flaker Scrubber Vent	PM	0.7	3.1
428	Spray Dryer Baghouse	PM Hydrazine (HAP) Ammonia (non-VOC)	2.4 0.1 0.1	10.2 0.5 0.5
429	CN-1753 Silo Baghouse	PM Methanol Toluene	0.3 1.6 0.1	1.2 6.7 0.3
430	CN-1753 Loadout Baghouse	PM	0.4	1.5
435	Thermal Oxidizer Flare	PM Methanol Toluene	0.1 0.4 1.1	0.1 1.6 4.6
436	Baghouse - TPB Bagging	PM ₁₀	0.9	4.0
499	Fugitive Emissions from Equipment Leaks	non-VOC FRAP (includes Hydrazine)	1.142e-5	0.0001

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20. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-413, SN-417, SN-419, SN-420, SN-427, SN-428, SN-429, SN-430 and SN-436 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Conditions #22 and #23.
21. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee may produce FF-680, TBP, CN-1753, BE-51, and PE-68 at the FF-680 Plant. Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;
 - (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

Control Equipment Operating Parameters

22. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with FF-680 production shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

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Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

Caustic concentrations and monitoring of caustic concentrations are not required for scrubbers which use water as the scrubbing liquor.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
401	scrubber	liquor flow rate	gal/min	5
413	scrubber	liquor flow rate	gal/min	12
		caustic concentration in scrubbing liquor	%	2.5
416	scrubber	liquor flow rate	gal/min	5
417	scrubber	liquor flow rate	gal/min	5
		caustic concentration in scrubbing liquor	%	2.5
418	scrubber	liquor flow rate	gal/min	2
421	scrubber	liquor flow rate	gal/min	7
427	scrubber	liquor flow rate	gal/min	10
		caustic concentration in scrubbing liquor	%	2.5

23. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all baghouses associated with FF-680 production shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

Each baghouse shall have a pressure drop device to measure the pressure drop across the baghouse. The pressure drop for each baghouse shall be read once each day and shall be recorded in a logbook.

When the meter shows the pressure drop is below the parameters as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

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SN	Control Equipment	Parameter	Units	Minimum Operating Limits
419	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1
420	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1
428	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1
429	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1
430	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1
436	fabric filter	pressure drop across baghouse	in. H ₂ O	0.1

FF-680 Production

Testing

24. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, bromine emissions from the PC-1 scrubber (SN-413) shall be measured every four years in accordance with an approved test procedure and Plantwide Condition #3. During the compliance test, the permittee shall measure the scrubber liquor flow rate and the caustic concentration of the scrubber liquid.
25. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, VOC emissions from the PC-8 scrubber (SN-421) shall be measured every four years in accordance with an approved test procedure and Plantwide Condition #3. During the compliance test, the permittee shall measure the scrubber liquor flow rate and the caustic concentration of the scrubber liquid.

BE-51 Production

26. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, BE-51 production shall not exceed 1,000 lots during any twelve consecutive months.

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27. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with the limits listed in Specific Condition #21 and #26. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

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SN-501, 503, 504, 505, 507 thru 510, and 599
CD-75 Plant

Source Description

CD-75 Production: The CD-75 process is based on the bromination of cyclododecatriene. The reaction phase is operated in a solvent system. At the end of the reaction cycle, solids are separated from the mother liquor. The cake is washed, dried, and packaged.

The mother liquor is distilled for recovery of the solvent. Residues from distillation are piped to the adjacent Bromine Recovery Unit (BRU) for recovery of bromine. Reactors, centrifuge, dryer, solvent separation, intermediate tanks, and auxiliary tanks vent through a common manifold to a scrubber followed by an aqueous scrubber system. Scrubbed gas exits through a blower exhaust to the atmosphere (SN-503).

Solid product is transferred pneumatically from the dryer system to a hammer mill. A dust collector collects particulates prior to atmospheric discharge (SN-508). Milled product is transferred to intermediate storage which also has a dust collector vented to the atmosphere (SN-507). Final packaging operations vent to the atmosphere through a final dust collector (SN-504).

There are several storage tanks that vent to the atmosphere: a bromine storage tank equipped with a scrubber (SN-501), an ethylene dichloride storage tank (SN-502), a glycol storage tank (SN-506), a recycle ethanol tank (SN-511), a recycle ethylene dichloride tank (SN-512), an ethanol storage tank (SN-513), and a cyclododecatriene storage tank (SN-514).

Chilsinator: The Chilsinator process compresses powder products into granules. Powder is pneumatically lifted into the chilsinator feed silo. Vent from the pneumatic transport system is vented to a baghouse type dust collector that vents as SN-505. Collected dust is blended back into the product.

Product is pneumatically lifted into a bagger feed silo. Vent from the pneumatic transport system is vented to a baghouse type dust collector. The cleaned air is exhausted to the atmosphere (SN-510). Collected dust is blended back into the product.

Blending operations are carried out to blend the final product with stabilizer. Powder is pneumatically lifted into the blender feed silo. Vent from the pneumatic transport system is vented to a baghouse type dust collector. The cleaned air is exhausted to the atmosphere (SN-509). Collected dust is blended back into product.

Packaging operations vent through a dust collector to atmosphere (SN-510).

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CD-75 Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	1.0	4.6
PM ₁₀	1.0	4.6
VOC	6.9	30.0
Bromine	0.1	0.1
Ethanol	2.6	11.4
Ethylene Dichloride (HAP)	3.5	15.4

Specific Conditions

28. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #32 and #33.

Source Number	Description	Pollutant	lb/hr	ton/yr
503	Vent Header Blower Exhaust	VOC	6.1	26.8
504	Packaging Baghouse Vent	PM ₁₀	0.1	0.5
505	Dust Collector Blower	PM ₁₀	0.2	0.9
507	Storage Baghouse Vent	PM ₁₀	0.1	0.5
508	Baghouse Vent	PM ₁₀	0.2	0.9
509	Rotary Dryer Baghouse Vent	PM ₁₀	0.2	0.9
510	Packaging Bagger Vent	PM ₁₀	0.2	0.9
599	Fugitive Emissions From Equipment Leaks	VOC	0.8	3.2

29. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #32 and #33.

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Source Number	Description	Pollutant	lb/hr	ton/yr
501	Bromine Storage Tank	Bromine	0.1	0.1
503	Vent Header Blower Exhaust	Ethanol Ethylene Dichloride (HAP)	2.6 3.5	11.4 15.4
504	Packaging Baghouse Vent	PM	0.1	0.5
505	Dust Collector Blower	PM	0.2	0.9
507	Storage Baghouse Vent	PM	0.1	0.5
508	Baghouse Vent	PM	0.2	0.9
509	Rotary Dryer Baghouse Vent	PM	0.2	0.9
510	Packaging Bagger Vent	PM	0.2	0.9

30. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-501, SN-504, SN-505, SN-507, SN-508, SN-509, and SN-510 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Conditions #32 and #33.
31. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, CD-75 and chilsonated products are allowed to be produced at this source. Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;

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- (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

Control Equipment Operating Parameters

32. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with CD-75 production shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
501	scrubber	liquor flow rate	gal/min	5
		caustic concentration in scrubbing liquor	%	2.5
503	scrubber	liquor flow rate	gal/min	5
		ethanol concentration in scrubbing liquor	%	50

33. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all baghouses associated with CD-75 production shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

Each baghouse shall have a pressure drop device to measure the pressure drop across the baghouse. The pressure drop for each baghouse shall be read once each day and shall be recorded in a logbook.

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When the meter shows the pressure drop is below the parameters as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
504	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
505	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
507	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
508	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
509	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
510	baghouse	pressure drop across baghouse	in. H ₂ O	0.1

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SN-601, 604, 605, 606, 608 thru 611, and 699
PHT-4 Plant

Source Description

PHT-4 Production: The PHT-4 production process contains two similar production lines or trains: PHT-4-I and PHT-4-II (Train I and Train II). Both trains share a reactant storage tank (SN-604). Since the two PHT-4 trains are nearly identical, the following description applies to both Train I and Train II.

PHT-4 (tetrabromophthalic anhydride) is produced by the bromination of a reactant in an oleum system. During the reaction, vapors are vented off. One of the by-products is recovered and either sold as a product or converted to another by-product; the other by-products are recycled back to the reaction. The PHT-4 is formed as it is separated from the mother liquor by filtration. The cake is washed, dried, and packaged for sale.

The reaction, the by-product acid storage tanks, bulk bromine storage tank, and all process vessels are vented to a water scrubber and sent scrubber to control (SN-611 for both trains).

SN-605 is a baghouse for PHT-4-I which controls dust emissions generated during solids packaging, handling, and drying. SN-610 is a shell and tube vent condenser used to control dust for PHT-4-II.

PHT-4 Diol Production: In this process, PHT-4 is reacted with two raw materials to form PHT-4 Diol. The reactant PHT-4 is transferred to a hopper by a mechanical vacuum pump which vents to the atmosphere as SN-608. The reaction solvent tank is vented to the atmosphere as SN-609. Vapors generated during the reaction are controlled by a primary and secondary condensation system. Non-condensibles are vented to the atmosphere through the vacuum system (SN-606).

NaBr Production: In this process, sodium bromide is producing by concentrating sodium bromide. No pollutants are emitted from this process which emits only water vapor. Part of the year, it is necessary to produce by an alternate process.

The PHT-4 plant is subject to 40 CFR Part 63 (NESHAP) Subparts F, G, and H (HON). The PHT-4 plant is subject to these regulations because tetrabromophthalic anhydride (PHT-4) is the primary product of the unit (listed as Group III chemical in Table 1 to Subpart F), phthalic anhydride is listed in Table 2 to Subpart F, and the GLCC South facility is considered a HAP major source (see 40 CFR 63.100(b)). The PHT-4 Diol and NaBr chemical manufacturing process units are not subject to the HON regulations due to the “primary product” qualifier.

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PHT-4 Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	2.7	11.7
PM ₁₀	2.7	11.7
SO ₂	8.6	37.8
VOC	52.1	14.0
Br ₂	0.2	1.0
H ₂ SO ₄ Mist	0.2	0.6
Phthalic Anhydride (HAP)	2.1	0.7
Toluene	49.3	10.2
non-VOC FRAP	0.6	2.6

Specific Conditions

34. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #41, #46, #38, #39, and #40.

Source Number	Description	Pollutant	lb/hr	ton/yr
604	Phthalic Anhydride Storage Tank	VOC	2.1	0.7
605	Dryer Dust Collector	PM ₁₀	1.1	4.9
606	Vacuum System	VOC	44.8	10.0
608	Mechanical Vacuum Pump	PM ₁₀	0.1	0.5
609	Toluene Storage Tank	VOC	4.5	0.2
610	Dryer Condenser	PM ₁₀	1.3	5.7

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Source Number	Description	Pollutant	lb/hr	ton/yr
611	Train II Process SO ₂ Scrubber Vent	PM ₁₀	0.1	0.3
		SO ₂	4.3	18.9
699	Fugitive Emissions from Equipment Leaks	VOC	0.7	3.1

35. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #41, #46, #38, #39, and #40.

Source Number	Description	Pollutant	lb/hr	ton/yr
604	Phthalic Anhydride Storage Tank	Phthalic Anhydride (HAP)	2.1	0.7
605	Dryer Dust Collector	PM	1.1	4.9
606	Vacuum System	Toluene	44.8	10.0
608	Mechanical Vacuum Pump	PM	0.1	0.5
609	Toluene Storage Tank	Toluene	4.5	0.2
610	Dryer Condenser	PM	1.3	5.7
611	Train II Process SO ₂ Scrubber Vent	PM	0.1	0.3
		H ₂ SO ₄ Mist	0.1	0.3
		Br ₂	0.1	0.5
699	Fugitive Emissions from Equipment Leaks	non-VOC FRAP	0.6	2.6

36. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-605, SN-608, SN-610, and SN-611 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Conditions #38 and #39, and #40.

NESHAP Subparts F, G, and H

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37. The PHT-4 Plant (PHT-4 production) is subject to and shall comply with applicable provisions of 40 CFR Part 63 Subpart A – General Provisions and 40 CFR Part 60 Subparts F, G, and H – Hazardous Organic NESHAP (HON). A copy of NESHAP Subparts F, G, and H is provided in Appendix B. Applicable provisions include, but are not limited to, the following:
- (a) Pursuant to 40 CFR §63.123(a), the permittee shall keep readily accessible records showing the dimensions of the 35,000 gallon phthalic anhydride tank (SN-604) and an analysis showing the capacity of the storage vessel. This record shall be kept as long as the storage vessel retains Group 2 status and is in operation.
 - (b) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.167 (Standards: Open-ended valves or lines).
 - (c) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.169 (Standards: Pumps, valves, connectors, and agitators in heavy liquid service; instrumentation systems; and pressure relief devices in liquid service).
 - (d) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.171 (Standards: Delay of repair).
 - (e) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.180 (Test methods and procedures).
 - (f) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.181 (Recordkeeping requirements).
 - (g) The permittee is subject to and shall comply with applicable provisions of 40 CFR §63.182 (Reporting requirements).

Control Equipment Operating Parameters

38. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with the PHT-4 Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

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Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken with 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
611	scrubber	liquor flow rate	gal/min	40
		caustic concentration in scrubbing liquor	%	2.5

39. Pursuant to §19.303 of Regulation #19, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all baghouses associated with the PHT-4 Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

Each baghouse shall have a pressure drop device to measure the pressure drop across the baghouse. The pressure drop for each baghouse shall be read once each day and shall be recorded in a logbook.

When the meter shows the pressure drop is below the parameters as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
605	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
608	baghouse	pressure drop across baghouse	in. H ₂ O	0.1

PHT-4 Production

40. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain a recirculation rate of 5 gallons per minute to the Condenser (SN-610). The recirculation rate shall be monitored

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and recorded at a minimum of once per week. Records of recirculation rate shall be maintained on site and provided to Department personnel upon request.

41. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, PHT-4 production shall not exceed 1370 PHT-4 lots per twelve consecutive months for each PHT-4 Train.
42. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records of PHT-4 production which demonstrate compliance with the limits listed in Specific Condition #41. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.
43. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee shall not change the compound being stored in storage tank J-901 (the phthalic anhydride storage tank, SN-604) without prior written approval from the Department.

Testing

44. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the bromine emissions from SN-611 within 180 days of the issuance of this permit and every four years thereafter in accordance with an approved test procedure and Plantwide Condition #3.

During the compliance test, the permittee shall measure the scrubber liquor flow rate to the scrubbers and caustic concentration of the scrubber liquids. During the test, Great Lakes shall operate the plant within 10 percent of the rated throughput capacity. If 90 percent of the rated throughput capacity cannot be achieved, the facility shall be limited to 10 percent above the actual tested throughput.

45. Pursuant to §19.702 of Regulation #18 and 40 CFR Part 52 Subpart E, within 90 days of maximum production of Train II, but not more than 180 days after startup, the permittee shall measure the particulate matter emissions from SN-610 in accordance with EPA Reference Method 5 and Plantwide Condition #3.

PHT-4 Diol Production

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46. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, PHT-4 Diol production shall not exceed 1200 lots per twelve consecutive months.
47. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records of PHT-4 production which demonstrate compliance with the limits listed in Specific Condition #46. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

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SN-702, 703, 704, 706, 709, 711, and 799
FCU North Plant

Source Description

FM 200 Production: FM 200 can be produced at either of two production trains. Reactants are reacted to make heptafluoropropane (FM200). The natural gas fired Hot Oil System is used to heat the reactor. Emissions are vented as SN-707. The reacted gas is distilled. The fluorination reaction and distillation column are vented to the C-731 Absorber Scrubber. The scrubber is vented to the atmosphere as SN-702.

The intermediate product stream is sent to a dual molecular sieve bed dryer. Emissions from the dryers are vented to SN-709. The product stream is then separated by distillation. The overhead stream is routed to cylinder filling and cylinder evacuation.

Freon 32 Production: Freon 32 (R32) can be produced at either of two production trains. The raw material is reacted in the presence of a catalyst to form R32. The raw material storage tank is vented at SN-711. The reaction is heated with a hot oil heater, which vents to SN-707.

Products for sale and recycle are recovered during a purification step. The first purification is vented through scrubbers to SN-702. R32 is dried, and periodic emissions are routed to the atmosphere through SN-751. A by-product is sent to storage (SN-706) for sales.

R32 is further purified prior to storage for sales. This purification vents through SN-704.

Freon 23 Production: Freon 23 (R23) can be produced at either of two production trains. The raw material is reacted in the presence of a catalyst to form R23. The raw material storage tank is vented as SN-711. The reaction is heated with oil, which vents to SN-707.

Products for sale and recycle are recovered during a purification step. The first purification is vented through scrubbers to SN-702. R23 is dried, and periodic emissions are routed to the atmosphere through SN-751. A by-product is sent to storage (SN-706) for sales.

R23 is further purified prior to storage for sales. This purification vents through SN-704.

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FCU North Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
VOC	9.3	40.4
CO	2.0	8.8
HF (HAP)	1.2	5.3
HCl (HAP)	1.3	5.8
Freon 23 (non-VOC)	4.2	18.7
Methylene Chloride (HAP)	0.1	0.5
Chloroform (HAP)	0.1	0.5
non-VOC FRAP (includes HF, Methylene Chloride)	2.0	7.7

Specific Conditions

48. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #53, #57, and #52.

Source Number	Description	Pollutant	lb/hr	ton/yr
702	C-731 Absorber Scrubber	VOC	1.1	4.9
704	Final Purification	VOC CO	4.0 2.0	17.6 8.8
709	Mole Sieve Dryer Regeneration	VOC	1.1	4.4
711	Methylene Chloride/Chloroform Storage Tank	VOC	0.1	0.5
751	Mole Sieve Dryer Regeneration	VOC	1.0	4.5
799	Fugitive Emissions from Equipment Leaks	VOC	2.0	8.5

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49. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #53, #57, and #52.

Source Number	Description	Pollutant	lb/hr	ton/yr
702	C-731 Absorber Scrubber	HF (HAP)	1.2	5.3
		HCl (HAP)	0.3	1.4
		Freon 23 (non-VOC)	1.1	4.9
		HCFC 143a (non-VOC)	0.4	1.4
		HCFC 152a (non-VOC)	0.2	0.6
		HCFC 161	0.1	0.2
704	Final Purification	Freon 23 (non-VOC)	1.0	4.4
706	HCl Storage Tanks (T-631A, T-631B)	HCl (HAP)	0.9	3.9
711	Methylene Chloride/Chloroform Storage Tank	Methylene Chloride (HAP)	0.1	0.5
		Chloroform (HAP)	0.1	0.5
751	Mole Sieve Dryer Regeneration	Freon 23 (non-VOC)	1.0	4.5
799	Fugitive Emissions from Equipment Leaks	non-VOC FRAP (includes HF, Methylene Chloride, Freon 23)	1.3	5.5

50. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the FCU North Plant is permitted to produce FM 200, Freon 32, and Freon 23. Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;

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- (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

Testing

51. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, VOC and HF emissions from the C-731 Absorber Scrubber (SN-702) shall be measured every four year in accordance with an approved test procedure and Plantwide Condition #3.

Control Equipment Operating Parameters

52. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with FCU North Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

Caustic concentrations and monitoring of caustic concentrations are not required for scrubbers which use water as the scrubbing liquor.

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SN	Control Equipment	Parameter	Units	Minimum Operating Limits
702	scrubber	liquor flow rate	gal/min	25
		caustic concentration in scrubbing liquor	%	2.5
703	scrubber	liquor flow rate	gal/min	15
		caustic concentration in scrubbing liquor	%	2.5
706	scrubber	liquor flow rate	gal/min	1

Freon 32 Production

53. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, Freon 32 production at the FCU North Plant shall not exceed 1752 lots per twelve consecutive months.
54. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with the limits listed in Specific Condition #53. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.
55. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, during the first purification of Freon 32 and Freon 23, the permittee may emit to the atmosphere through the C-731 Column (SN-702) or the C-401 Column (SN-703). The permittee may use only one column at a time.
56. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records of usage of the C-731 and C-401 columns to demonstrate compliance with Specific Condition #55. These records shall be kept on site and made available to Department personnel upon request.

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Freon 23 Production

57. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, Freon 23 production at the FCU North Plant shall not exceed 1752 lots per twelve consecutive months.
58. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with the limits listed in Specific Condition #57. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

FM 200 Production

Testing

59. Pursuant to §19.702 of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall annually measure the VOC emissions from SN-709 or SN-751 in accordance with a test procedure which has been specifically approved by the Department prior to the testing and Plantwide Condition #3. The permittee must conduct three one hour tests during the first hours of regeneration.

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SN-802, 803, 807, 808, 809, 817, 818, and 899
FCU South Plant

Source Description

TFP Production: The production of trifluoropropane (TFP) is done in two steps. In the first step, an intermediate compound is produced and purified. The purified intermediate is then sent to the second reactor where it is mixed with acid and catalyst. This reaction produces TFP along with unreacted acid. The acid and TFP are separated using conventional distillation equipment. The acid is recycled while the crude TFP is further purified (SN-809). The finished TFP is loaded into shipping cylinders and prepared for transport.

Catalyst for the second reaction will be manufactured on site. The mixing vessel will be vented through a scrubber and then to the atmosphere as SN-807. The catalyst must be activated before use.

Other emission sources include the combined process vent (SN-803), the acid scrubber vent (SN-808), a hot oil heater (SN-811), and five storage tank vents – the ethylene storage tank (SN-802), the carbon tetrachloride storage tank (SN-815), the TCP storage tank (SN-804), and the heavies storage tanks (SN-806 and SN-816).

FM 200 Production: Heptafluoropropane (FM 200) is produced at the FCU South Plant by reacting two reactants together. The crude product is purified and stored for sale.

The reaction uses a hot oil system which is heated by a natural gas fired heater. The flue gas is vented to the atmosphere as SN-811. The purification equipment is vented to the atmosphere as SN-814.

Cylinder filling emissions are designated as SN-812.

BFE Production: 2-bromo-1-fluoroethane (BFE) is made by reacting two reactants together. The product is purified and stored for sale.

Process vapors are vented through three liquid nitrogen condensers. Emissions from the condensers are vented to the atmosphere as SN-817.

Freon 32 Production: Two reactants are reacted together to form Difluoromethane (Freon 32). Spent catalyst is disposed as a solid waste. The feed storage tank is vented to the atmosphere as SN-804. The crude product is purified and collected in product storage tanks. The purification equipment vents to the atmosphere as SN-808.

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Cylinder filling emissions are designated as SN-812. Emissions from catalyst conditioning are vented through a scrubbed packed column as SN-807. Hot oil burners vent to the atmosphere as SN-811.

FM 200 New Technology Production

Heptafluoropropane (FM 200) is to be produced in the FCU South Plant in a three step process. In the first step, an intermediate compound is produced by the reaction of three reactants in a two reactor system. The intermediate is then purified and stored for reaction in the second step of the process.

In the second step, the intermediate from the first step is reacted with one other reactant in a two reactor system to produce another intermediate for use in the third step of the process. The intermediate is then purified and stored for feed to the third step of the process.

In the third step, the intermediate produced in the second step is reacted with one reactant in a single reactor to produce FM 200. The FM 200 is purified and stored for sale.

The first reactor in the first step and the reactor for the third step are one and the same. This reactor uses a hot oil system which is heated by a natural gas fired heater. The second reactor for the first step and the reactor for the second step are one and the same and uses a new molten salt system which is heated by internal electric heating elements.

Catalyst for the reactors may be manufactured on site. If so, the mixing vessel will be vented through a scrubber and then to the atmosphere as SN-807. The catalyst must be activated before use and during activation the reactor will be vented to a scrubber (SN-702).

Other emission sources for this facility include a scrubber (SN-808), the Mole Sieve Regeneration unit (SN-814), and the hot oil heater. The intermediates and the final products will be stored in cylinders or a pressure vessel.

HFC245fa Production: HFC245fa is produced in a batch process. In the initial step, an intermediate is produced by reacting two reactants with catalysts. The vent gases from the production of the intermediate are routed to a small thermal oxidizer system. The vent gases from the thermal oxidizer pass through a vent quench and vent scrubber then emit to the atmosphere (SN-818). Emissions generated during the transfer of one of the feedstocks are also vented to the thermal oxidizer.

The intermediate is next sent to a reactor where a second intermediate is produced. The vapors from this process are routed to the thermal oxidizer mentioned above. The second intermediate is used to produce a third intermediate, which is then used to produce crude HFC245fa. The gases produced in these processes are routed to existing scrubbers SN-702 and SN-808. The final HFC245fa product

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is produced in a series of washing, drying, and distillation steps. The distillation column vents to the atmosphere as SN-809. The liquid HFC245fa product is stored in ISO containers prior to shipping.

FCU South Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	0.2	1.0
PM ₁₀	0.2	1.0
VOC	169.0	49.9
CO	24.1	1.7
NO _x	0.2	1.0
Carbon Tetrachloride (HAP)	0.4	1.8
HCl	0.7	3.2
Methylene Chloride	1.8	7.9
HBr	0.1	0.5
Br	0.1	0.5
non-VOC FRAP (includes HF, HCl, and Methylene Chloride)	1.142e-5	0.0001

Specific Conditions

60. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #61, #69, #71, #74, and #76.

Source Number	Description	Pollutant	lb/hr	ton/yr
802	Ethylene Storage Tank Loading	VOC	158.1	2.1
803	Combined Process Vent	VOC	4.5	19.8

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Source Number	Description	Pollutant	lb/hr	ton/yr
807	Common Process Vent: Catalyst Vent	PM ₁₀	0.1	0.5
		CO	24.0	1.2
808	HCl Scrubber Vent	VOC	1.0	4.4
809	C-301T Vent Scrubber	VOC	1.7	7.5
817	Liquid Nitrogen Condensers	VOC	0.1	0.5
818	Thermal Oxidizer with Scrubber	PM ₁₀	0.1	0.5
		VOC	1.5	6.6
		CO	0.1	0.5
		SO ₂	0.1	0.5
		NO _x	0.2	1.0
899	Fugitive Emissions from Equipment Leaks	VOC	2.1	9.0

61. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the emissions of carbon monoxide from SN-807 is limited to 100 hours per twelve consecutive months.
62. Pursuant to §19.705 of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall keep records which demonstrate compliance with Specific Condition #61. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.
63. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #69, #71, #74, and #76.

Source Number	Description	Pollutant	lb/hr	ton/yr
803	Combined Process Vent	Carbon Tetrachloride (HAP)	0.4	1.8
807	Common Process Vent: Catalyst Vent	PM	0.1	0.5
808	HCl Scrubber Vent	HCl (HAP)	0.3	1.4
		Methylene Chloride (HAP)	1.8	7.9

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Source Number	Description	Pollutant	lb/hr	ton/yr
817	Liquid Nitrogen Condensers	HBr	0.1	0.5
		Br	0.1	0.5
818	Thermal Oxidizer with Scrubber	PM	0.1	0.5
		HCl (HAP)	0.4	1.8
899	Fugitive Emissions from Equipment Leaks	non-VOC FRAP (includes HF, HCl, and Methylene Chloride)	1.142e-5	0.0001

64. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-807, SN-817, and SN-818 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Conditions #71 and #69.
65. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the FCU South Plant may only produce one product at a time. The FCU South Plant is permitted to produce TFP, BFE, FM 200, Freon 32, HFC245fa, and FM 200 New Technology. Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;
 - (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

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66. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee must comply with the specific conditions listed for each product while producing that respective product.

Testing

67. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the emissions from SN-808 during the production of the following products for the pollutants specified in Specific Conditions #60 and #63 (VOC, HCl, Methylene Chloride): Trifluoropropane (TFP) and Difluoromethane (Freon 32).

The permittee shall test one of the above mentioned products which are produced during each calendar year at this unit. Each product, which has a production run at least 30 days long or is run at least 60 days in any twelve consecutive months, shall be tested at least every five years. The testing shall be conducted in accordance with an approved test method and Plantwide Condition #3.

68. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall test each new product which is produced at the FCU South Plant for all permitted or any new pollutants which are / may be emitted from SN-808. This test shall occur within the initial production run of the new product. The testing shall be in accordance with a test procedure which has been specifically approved by the Department prior to the testing and in accordance with Plantwide Condition #3.

During the testing, the plant shall be operated within 10 percent of the rated throughput capacity. Failure to test at the rated throughput shall limit the production of the product to 10 percent above the tested throughput.

A production run of less than 30 days shall not exclude that product from being tested if it has not been tested within the last three years.

Control Equipment Operating Parameters

69. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with the FCU South Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

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The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

Caustic concentrations and monitoring of caustic concentrations are not required for scrubbers which use water as the scrubbing liquor.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
807	scrubber	liquor flow rate	gal/min	1.5
808	scrubber	liquor flow rate	gal/min	0.25
818	scrubber	liquor flow rate	gal/min	2

TFP Production

Testing

70. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the emissions from SN-803 every four years in accordance with an approved test procedure and Plantwide Condition #3.

BFE Production

71. Pursuant to §19.703 of Regulation #19, 40 CFR Part 52 Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall install a device(s) to continuously measure, record, and maintain the liquid nitrogen condensers (SN-817) at or below -140EC while BFE is being produced.

FM 200 and FM 200 New Technology Production

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72. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee shall only vent through SN-803 or SN-814 once in two weeks for a time period not to exceed five hours. The permittee may use only one column at a time.
73. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records of column usage to demonstrate compliance with Specific Condition #72. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.
74. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, for the new technology FM 200 process, FM 200 production shall not exceed 140,160 lots per twelve consecutive months.
75. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with the limits listed in Specific Condition #74. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

Freon 32 Production

76. Pursuant to §18.1004 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-3-11, methylene chloride usage at the FCU South Plant -- Freon 32 production shall not exceed 88.8 g-lots per twelve consecutive months.
77. Pursuant to §18.1004 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with Specific Condition #76. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

HFC245a Production

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78. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, HFC245fa production shall not exceed 8,760 lots per twelve consecutive months.
79. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with the limits listed in Specific Condition #78. The permittee shall maintain both monthly records and a twelve month total. The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.
80. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, natural gas shall be the only fuel used for the thermal oxidizer (SN-818).
81. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records which demonstrate compliance with Specific Condition #80 – that only natural gas is being burned (records of natural gas fuel volume are not required by this condition, only a statement that only natural gas is being used is required by this condition). The records shall be updated on a monthly basis. These records shall be kept on site, provided to Department personnel upon request, and may be used by the Department for enforcement purposes.

SN-901, 902, 904, 908, 910, 916, and 999
DBS Plant

Source Description

DBS Production: The dibromostyrene (DBS) process chemistry is based on three independent reactions. The process has been segmented into eight functional steps. The following is a listing and brief description of each step.

Step I Reaction: The Step I Reaction is conducted in a continuous pipe reactor. The feedstock is continuously fed to the Step I reactor, R-101, through a feed/recycle sparger. The vapor feed is introduced to the reactor in the gas section of the feed/recycle sparger. R-101 is vented to emission point SN-901.

Step I Distillation: The non-condensibles are routed from C-111 through two overhead condensers, a vapor/liquid separator (T-33), and emission point SN-901. The column bottoms are routed to an intermediate storage tank, T-06. T-06 is vented to emission point SN-901.

Pre-Bromination: Pre-bromination takes place in a reticulation loop on T-06. Bromine is added to the crude intermediate product. T-06 is vented to emission point SN-901.

Crude Intermediate Distillation: Crude intermediate product, stored in T-06, is continuously fed to C-112, a distillation column. Refined intermediate product is taken overhead as a distillate. C-112 vents through two overhead condensers and are then scrubbed. The scrubbed vapors are vented through emission point SN-910. Crude intermediate residue is removed as a bottom stream. The refined intermediate product is collected in the feed storage tank, T-10, while the intermediate residue is stored in the C-112 bottoms storage tank, T-12, prior to disposal in the bromine recovery unit. T-10 vents to emission point SN-904. T-12 is vented to emission point SN-901.

Step II Reaction, Quench, and NaOH Wash: Refined intermediate is brominated batch wise in the Step II reactor, R-103, to form Step II intermediate product. After complete conversion, the reaction mass is pumped to the Step II quench reactor, R-104.

The Step II intermediate product is quenched by washing residual bromine from the reaction mass in R-104. R-104 is vented to emission point SN-901. Water is added, and the mixture is agitated and recirculated. Agitation is stopped and the phases are allowed to separate. The organic layer is directed to the caustic wash receiver, T-36, for caustic wash. T-36 is vented to emission point SN-901. The aqueous layer from R-104 is transferred to extraction. Water and a caustic are added to T-36 prior to transfer of the organic layer from R-104. The mixture is agitated and recirculated. Agitation is stopped and the phases are allowed to separate. The organic layer is directed to the C-113 feed stock tank, T-14. T-14 vents to emission point SN-905. The aqueous layer from T-36 is transferred to extraction.

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Step II Distillation: Step II intermediate product is collected as the bottoms from the column and is fed to the falling film evaporator, H-10. Step II intermediate material is removed as a vapor from the falling film evaporator and is condensed in two heat exchangers prior to storage tank, T-16. T-16 vents to emission point SN-905. The residue from the falling film evaporator is stored in T-12 prior to disposal in the bromine recovery unit. T-12 is vented to emission point SN-901. The C-113 overhead vapors vent through a heat exchanger and are then scrubbed. The scrubbed vapors are vented through emission point SN-910.

Step III Reaction: Step II intermediate product is converted to Step III in a two stage continuous reaction system. Step II intermediate product is continuously added to the Step III reactor, R-105. R-105 vents to emission point SN-906. The two-phase reaction mass is transferred to D-01, a phase separator, where water is added to enhance the separation of the partially converted Step II intermediate product and the aqueous layer. D-01 vents to emission point SN-906. The organic layer underflows to R-106, the second stage reactor. R-106 vents to emission point SN-906. The aqueous phase from D-01 is directed to the T-35R scrubber, via T-51. T-35R vents to emission point SN-901. T-51 vents to emission point SN-906.

The level controlled discharge of R-106 is directed to D-02, a phase separator. D-02 vents to emission point SN-906. In D-02, water is added and the phases are allowed to separate. DBS underflows the phase separator and is routed to the Step III neutralizer, R-107. R-107 vents to emission point SN-906. The aqueous phase from D-02 is directed to T-35R, via D-04 and T-51.

Step III Reaction – Neutralization: The residual alkalinity in the DBS is neutralized in R-107. The level is maintained by discharging to D-03, a phase separator. D-03 vents to emission point SN-906. Water is added to D-03 and the phases are allowed to separate. The organic phase underflows to intermediate product storage tanks for inhibitor addition. These intermediate product storage tanks vent to emission points SN-907 and SN-908. The aqueous phase overflows to D-05, a phase separator. D-05 vents to emission point SN-901.

The following tanks are used in the DBS Plant: the styrene storage tank (SN-902), two PEG storage tanks (SN-909 and SN-913), the HCl storage tank (SN-914), and three BCP permanent storage tanks (SN-916).

BCP Production: The BCP reaction is conducted in a continuous reactor which discharges into the R-101 vapor/liquid separation chamber. Reactant feed-stock is stored in the T-23 bulk tank (SN-911). Other reactants are introduced into the reactor in the gas section of the feed/recycle sparger. The off gas disengages from the liquid in the R-101 vapor/liquid separation chamber and is routed through the H-102 overhead condenser, the T-35R scrubber, and emission point SN-901.

The product is transferred to crude BCP storage tanks. The crude BCP is next pumped through the T-06 feed tank to a batch purification system to remove the light components and the heavy components. Heat for this purification system is supplied by a hot oil system (SN-912).

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The purified product is collected in the T-10 receiver and stored in the T-02R bulk tank. Both T-10 and T-02R are vented through an activated carbon drum to SN-904. The final product is carbon treated, filtered, and then sold in bulk or drums.

Phosphorus Tribromide Production: Two reactants are reacted to form Phosphorus Tribromide (PBr_3) and a byproduct. The byproduct is passed through a scrubber and vented to the atmosphere as SN-901. PBr_3 product is drummed from the reactor.

The following tanks at the DBS Plant are subject to and shall comply with applicable provisions of 40 CFR Part 60 Subpart A – General Provisions and 40 CFR Part 60 Subpart Kb – VOL Storage Vessels: styrene storage tank (SN-902), two DBS storage tanks (SN-908), and two BCP storage tanks (SN-916).

DBS Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
VOC	5.3	23.2
BCP	3.4	15.0
HBr	1.3	5.7
HCl (HAP)	0.6	2.6
PCl_3	0.3	1.3
PBr_3	0.1	0.5
Styrene (HAP)	0.2	0.9
BEB	0.1	0.5
DBS	0.1	0.5

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Specific Conditions

82. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #87 and #88.

Source Number	Description	Pollutant	lb/hr	ton/yr
901	Scrubber Vent	VOC	3.3	14.5
902	Styrene Storage Tank (T-24)	VOC	0.2	0.9
904	Carbon Bed Adsorber for BEB Tanks	VOC	0.1	0.5
908	DBS Storage Tanks (T-20A, T-20B)	VOC	0.1	0.5
916	BCP Permanent Storage Tanks	VOC	0.1	0.5
999	Fugitive Emissions from Equipment Leaks	VOC	1.5	6.3

83. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #87 and #88.

Source Number	Description	Pollutant	lb/hr	ton/yr
901	Scrubber Vent	BCP HBr HCl (HAP) PCl ₃ PBr ₃	3.3 1.3 0.6 0.3 0.1	14.5 5.7 2.6 1.3 0.5
902	Styrene Storage Tank (T-24)	Styrene (HAP)	0.2	0.9
904	Carbon Bed Adsorber for BEB Tanks	BEB	0.1	0.5
908	DBS Storage Tanks (T-20A, T-20B)	DBS	0.1	0.5
916	BCP Permanent Storage Tanks	BCP	0.1	0.5

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84. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee is currently allowed to make three separate products at the DBS Plant: dibromostyrene (DBS), phosphorus tribromide (PBr₃), and 1-bromo-3-chloropropane (BCP). Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;
 - (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

NSPS Subpart Kb

85. The Styrene Storage Tank (T-24, SN-902), the DBS Storage Tank (T-20A, SN-908), the DBS Storage Tank (T-20B, SN-908), the BCP Storage Tank (T-91, SN-916), and the BCP Storage Tank (T-92, SN-916) are all subject to and shall comply with applicable provisions of 40 CFR Part 60 Subpart A – General Provisions and 40 CFR Part 60 Subpart Kb – VOL Storage Vessels. A copy of NSPS Subpart Kb is provided in Appendix C. Applicable provisions include, but are not limited to, the following:
- (a) Pursuant to 40 CFR §60.116b(b), the permittee shall keep readily accessible records showing the dimension of each storage vessel listed above and an analysis showing the capacity of each storage vessel listed above.

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Testing

86. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the emissions from SN-901 during the production of the following products for the pollutants specified in Specific Conditions #82 and #83: Dibromostyrene (DBS), Phosphorus Tribromide (PBr_3), 1-Bromo3-chloropropane (BCP) – during heavy removals, and PBr_3 and BCP simultaneous production .

The permittee shall test one of the above mentioned products which are produced during each calendar year at this unit. Each product shall be tested at least every four years. The testing shall be conducted in accordance with an approved test method and Plantwide Condition #3.

If any product is not produced during any four year period, it shall be tested in accordance with Plantwide Condition #3 during the next production run lasting 30 days or more.

During the testing, the plant shall be operated within 10 percent of the rated throughput capacity. Failure to test at the rated throughput capacity shall limit the production of the tested product to 10 percent above the tested throughput capacity.

A production run of less than 30 days shall not exclude that product from being tested if it has not been tested within the last four years.

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Control Equipment Operating Parameters

87. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall replace the carbon canisters on SN-902 and SN-904 annually.
88. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the HBr Vent (SN-901) shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
901	scrubber	liquor flow rate	gal/min	0.8
		caustic concentration in scrubbing liquor	%	2.5

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SN-1001, 2001, 2099
Bromine Recovery Unit

Source Description

The Bromine Recovery Unit consists of equipment to recover bromine and chlorine from feed streams. The Bromine Recovery Unit consists of two units: BRU-II and BRU-III.

During the operation of each BRU, natural gas, combustion air, and the feed streams are fed to the oxidation system. Here, the halogenated organic feed streams are converted to carbon monoxide, carbon dioxide, hydrogen bromide, hydrogen chloride, and water vapor.

Next, the off-gases go to the halogen recovery system. In this system, HBr and HCl are absorbed from the gases into an aqueous system which is then sent to the bromine plant for further processing. The gases leave the halogen recovery system and go to tertiary oxidation where any remaining organics are destroyed. The gases leaving the unit are vented to the atmosphere through SN-1001 (BRU-II) and SN-2001 (BRU-III).

Bromine Recovery Unit Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	4.0	17.6
PM ₁₀	4.0	17.6
SO ₂	0.2	1.0
VOC	0.5	2.0
CO	0.6	2.8
NO _x	5.2	22.8
HCl	2.6	11.4
HBr	9.5	41.7

Specific Conditions

89. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #91 thru #104.

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Source Number	Description	Pollutant	lb/hr	ton/yr
1001	Bromine Recovery Unit (BRU-II)	PM ₁₀	2.0	8.8
		SO ₂	0.1	0.5
		VOC	0.1	0.5
		CO	0.3	1.4
		NO _x	2.6	11.4
2001	Bromine Recovery Unit (BRU-III)	PM ₁₀	2.0	8.8
		SO ₂	0.1	0.5
		VOC	0.1	0.5
		CO	0.3	1.4
		NO _x	2.6	11.4
2099	Fugitive Emissions from Equipment Leaks	VOC	0.3	1.0

90. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #91 thru 104.

Source Number	Description	Pollutant	lb/hr	ton/yr
1001	Bromine Recovery Unit (BRU-II)	PM	2.0	8.8
		HCl (HAP)	1.3	5.7
		HBr	5.5	24.1
2001	Bromine Recovery Unit (BRU-III)	PM	2.0	8.8
		HCl (HAP)	1.3	5.7
		HBr	4.0	17.6

Bromine Recovery Unit II

91. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the BRU-II (SN-1001) shall only burn natural gas or a reducing agent as the auxiliary fuel.
92. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-1001 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #91.

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93. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee is only allowed to burn the following waste streams in the BRU-II (SN-1001):

CD-75 still bottoms	DBS (from Project M)
PEG Extraction Oils (from DBS)	Terroicide
Off-specification materials (from DBS)	FF-680 TBE
FF-680 Decant Oils	Bromine tower bottoms
Lab materials	Polydibromostyrene recycle stream
Off-specification bromobenzene	Bromochloropropane recycle streams

The permittee shall obtain written permissions from the Department before burning other waste streams.

Control Equipment Operating Parameters

94. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the pollution control system on the BRU-II (SN-1001) shall be operated so that it is able to achieve 99% HBr removal efficiency.
95. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall sample SN-1001 for HBr removal efficiency in accordance with an approved test method and Plantwide Condition #3.

Testing

96. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, every other year, the permittee shall sample SN-1001 for PM/PM₁₀, NO_x, HCl, HBr, and CO in accordance with the methods specified in the following table and Plantwide Condition #3. The first testing was completed on or before December 31, 1995.

Method	Title
#1	Sample and Velocity Transverses for Stationary Sources
#2	Determination of Stack Gas Velocity and Volumetric Flow (Type S Pilot)
#3	Gas Analysis for CO ₂ , O ₂ , Excess Air, and Dry Molecular Weight
#4	Determination of Moisture Content in Stack Gases

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Method	Title
#5	Determination of Particulate Emissions from Stationary Sources
#6	Determination of Sulfur Dioxide Emissions from Stationary Sources
#7E	Determination of Nitrogen Oxide Emissions from Stationary Sources (Instrumental Analyzer Method)
#18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
#25A	Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer
HBr sampling shall be consistent with <i>Stack Sampling for Gaseous Pollutants</i> from Texas Air Control Board's <i>Sampling Procedures Manual</i> or equal. HBr analysis shall follow NIOSH S175.	
The BRU-II procedure shall include three independent samplings, each of minimum one hour duration.	

97. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, during the compliance testing required by Specific Condition #96 and at all times the BRU-II is operated thereafter, the permittee shall continuously monitor and record the venturi scrubber differential pressure and thermal oxidizer temperature. The venturi scrubber differential pressure shall not fall below 40" of water and the thermal oxidizer temperature shall not fall below 1600EF.

Bromine Recovery Unit III

98. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the BRU-III (SN-2001) shall only burn natural gas or a reducing agent as the auxiliary fuel.
99. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-2001 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #98.
100. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the permittee is only allowed to burn the following waste streams in the BRU-III (SN-2001):

CD-75 still bottoms

DBS (from Project M)

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PEG Extraction Oils (from DBS)
Off-specification materials (from DBS)
FF-680 Decant Oils
Lab materials
Off-specification bromobenzene

Terroicide
FF-680 TBE
Bromine tower bottoms
Polydibromostyrene recycle stream
Bromochloropropane recycle streams

The permittee shall obtain written permissions from the Department before burning other waste streams.

Control Equipment Operating Parameters

101. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the pollution control system on the BRU-III (SN-2001) shall be operated so that it is able to achieve 99% HBr removal efficiency.
102. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall sample SN-2001 for HBr removal efficiency in accordance with an approved test method and Plantwide Condition #3.

Testing

103. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, every other year, the permittee shall sample SN-2001 for PM/PM₁₀, NO_x, HCl, HBr, and CO in accordance with the methods specified in the following table and Plantwide Condition #3. The first testing was completed on or before December 31, 1995.

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Method	Title
#1	Sample and Velocity Transverses for Stationary Sources
#2	Determination of Stack Gas Velocity and Volumetric Flow (Type S Pilot)
#3	Gas Analysis for CO ₂ , O ₂ , Excess Air, and Dry Molecular Weight
#4	Determination of Moisture Content in Stack Gases
#5	Determination of Particulate Emissions from Stationary Sources
#6	Determination of Sulfur Dioxide Emissions from Stationary Sources
#7E	Determination of Nitrogen Oxide Emissions from Stationary Sources (Instrumental Analyzer Method)
#18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
#25A	Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer
HBr sampling shall be consistent with <i>Stack Sampling for Gaseous Pollutants</i> from Texas Air Control Board's <i>Sampling Procedures Manual</i> or equal. HBr analysis shall follow NIOSH S175.	
The BRU-III procedure shall include three independent samplings, each of minimum one hour duration.	

104. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, during the compliance testing required by Specific Condition #103 and at all times the BRU-III is operated thereafter, the permittee shall continuously monitor and record the venturi scrubber differential pressure and thermal oxidizer temperature. The venturi scrubber differential pressure shall not fall below 40" of water and the thermal oxidizer temperature shall not fall below 1600EF.

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SN-1101, 1104, 1106, and 1199
PDBS Plant

Source Description

PDBS Production: Monomer is transferred into a feed tank at the beginning of the process production line. This tank vents as emission point SN-1102. The monomer is fed into a plug flow reactor where chemicals are added at various separate points along the reactor. One chemical is stored in a storage tank which vents as emission point SN-1103. The extruder is allowed to stabilize and the residual monomer is stripped off as an impurity using a two-stage, mechanical vacuum pump.

Vapors from the reactor's atmospheric vent and the extruder's vacuum pump are released through emission point SN-1101. The vacuum overhead take-off is collected and sent to the bromine recovery unit (BRU) for the recovery of bromine. The overhead condensate from the extruder's atmospheric vent is collected and sent to the BRU.

The product from the reactor is fed to an underwater pelletizer where solidified strings of product are cut into pellets. The tempered water conveys the pellets to a screening operation. The water is recycled and the pellets are dried in a tumble dryer. The air emissions from the dryer are sent to a baghouse dust collector which vents through emission point SN-1104. The dried product is packaged using a standard packaging machine. The particulate matter emissions from the product hopper are controlled with baghouse SN-1106.

Solids Pelletizing Process: In the solids pelletizing process, the powder is unloaded into a supersack unloader, fed through an LIW feeder, fed through a mixer, then charged to the extruder. The extruded product proceeds through a chiller and then to a pelletizer. The pellets are next conveyed to a product screener before proceeding to the product hopper and packaging operations. The particulate emissions from the chiller, pelletizer, and screener are controlled with baghouse SN-1104. Particulate emissions from the product hopper are controlled with baghouse SN-1106.

PDBS Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	0.7	3.2
PM ₁₀	0.7	3.2
VOC	1.2	5.2

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PDBS Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
Toluene (HAP)	0.9	4.0
DBS	0.1	0.5

Specific Conditions

105. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition #110.

Source Number	Description	Pollutant	lb/hr	ton/yr
1101	Pre-Polymerizer and Vacuum Pump Vent	VOC	1.0	4.5
1104	Process Dust Collector	PM ₁₀	0.6	2.7
1106	Vacuum Pellet Transport System	PM ₁₀	0.1	0.5
1199	Fugitive Emissions from Equipment Leaks	VOC	0.2	0.7

106. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #110.

Source Number	Description	Pollutant	lb/hr	ton/yr
1101	Pre-Polymerizer and Vacuum Pump Vent	Toluene (HAP)	0.9	4.0
		DBS	0.1	0.5
1104	Process Dust Collector	PM	0.6	2.7
1106	Vacuum Pellet Transport System	PM	0.1	0.5

107. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-1104 and

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SN-1106 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #110.

108. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, the specific compounds the permittee is allowed to produce at the PDBS Plant are limited to the following: PDBS-10, PDBS-80, GPP-36 (12), GPP-39 (12), and pellets from the Solids Pelletizing Process. Other products may be produced without a permit modification if:
- (a) No new equipment with air contaminant emissions will be installed, other than insignificant sources (insignificant sources may be permitted via the administrative amendment process);
 - (b) The worst-case emissions limits contained in this permit will not be exceeded. In addition, no new pollutants will be emitted. The permittee shall produce written emissions calculations and submit them to the Department pursuant to paragraph (d) below;
 - (c) No new air pollution control requirements are triggered, such as provisions of 40 CFR Part 52, Part 60, Part 61, or Part 63;
 - (d) The permittee submits to the Department information concerning items in paragraph (a) thru (c) above at least 30 days prior to the production of the new product and the Department does not object during this 30 day period.

Testing

109. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the emissions from SN-1101 during the production of the following products for the pollutants specified in Specific Conditions #105 and #106: PDBS-10, PDBS-80, GPP-36 (12), and GPP-39 (12).

The permittee shall test one of the above mentioned products which are produced during each calendar year at this unit. Each product shall be tested at least every four years.

If any product is not produced during any four year period, it shall be considered a new product upon production. In addition, the permittee shall test each new product which is

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produced at the PDBS Plant for all permitted or any new pollutants which are /may be emitted from SN-1101. This test shall occur within the initial production run of the new product. The testing shall be in accordance with Plantwide Condition #3 and a test procedure which has been specifically approved by the Department prior to the testing.

During the testing, the plant shall be operated within 10 percent of the rated throughput capacity. Failure to test at the rated throughput capacity shall limit the production to 10 percent above the tested throughput.

A production run of less than 30 days shall not exclude that product from being tested if it has not been tested within the last four years.

Control Equipment Operating Parameters

110. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all baghouses associated with the PDBS Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

Each baghouse shall have a pressure drop device to measure the pressure drop across the baghouse. The pressure drop for each baghouse shall be read once each day and shall be recorded in a logbook. When the pressure drop is below 0.1 inches of H₂O, the permittee shall clean or replace the bag filters.

When the meter shows the pressure drop is below the parameters as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
1104	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
1106	baghouse	pressure drop across baghouse	in. H ₂ O	0.1

SN-1201, 1202, 1204, and 1299
Pharmaceutical Chemicals Unit

Source Description

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The Pharmaceuticals Chemicals Unit will produce isoflurane in two steps. First, reactants are reacted to make an intermediate. The intermediate material is then purified. In the second step, the intermediate is reacted with another reactant to make isoflurane. The isoflurane product is then purified and collected in product shipping totes.

The trifluoroethanol (TFE) and acetone storage tanks (SN-1201 and SN-1202, respectively) will be equipped with condensers to minimize emissions. Process vents emitting gases will be routed to a caustic scrubber (SN-1204) to minimize emissions. A 2.5 MMBtu/hr natural gas fired boiler (insignificant activity) will provide process steam to the unit.

Pharma 227ea Production

Pharma 227ea is an inhalant carrier. The raw material is stored in a pressurized storage tank before proceeding through a series of distillation columns and purification steps. The resulting Pharma 227ea product is stored in a pressurized storage vessel prior to being loaded into ESO containers for shipment. This process is a closed process and no air pollutants are vented to the atmosphere.

The manufacture of this product does not trigger the requirements of the Pharmaceutical MACT (40 CFR Part 63, Subpart GGG), since Pharma 227ea is not a pharmaceutical product, but rather an excipient. “Excipients” are excluded from the definition of “pharmaceutical product” in the regulation.

Pharmaceutical Chemicals Unit Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
VOC	6.3	16.1
TFE	2.6	0.1
Acetone	8.3	1.0
Freon 22	1.5	6.6
HCl (HAP)	0.1	0.5
Cl ₂ (HAP)	0.1	0.5
non-VOC FRAP (includes HCl, Cl ₂ , and Freon 22)	0.8	3.5

Specific Conditions

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111. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #115.

Source Number	Description	Pollutant	lb/hr	ton/yr
1201	TFE Storage and Recycle Tanks	VOC	2.6	0.1
1204	Process Vent	VOC	2.3	10.1
1299	Fugitive Emissions from Equipment Leaks	VOC	1.4	5.9

112. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #115.

Source Number	Description	Pollutant	lb/hr	ton/yr
1201	TFE Storage and Recycle Tanks	TFE	2.6	0.1
1202	Acetone Storage Tank	Acetone	8.1	0.1
1204	Process Vent	Freon 22 HCl (HAP) Cl ₂ (HAP) Acetone	1.5 0.1 0.1 0.2	6.6 0.5 0.5 0.9
1299	Fugitive Emissions from Equipment Leaks	non-VOC FRAP (includes HCl, Cl ₂ , and Freon 22)	0.8	3.5

Testing

113. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, initially and every four years thereafter, the permittee shall measure the Cl₂, HCl, and VOC emissions from SN-1204 in accordance with Plantwide Condition #3 and a test procedure which has been specifically approved by the Department prior to the testing.

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During the testing, the permittee shall measure the flow rate to the scrubber and the caustic concentration in the scrubber liquid.

114. Pursuant to §18.1002 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, every four years, the permittee shall test the process vent exhaust (SN-1204) for total fluorides using EPA Reference Method 13 A/B as defined in 40 CFR Part 60, Appendix A and in accordance with Plantwide Condition #3. During the test, the plant shall be operated within 10 percent of the rated throughput capacity. Failure to test at the rated throughput capacity shall limit the production to 10 percent above the tested throughput capacity.

Control Equipment Operating Parameters

115. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with the Pharmaceutical Chemical Unit shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
1204	scrubber	liquor flow rate	gal/min	10
		caustic concentration in scrubbing liquor	%	2.5

NESHAP Subpart GGG

116. In the event that Great Lakes operates the Pharmaceutical Chemicals Unit, Great Lakes shall comply with all applicable provisions of 40 CFR Part 63 Subpart A -- General Provisions and 40 CFR Part 63 (NESHAP) Subpart GGG – National Emission Standards for Pharmaceuticals Production.

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SN-1301, 1303, and 1399
TFP Plant

Source Description

TFP Production: Great Lakes proposes to construct a new unit which will manufacture TFP (trifluoropropene). The production of TFP includes two reaction steps. The first reaction proceeds between two reactants in the presence of a catalyst to form an intermediate. The process stream is then transferred through a holding tank to a distillation train which is controlled by a scrubber and a condenser. Most process equipment is directly or indirectly vented to SN-1301 which is controlled by a condenser.

In the second reaction step the intermediate is reacted with a reactant to form TFP. The process stream is separated by distillation. The overhead stream is scrubbed with water to remove essentially all of the HCL. The unreacted hydrocarbons are separated using conventional distillation technology (SN-1303).

Catalyst must be activated after charging to the reactor.

A natural gas hot oil system supplies heat to the TFP vaporizers / reactors.

FM 200 Production: Two reactants are mixed in a reactor to make FM 200. The reactor uses a hot oil system which is heated by a natural gas fired heater. Emissions from this hot oil system are considered to be insignificant.

The reacted gas is distilled in a separator to remove heavy organics. The separator is vented through two scrubbers in series. Neither of these scrubbers vent to the atmosphere. The reactor only vents during catalyst regeneration or an emergency shutdown. Emissions from the reactor are vented to the TFP Scrubber at the FCU-South Plant. The TFP Scrubber is vented to the C-731 Absorber Scrubber at the FCU-North Plant. Emissions from the C-731 Scrubber are vented to the atmosphere as SN-702.

The freon stream is then dried using a dual molecular sieve bed dryer. The molecular sieve is regenerated at the FCU-North Plant. The dry freon is separated by a distillation column to a final product stream (FM 200) and sent to sales. The light organics from the distillation column are collected in cylinders.

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TFP Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
VOC	22.6 *	18.6
Carbon Tetrachloride (HAP)	0.4	1.8
HCFC 143a (non-VOC)	28.6 *	5.3
HCFC 152a (non-VOC)	10.6 *	2.0
HCFC 161	3.2*	0.6

* The short term emissions from SN-1303 are based on lb/24 hours.

Specific Conditions

117. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #120.

Source Number	Description	Pollutant	lb/hr	ton/yr
1301	Combined Process Vent	VOC	1.5	6.4
1303	Pressure Control Valve from Distillation Column	VOC	19.1 *	3.5
1399	Fugitive Emissions from Equipment Leaks	VOC	0.9	3.8

* lb/24 hours

118. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #120.

Source Number	Description	Pollutant	lb/hr	ton/yr
1301	Combined Process Vent	Carbon Tetrachloride (HAP)	0.4	1.8

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Source Number	Description	Pollutant	lb/hr	ton/yr
1303	Pressure Control Valve from Distillation Column	HCFC 143a (non-VOC)	28.6 *	5.3
		HCFC 152a (non-VOC)	10.6 *	2.0
		HCFC 161	3.2 *	0.6

* lb/24 hours

Testing

119. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall measure the VOC and HCl emissions from SN-1301 in accordance with an approved test procedure and Plantwide Condition #3.

During the compliance test, the permittee shall measure the scrubber liquor flow rate and the caustic concentration of the scrubber liquid. During the test Great Lakes shall operate the plant within 10 percent of the rated throughput capacity. If 90 percent of the rated throughput capacity can not be achieved, the permittee shall be limited to 10 percent above the actual tested throughput.

Control Equipment Operating Parameters

120. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with the TFP Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

Caustic concentrations and monitoring of caustic concentrations are not required for scrubbers which use water as the scrubbing liquor.

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SN	Control Equipment	Parameter	Units	Minimum Operating Limits
1301	distillation scrubber	liquor flow rate	gal/min	0.25
		caustic concentration in scrubbing liquor	%	30
1301	tank scrubber	caustic concentration in scrubbing liquor	%	30

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SN-1401 thru 1405, 1499
CN-1985 Plant

Source Description

Great Lakes proposes to construct a new unit which will manufacture CN-1985. Raw material A is received in tank trucks and loaded into a storage tank. Emissions from the unloading operations and the storage tank are vented through a knockout pot to a water scrubber (SN-1401).

Raw material B is received and loaded unto a 10,000 gallon storage tank. Emissions from the unloading operations and the storage tanks are vented through a water scrubber (SN-1404).

Raw material C is received in bulk trucks. It is unloaded and conveyed to the reactor charge system as needed by a conveying system using nitrogen as the conveying medium. Emissions are controlled with a baghouse (SN-1402). Drying is accomplished by contacting the material with hot, dry air or nitrogen. Emissions are controlled with a baghouse (SN-1403).

CN-1985 is produced in a series of reactions. Emissions from the process are controlled with condensers, the HCl absorption system and a scrubber (SN-1401).

A hot oil heater (9.5 MMBtu/hr, SN-1405) is used to provide heat to the process.

CN-1985 Plant Section Emission Rate Summary		
Pollutant	lb/hr	ton/yr
PM	0.5	1.4
PM ₁₀	0.5	1.4
SO ₂	0.1	0.1
VOC	1.7	6.8
CO	0.2	0.9
NO _x	1.0	4.2
HCl (HAP)	0.5	1.9
Phenol (HAP)	0.2	0.7

Specific Conditions

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121. Pursuant to §19.501 et seq of Regulation #19 and 40 CFR Part 52 Subpart E, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #125, #126, and #127.

Source Number	Description	Pollutant	lb/hr	ton/yr
1401	Scrubber Vent	VOC	0.1	0.5
1402	BPA Conveying Baghouse	PM ₁₀	0.2	0.8
1403	BPA Dryer Baghouse	PM ₁₀	0.1	0.1
1404	Phenol Storage Tank Scrubber	VOC	0.1	0.2
1405	Hot Oil Heater	PM ₁₀	0.2	0.5
		SO ₂	0.1	0.1
		VOC	0.1	0.2
		CO	0.2	0.9
		NO _x	1.0	4.2
1499	Fugitive Emissions from Equipment Leaks	VOC	1.4	5.9

122. Pursuant to §18.801 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions #125, #126, and #127.

Source Number	Description	Pollutant	lb/hr	ton/yr
1401	Scrubber Vent	HCl (HAP)	0.5	1.9
		Phenol (HAP)	0.1	0.5
1402	BPA Conveying Baghouse	PM	0.2	0.8
1403	BPA Dryer Baghouse	PM	0.1	0.1
1404	Phenol Storage Tank Scrubber	Phenol (HAP)	0.1	0.2
1405	Hot Oil Heater	PM	0.2	0.5

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123. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-1402 and SN-1403 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #127.
124. Pursuant to §18.501 of Regulation #18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause to be discharged to the atmosphere from SN-1405 gases which exhibit an opacity greater than 5%. The opacity shall be measured in accordance with EPA Reference Method 9 as found in 40 CFR Part 60 Appendix A. Compliance with the opacity limits shall be demonstrated by compliance with Specific Condition #125.
125. Pursuant to §19.705 of Regulation #19, §18.1004 of Regulation #18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR 70.6, natural gas shall be the only fuel used for the hot oil heater (SN-1405).

Control Equipment Operating Parameters

126. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all scrubbers associated with the CN-1985 Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

The scrubber shall have a flow meter to measure the flow rate of the scrubbing liquor. The scrubber liquor flow rates and the caustic concentration shall be measured once per day. The result shall be kept on site and be available to Department personnel upon request.

Should the scrubber liquor flow rate or caustic concentration drop below the minimum rate, as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document the duration of every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

Caustic concentrations and monitoring of caustic concentrations are not required for scrubbers which use water as the scrubbing liquor.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
1401	scrubber	liquor flow rate	gal/min	25
1404	scrubber	liquor flow rate	gal/min	5

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127. Pursuant to §19.303 of Regulation #19, §18.1104 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all baghouses associated with the CN-1985 Plant shall be kept in good working condition at all times and shall meet the conditions shown in the following table.

Each baghouse shall have a pressure drop device to measure the pressure drop across the baghouse. The pressure drop for each baghouse shall be read once each day and shall be recorded in a logbook.

When the meter shows the pressure drop is below the parameters as specified in the following table, action shall be taken within 12 hours to remedy the situation. The permittee shall document every such situation in a logbook. The logbook shall be kept on site and be available to Department personnel upon request.

SN	Control Equipment	Parameter	Units	Minimum Operating Limits
1402	baghouse	pressure drop across baghouse	in. H ₂ O	0.1
1403	baghouse	pressure drop across baghouse	in. H ₂ O	0.1

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SECTION V: COMPLIANCE PLAN AND SCHEDULE

Great Lakes Chemical Corporation – South Plant is in compliance with the applicable regulations cited in the permit application. Great Lakes Chemical Corporation – South Plant will continue to operate in compliance with those identified regulatory provisions. The facility will examine and analyze future regulations that may apply and determine their applicability with any necessary action taken on a timely basis.

SECTION VI: PLANTWIDE CONDITIONS

1. Pursuant to Section 19.704 of Regulation 19, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the Director shall be notified in writing within thirty (30) days after construction has commenced, construction is complete, the equipment and/or facility is first placed in operation, and the equipment and/or facility first reaches the target production rate.
2. Pursuant to Section 19.410(B) of Regulation 19, 40 CFR Part 52, Subpart E, the Director may cancel all or part of this permit if the construction or modification authorized herein is not begun within 18 months from the date of the permit issuance if the work involved in the construction or modification is suspended for a total of 18 months or more.
3. Pursuant to Section 19.702(E), 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, each emission point for which an emission test method is specified in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. Two copies of the compliance test results shall be submitted to the Department within thirty (30) days after the completed testing. The permittee shall provide:
 - (1) Sampling ports adequate for applicable test methods
 - (2) Safe sampling platforms
 - (3) Safe access to sampling platforms
 - (4) Utilities for sampling and testing equipment

For further information regarding testing, please see Plantwide Conditions #11 thru #13.

4. Pursuant to §19.303 of Regulation #19, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by A.C. A. §8-4-304 and §8-4-311, the equipment, control apparatus and emission monitoring equipment shall be operated within their design limitations and maintained in good condition at all times.
5. Pursuant to Regulation 26 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, this permit subsumes and incorporates all previously issued air permits for this facility.
6. Pursuant to §18.801 of Regulation #18, the permittee shall not cause or permit the emission of air contaminants, including odors or water vapor and including an air contaminant whose

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emission is not otherwise prohibited by Regulation #18, if the emission of the air contaminant constitutes air pollution within the meaning of A.C.A. §8-4-303.

7. Pursuant to §18.901 of Regulation #18, the permittee shall not conduct operations in such a manner as to unnecessarily cause air contaminants and other pollutants from becoming airborne.
8. Pursuant to A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the emission points listed in the permit are the only emission points being permitted at the facility. Emissions of pollutants from any other emission point, or the emissions of any unpermitted air contaminant from a permitted emission point shall be considered a violation of this permit and any applicable air pollution control regulations. This shall not apply to emission points or emission rates which are specifically exempted by regulation or by published Department guidance. If any unpermitted emission points or air contaminants are discovered by the permittee, the permittee shall notify the Department within 10 working days of such discovery. The Department may require the permittee to take corrective actions within the bounds of regulatory requirements.

Records

9. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain production records at the facility on the amount of product produced. This information shall be maintained either within the respective unit or at the main office located within the property boundary. The records shall be provided to Department personnel upon request.
10. Pursuant to §19.705 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1004 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, all records required to be kept by this permit shall be kept by the permittee on site in written or electronic form and shall be made available to Department personnel upon request.

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Testing

11. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain a copy of the results of each stack test within the property boundary and make them available for Department personnel upon request.
12. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, when performing emissions testing by this permit, the permittee shall use EPA approved testing methods. Where no EPA test method is available for the emissions to be tested, the permittee may use a Department approved testing method.
13. Pursuant to §19.702 of Regulation #19, 40 CFR Part 52 Subpart E, §18.1002 of Regulation #18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, when performing emissions testing required by this permit, the permittee shall operate the equipment being tested at least at 90% of its throughput capacity. If 90% of the rated throughput capacity cannot be achieved, the equipment in question shall be limited to operating no more than 10% above the throughput rate achieved during emissions testing.

Regulations

14. The permittee is subject to and shall comply with applicable provisions of 40 CFR Part 61 (NESHAP) Subpart M – Asbestos. A copy of Subpart M is provided in Appendix D.
15. The permittee is subject to and shall comply with applicable provisions of 40 CFR Part 61 (NESHAP) Subpart FF – Benzene Waste Operations. A copy of Subpart FF is provided in Appendix E.

Title VI Provisions

16. The permittee shall comply with the standards for labeling of products using ozone depleting substances pursuant to 40 CFR Part 82, Subpart E:
 - a. All containers containing a class I or class II substance stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced to interstate commerce pursuant to 40 CFR § 82.106.

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- b. The placement of the required warning statement must comply with the requirements pursuant to 40 CFR § 82.108.
 - c. The form of the label bearing the required warning must comply with the requirements pursuant to 40 CFR § 82.110.
 - d. No person may modify, remove, or interfere with the required warning statement except as described in 40 CFR § 82.112.
- 17. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for MVACs in Subpart B:
 - a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR § 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 CFR § 82.158.
 - c. Persons performing maintenance, service repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR § 82.161.
 - d. Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to 40 CFR § 82.166. (“MVAC-like appliance” as defined at 40 CFR § 82.152.)
 - e. Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to 40 CFR § 82.156.
 - f. Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR § 82.166.
- 18. If the permittee manufactures, transforms, destroys, imports, or exports a class I or class II substance, the permittee is subject to all requirements as specified in 40 CFR Part 82, Subpart A, Production and Consumption Controls.
- 19. If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle

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air conditioner (MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.

The term “motor vehicle” as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term “MVAC” as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

20. The permittee shall be allowed to switch from any ozone-depleting substance to any alternative that is listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, Significant New Alternatives Policy Program.

Permit Shield

21. Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements, as of the date of permit issuance, included in and specifically identified in item a of this condition. All inapplicable requirements, as of the date of permit issuance, are included in and specifically identified in item b of this condition. Nothing shall alter or affect the requirements included in and specifically identified in item c of this condition.
- a. The following have been specifically identified as applicable requirements based upon the information submitted by the permittee in an application dated January, 1997.

Source No.	Regulation	Description
Facility	Arkansas Regulation #19	Regulations of the Arkansas Plan of Implementation for Air Pollution Control (SIP)
Facility	Arkansas Regulation #26	Regulations of the Arkansas Operating Air Permit Program
Facility	40 CFR Part 61 (NESHAP) Subpart M	Asbestos
Facility	40 CFR Part 61 (NESHAP) Subpart FF	Benzene Waste Operations
Utilities		
07	40 CFR Part 60 (NSPS) Subpart Dc	Small Steam Generating Units
PHT-4 Plant		

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Source No.	Regulation	Description
PHT-4 Plant (PHT-4 Production)	40 CFR Part 63 (NESHAP) Subparts F, G, & H	Hazardous Organic NESHAP (HON)
DBS Plant		
902 (T-24)	40 CFR Part 60 (NSPS) Subpart Kb	VOL Storage Vessels
908 (T-20A)	40 CFR Part 60 (NSPS) Subpart Kb	VOL Storage Vessels
908 (T-20B)	40 CFR Part 60 (NSPS) Subpart Kb	VOL Storage Vessels
916 (T-91)	40 CFR Part 60 (NSPS) Subpart Kb	VOL Storage Vessels
916 (T-92)	40 CFR Part 60 (NSPS) Subpart Kb	VOL Storage Vessels

- b. The following requirements have been specifically identified as not applicable based upon information submitted by the permittee in an application dated January, 1997.

Source No.	Regulation	Description	Basis for Determination
Facility	40 CFR Part 60 Subpart VV	SOCMI VOC Equipment Leaks	None of the chemicals listed in 40 CFR 60.489 are produced at this facility.
Facility	40 CFR Part 60 Subpart III	SOCMI Air Oxidation Units	There are no air oxidation units at the facility.
Facility	40 CFR Part 60 Subpart NNN	SOCMI Distillation Operations	None of the chemicals listed in 40 CFR 60.667 are produced at this facility.
Facility	40 CFR Part 60 Subpart RRR	SOCMI Reactor Units	None of the chemicals listed in 40 CFR 60.707 are produced at this facility.
Facility	40 CFR Part 61 Subpart V	Equipment Leaks of VHAP	This facility does not use or produce benzene or vinyl chloride.

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Source No.	Regulation	Description	Basis for Determination
Utilities			
02	40 CFR Part 60 Subpart Db	Steam Generating Units	Installed in 1973
03	40 CFR Part 60 Subpart Dc	Small Steam Generating Units	Installed in 1985
PHT-4 Plant			
PHT-4 Plant (PHT-4 Diol & NaBr)	40 CFR Part 63 Subpart F, G, & H	Hazardous Organic NESHAP (HON)	“Primary Product” qualifier
SN-604	40 CFR Part 60 Subpart Kb	VOL Storage Vessels	Because this tank is subject to the HON, it is not subject to 40 CFR Part 60 Subpart Kb (see 40 CFR §63.110(b)).

- c. Nothing shall alter or affect the following:

Provisions of Section 303 of the Clean Air Act;

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

The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; or

The ability of the EPA to obtain information under Section 114 of the Clean Air Act.

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SECTION VII: INSIGNIFICANT ACTIVITIES

Pursuant to §26.304 of Regulation 26, the following sources are insignificant activities. Any activity for which a state or federal applicable requirement applies is not insignificant even if this activity meets the criteria of §304 of Regulation 26 or is listed below. Insignificant activity determinations rely upon the information submitted by the permittee in an application dated January 1997 and subsequent submittals.

Source Number	Description	Reason Insignificant
	Aerosol Can Crusher	A13
	Laboratory Experimental Station	A13
Bromine Production		
102	Brine Surge Tank 40,000 gallons, 1996	A13
FF-680 Plant		
403	Propylene Glycol Storage Tank (T-31) 17,300 gallons, 1978	A13
404	Isopropyl Alcohol Storage Tank (T-32) 17,300 gallons, 1978	A13
405	TBE Storage Tank (T-28) 11,750 gallons, 1978	A13
406	EDB Storage Tank (T-35)	A3 capacity: 7,600 gallons < 10,000 gallons true vapor pressure: 0.37 psia < 0.5 psia
407	Hydrazine Make-up Tank (T-2)	A3 capacity: 900 gallons < 10,000 gallons true vapor pressure: 0.1 psia < 0.5 psia
409	Phenol Charge Tank (T-13)	A3 capacity: 300 gallons < 10,000 gallons true vapor pressure: 0.06 psia < 0.5 psia
410	Mother Liquor Storage Tank (T-16) 10,200 gallons, 1978	A13

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Source Number	Description	Reason Insignificant
411	PG Solution Storage Tank (T-17) 1,700 gallons, 1978	A3 capacity: 1,700 gallons < 10,000 gallons true vapor pressure: 0.004 psia < 0.5 psia
	5% Hydrazine or NaOH Tank (T-81) 1,400 gallons	A3 capacity: 1,400 gallons < 10,000 gallons true vapor pressure: 0.1 psia < 0.5 psia
	Wastewater Treatment Tanks (T-45, T-49, T-18, T-19)	Contains trace levels of VOCs
431	Tank (T-33) 11,800 gallons, 1978	A13
	Caustic Scrubber Tank (contains no VOCs)	A4
433	T-10 Shot Tank	A13
434	Reactor R-1	A13
	Allyl Chloride Storage Tank (7,500 gallons, 1999)	does not emit to the atmosphere
CD-75 Plant		
502	Ethylene Dichloride Storage Tank 7,500 gallons, 1976	A13
506	Glycol Tank 4,500 gallons, 1976	A3 capacity: 4,500 gallons < 10,000 gallons true vapor pressure: 0.02 psia < 0.5 psia
511	Recycle Ethanol Tank (T-506) 2,000 gallons, 1996	A13
512	Recycle Ethylene Dichloride Tank (T-510) 2,000 gallons, 1996	A13
513	Ethanol Storage Tank 7,500 gallons, 1976	A13
514	CDDT Storage Tank 20,000 gallons, 1976	A13

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Source Number	Description	Reason Insignificant
	Wastewater Check Tank (T-514) 9,400 gallons, >1985	A13
	Wastewater Check Tank (T-515) 9,400 gallons, >1985	A13
	Wastewater Check Tank (T-516) 7,500 gallons, >1985	A13
	Wastewater Feed Tank (T-500) 8,000 gallons, >1985	A13
PHT-4 Plant		
612	Natural Gas Fired Hot Oil Unit (4 MMBtu/hr)	A1
FCU North Plant		
707	F-101 Hot Oil Heater 1.4 MMBtu/hr	A1
	75% Methanol Storage Tank @ < 0EF	A3 Volume: 4,000 gal < 10,000 gal. Vapor Pressure @ 0EF: 0.2 psig < 0.5 psig
FCU South Plant		
804	TCP/Methylene Chloride Storage Tank 1,200 gallons, 1988	A13
806	Chloropentanes Storage Tank #1 7,500 gallons, 1988	A13
811	Hot Oil Heater, 2 MMBtu/hr	A1
812	Cylinder Filling Losses	A13
814	Process Drying and Regeneration	A13
815	Carbon Tetrachloride Storage Tank 1,250 gallons, 1988	A13
816	Chloropentanes Storage Tank #2 7,500 gallons, 1996	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia

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Source Number	Description	Reason Insignificant
DBS Plant		
905	T-14 Storage Tank 4,000 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
905	T-16 Storage Tank 2,000 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
906	Step III Process Vent	A13
907	T-19A Storage Tank 2,000 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
907	T-19B Storage Tank 2,000 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
909	T-30 Storage Tank 6,000 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
910	Vacuum Jet	A13
911	Allyl Chloride Storage Tank (T-23) 4,000 gallons, 1993	A13
912	Hot Oil System, 0.866 MMBtu/hr	A1
913	T-53 Storage Tank 300 gallons	A3 capacity < 10,000 gallons true vapor pressure < 0.5 psia
914	T-201 HCl Storage Tank	A13
PDBS Plant		
1102	DBS Feed/Storage Tank 900 gallons, 1994	A3 capacity: 900 gallons < 10,000 gallons true vapor pressure: 0.0004 psia < 0.5 psia
1103	Toluene Mix Tank 70 gallons, 1994	A2 capacity: 70 gallons < 10,000 gallons true vapor pressure: 0.49 psia < 3.5 psia

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Source Number	Description	Reason Insignificant
Pharmaceutical Chemicals Unit		
1203	Boiler 2.5 MMBtu/hr	A1 <10 MMBtu/hr
	Propylene glycol storage tank 3,000 gallons, 0.001 psia	A3 capacity: 3,000 gallons < 10,000 gallons vapor pressure: 0.001 psia < 0.5 psia
	D-Limonene storage tank 3,000 gallons, 0.1 psia	A3 capacity: 3,000 gallons < 10,000 gallons vapor pressure: 0.1 psia < 0.5 psia
TFP Plant		
	TCP Storage Tank	A3 capacity: < 10,000 gallons true vapor pressure: < 0.5 psia
	Chloropentanes Storage Tank	A3 capacity: < 10,000 gallons true vapor pressure: < 0.5 psia
	Hot Oil Heater 1.5 MMBtu/hr	A13
CN-1985 Plant		
	Final product tank #1	A13
	Final product tank #2	A13
	Wastewater tank 10,000 gallons true vapor pressure < 0.01 psia	A3 capacity # 10,000 gallons true vapor pressure # 0.5 psia
	Tempered oil tank 2,500 gallons true vapor pressure = 0.1 psia @ 140EF	A3 capacity # 10,000 gallons true vapor pressure # 0.5 psia
	Cold oil tank 2,500 gallons true vapor pressure < 0.1 psia @ 60EF	A3 capacity # 10,000 gallons true vapor pressure # 0.5 psia

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Source Number	Description	Reason Insignificant
	30% ethylene glycol tank 1,000 gallons true vapor pressure = 0.0055 psia @ 160EF	A3 capacity # 10,000 gallons true vapor pressure # 0.5 psia

Pursuant to §26.304 of Regulation 26, the emission units, operations, or activities contained in Regulation 19, Appendix B, have been determined by the Department to be insignificant activities. Activities included in this list are allowable under this permit and need not be specifically identified.

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SECTION VIII: GENERAL PROVISIONS

1. Pursuant to 40 CFR 70.6(b)(2), any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*). Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute.
2. Pursuant to 40 CFR 70.6(a)(2) and §26.7 of the Regulations of the Arkansas Operating Air Permit Program (Regulation 26), this permit shall be valid for a period of five (5) years beginning on the date this permit becomes effective and ending five (5) years later.
3. Pursuant to §26.4 of Regulation #26, it is the duty of the permittee to submit a complete application for permit renewal at least six (6) months prior to the date of permit expiration. Permit expiration terminates the permittee's right to operate unless a complete renewal application was submitted at least six (6) months prior to permit expiration, in which case the existing permit shall remain in effect until the Department takes final action on the renewal application. The Department will not necessarily notify the permittee when the permit renewal application is due.
4. Pursuant to 40 CFR 70.6(a)(1)(ii) and §26.7 of Regulation #26, where an applicable requirement of the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq* (Act) is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, both provisions are incorporated into the permit and shall be enforceable by the Director or Administrator.
5. Pursuant to 40 CFR 70.6(a)(3)(ii)(A) and §26.7 of Regulation #26, records of monitoring information required by this permit shall include the following:
 - i. The date, place as defined in this permit, and time of sampling or measurements;
 - ii. The date(s) analyses were performed;
 - iii. The company or entity that performed the analyses;
 - iv. The analytical techniques or methods used;
 - v. The results of such analyses; and
 - vi. The operating conditions existing at the time of sampling or measurement.

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6. Pursuant to 40 CFR 70.6(a)(3)(ii)(B) and §26.7 of Regulation #26, records of all required monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. 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 this permit.
7. Pursuant to 40 CFR 70.6(a)(3)(iii)(A) and §26.7 of Regulation #26, the permittee shall submit reports of all required monitoring every 6 months. If no other reporting period has been established, the reporting period shall end on the last day of the anniversary month of this permit. The report shall be due within 30 days of the end of the reporting period. Even though the reports are due every six months, each report shall contain a full year of data. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by a responsible official as defined in §26.2 of Regulation #26 and must be sent to the address below.

Arkansas Department of Environmental Quality
Air Division
ATTN: Compliance Inspector Supervisor
Post Office Box 8913
Little Rock, AR 72219

8. Pursuant to 40 CFR 70.6(a)(3)(iii)(B), §26.7 of Regulation #26, and §19.601 and 19.602 of Regulation #19, all deviations from permit requirements, including those attributable to upset conditions as defined in the permit shall be reported to the Department. An initial report shall be made to the Department by the next business day after the occurrence. The initial report may be made by telephone and shall include:
 - i. The facility name and location,
 - ii. The process unit or emission source which is deviating from the permit limit,
 - iii. The permit limit, including the identification of pollutants, from which deviation occurs,
 - iv. The date and time the deviation started,
 - v. The duration of the deviation,
 - vi. The average emissions during the deviation,
 - vii. The probable cause of such deviations,
 - viii. Any corrective actions or preventive measures taken or being taken to prevent such deviations in the future, and
 - ix. The name of the person submitting the report.

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A full report shall be made in writing to the Department within five (5) business days of discovery of the occurrence and shall include in addition to the information required by initial report a schedule of actions to be taken to eliminate future occurrences and/or to minimize the amount by which the permits limits are exceeded and to reduce the length of time for which said limits are exceeded. If the permittee wishes, they may submit a full report in writing (by facsimile, overnight courier, or other means) by the next business day after discovery of the occurrence and such report will serve as both the initial report and full report.

9. Pursuant to 40 CFR 70.6(a)(5) and §26.7 of Regulation #26, and A.C.A. §8-4-203, as referenced by §8-4-304 and §8-4-311, if any provision of the permit or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications hereof which can be given effect without the invalid provision or application, and to this end, provisions of this Regulation are declared to be separable and severable.
10. Pursuant to 40 CFR 70.6(a)(6)(i) and §26.7 of Regulation #26, the permittee must comply with all conditions of this Part 70 permit. Any permit noncompliance with applicable requirements as defined in Regulation #26 constitutes a violation of the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.* and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Any permit noncompliance with a state requirement constitutes a violation of the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) and is also grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
11. Pursuant to 40 CFR 70.6(a)(6)(ii) and §26.7 of Regulation #26, 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.

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12. Pursuant to 40 CFR 70.6(a)(6)(iii) and §26.7 of Regulation #26, 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.
13. Pursuant to 40 CFR 70.6(a)(6)(iv) and §26.7 of Regulation #26, this permit does not convey any property rights of any sort, or any exclusive privilege.
14. Pursuant to 40 CFR 70.6(a)(6)(v) and §26.7 of Regulation #26, the permittee shall furnish to the Director, within the time specified by the Director, any information that the Director 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 Director copies of records required to be kept by the permit. For information claimed to be confidential, the permittee may be required to furnish such records directly to the Administrator along with a claim of confidentiality.
15. Pursuant to 40 CFR 70.6(a)(7) and §26.7 of Regulation #26, the permittee shall pay all permit fees in accordance with the procedures established in Regulation #9.
16. Pursuant to 40 CFR 70.6(a)(8) and §26.7 of Regulation #26, 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 elsewhere in this permit.
17. Pursuant to 40 CFR 70.6(a)(9)(i) and §26.7 of Regulation #26, if the permittee is allowed to operate under different operating scenarios, the permittee shall, contemporaneously with making a change from one operating scenario to another, record in a log at the permitted facility a record of the scenario under which the facility or source is operating.
18. Pursuant to 40 CFR 70.6(b) and §26.7 of Regulation #26, all terms and conditions in this permit, including any provisions designed to limit a source's potential to emit, are enforceable by the Administrator and citizens under the Act unless the Department has specifically designated as not being federally enforceable under the Act any terms and conditions included in the permit that are not required under the Act or under any of its applicable requirements.

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19. Pursuant to 40 CFR 70.6(c)(1) and §26.7 of Regulation #26, any document (including reports) required by this permit shall contain a certification by a responsible official as defined in §26.2 of Regulation #26.
20. Pursuant to 40 CFR 70.6(c)(2) and §26.7 of Regulation #26, the permittee shall allow an authorized representative of the Department, upon presentation of credentials, to perform the following:
 - i. Enter upon the permittee's premises where the permitted source is located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit;
 - ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
 - iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements.
21. Pursuant to 40 CFR 70.6(c)(5) and §26.7 of Regulation #26, the permittee shall submit a compliance certification with terms and conditions contained in the permit, including emission limitations, standards, or work practices. This compliance certification shall be submitted annually and shall be submitted to the Administrator as well as to the Department. All compliance certifications required by this permit shall include the following:
 - i. The identification of each term or condition of the permit that is the basis of the certification;
 - ii. The compliance status;
 - iii. Whether compliance was continuous or intermittent;
 - iv. The method(s) used for determining the compliance status of the source, currently and over the reporting period established by the monitoring requirements of this permit; and
 - v. Such other facts as the Department may require elsewhere in this permit or by §114(a)(3) and 504(b) of the Act.
22. Pursuant to §26.7 of Regulation #26, nothing in this permit shall alter or affect the following:

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- i. The provisions of Section 303 of the Act (emergency orders), including the authority of the Administrator under that section;
 - ii. The liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance;
 - iii. The applicable requirements of the acid rain program, consistent with §408(a) of the Act; or
 - iv. The ability of EPA to obtain information from a source pursuant to §114 of the Act.
- 23. Pursuant to A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, this permit authorizes only those pollutant emitting activities addressed herein.

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E

INVOICE REQUEST FORM

PDS-_____

Date October 11, 2001

☒	Air
☐	NPDES
☐	Stormwater
☐	State Permits Branch
☐	Solid Waste

CSN 70-0037

Facility Name Great Lakes Chemical - South Plant

Invoice Mailing Address Great Lakes Chemical Corp., PO Box 7020, El Dorado , AR 71730, attn: Mr. Pete Howard - Env. Mgr.

☐	Initial
☒	Modification
☐	Annual

Permit Number 873-AOP-R2
Permit Description Title 5
Permit Fee Code A

Amount Due \$ 500

Engineer Leamons

Paid? GNo GYes Check # _____

Comments: Air Permit Fee Calculation = Minor Mod = \$500

Public Notice

Pursuant to the Arkansas Operating Air Permit Program (Regulation #26) Section 602, the Air Division of the Arkansas Department of Environmental Quality gives the following notice:

Great Lakes Chemical Corp., operates chemical manufacturing facility, the “South Plant” located at 324 Southfield Cutoff, El Dorado, Arkansas 71730. The facility has applied for minor modification to their existing Title V operating air permit (CSN: 70-0037). Upon final approval and issuance by the Department the facility will be permitted to operate an additional baghouse control device for control of particulate air emissions.

The application has been reviewed by the staff of the Department and has received the Department's tentative approval subject to the terms of this notice.

Citizens wishing to examine the permit application and staff findings and recommendations may do so by contacting Suzanne Carswell, Information Officer. Citizens desiring technical information concerning the application or permit should contact Bryan Leamons, Engineer. Both Suzanne Carswell and Bryan Leamons can be reached at the Department's central office, 8001 National Drive, Little Rock, Arkansas 72209, telephone: (501) 682-0744.

The draft permit and permit application are available for copying at the above address. A copy of the draft permit has also been placed at the Barton Library, East Fifth & North Jefferson, El Dorado, Arkansas 71730. This information may be reviewed during normal business hours.

Interested or affected persons may also submit written comments or request a hearing on the proposal, or the proposed modification, to the Department at the above address - Attention: Suzanne Carswell. In order to be considered, the comments must be submitted within thirty (30) days of publication of this notice. Although the Department is not proposing to conduct a public hearing, one will be scheduled if significant comments on the permit provisions are received. If a hearing is scheduled, adequate public notice will be given in the newspaper of largest circulation in the county in which the facility in question is, or will be, located.

The Director shall make a final decision to issue or deny this application or to impose special conditions in accordance with Section 2.1 of the Arkansas Pollution Control and Ecology Commission's Administrative Procedures (Regulation #8) and Regulation #26.

Dated this

Richard A. Weiss
Interim Director