Lane Regional Air Protection Agency
Standard Air Contaminant Discharge Permit

Review Report

Arclin USA, LLC **Permit No. 201221**
475 North 28th Street
Springfield, Oregon 97477
http://www.arclin.com/

Source Information:

Primary SIC	2821 – Synthetic Resin Manufacturing	Source Categories (LRAPA Title 37, Table 1)	B. 51 – Organic or inorganic chemical manufacturing and distribution B. 70 – Synthetic resin manufacturing
Secondary SIC	2869 – Organic Chemical Manufacturing		
Primary NAICS	325211 – Plastics Material and Resin Manufacturing		
Secondary NAICS	325199 – Organic Chemical Manufacturing	Public Notice Category	Category III

Compliance and Emissions Monitoring Requirements:

Unassigned emissions	Y	Source test date(s)	Within 12 months of permit issuance
Emission credits	NA	COMS	NA
Special Conditions	NA	CEMS	NA
Compliance schedule	NA	Ambient monitoring	NA

Reporting Requirements:

Annual report (due date)	February 15	Monthly report (due dates)	NA
Semi-annual report (due date)	August 15	Excess emissions report	Y
GHG Report (due date)	See permit	Other reports	NA

Air Programs:

NSPS (list subparts)	A, III, VV, Dc	Major HAP source	NA
NESHAP (list subparts)	A, ZZZZ	Federal major source	NA
CAM	NA	New Source Review (NSR)	NA
Regional Haze (RH)	NA	Prevention of Significant Deterioration (PSD)	NA
Synthetic Minor (SM)	NA	Acid Rain	NA
SM-80	Y	Clean Air Mercury Rule (CAMR)	NA
Part 68 Risk Management	Y	TACT	NA
Title V	NA	>20 Megawatts	NA
ACDP (SIP)	NA		

Permittee Identification

1. Arclin USA, LLC ("Arclin" or "the facility") is a formaldehyde and resin manufacturing facility located at 475 North 28th Street in Springfield, Oregon.

General Background

2. Arclin manufactures formaldehyde and various types of resins incorporating formaldehyde. The facility produces formaldehyde by utilizing three (3) production plants: SF-1, SF-2, and SF-3. SF-1 and SF-3 convert methanol to formaldehyde using an oxidation process, while SF-2 converts methanol to formaldehyde using a dehydrogenation process. A Regenerative Thermal Oxidizer (RTO) controls Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs) emissions from SF-1: Group 1. A Tail Gas Boiler (TGB) controls emissions from SF-2: Group 2, while additionally providing steam for the plant. The emissions from SF-3: Group 3 are controlled by a Catalytic Incinerator (CI). Other emissions include various storage tanks not vented to the three (3) control devices listed above and fugitive emissions from process equipment such as flanges, valves, and pumps. Total annual resin production at the facility is approximately 200 million pounds. The facility operates 8,760 hours per year.

Reasons for Permit Action and Fee Basis

3. This permit action is a renewal for an existing Standard Air Contaminant Discharge Permit (Standard ACDP) which was issued on September 1, 2016, and was scheduled to expire on September 1, 2021. As the facility submitted a timely renewal application on April 29, 2021, the current permit will remain in effect until final action has been taken on the renewal application. The facility operates processes listed in LRAPA title 37 Table 1, Part B: 51. Organic or inorganic chemical manufacturing and distribution and Table 1, Part B: 70. Synthetic resin manufacturing. The facility is also applicable to LRAPA title 37 Table 1, Part C: 3. All sources electing to maintain the source's baseline emission rate or netting basis. Therefore, the facility is required to obtain a Standard ACDP.

Attainment Status

4. The facility is located in an area that has been designated as attainment or unclassified for all criteria pollutants. The facility is inside the Eugene-Springfield UGB as defined in LRAPA 29-0010 which designates the Eugene-Springfield carbon monoxide and PM_{10} maintenance areas. The facility is also located inside the Eugene-Springfield UGB as described in the current Eugene-Springfield Metropolitan Area General Plan, as amended.

Permitting History

5. LRAPA has reviewed and issued the following permitting actions to this facility:

Date(s) Approved/Valid	Permit Action Type	Description
06/26/1995	Synthetic Minor ACDP	Initial permit – Included three (3) formaldehyde production lines, eight (8) resin production kettles, and material storage and handling operations.
06/25/2005	Synthetic Minor ACDP	Three (3) formaldehyde production plants SF-1, SF-2, and SF-3 controlled by a Regenerative Thermal Oxidizer (RTO), Tail Gas Boiler (TGB), and Catalytic Incinerator (CI), respectively.
07/19/2010	Standard ACDP	Renewal
12/05/2012	Addendum 1 – Administrative Amendment	Changed facility mailing address.

Date(s) Approved/Valid	Permit Action Type	Description
06/19/2014	Addendum 2 – Non-NSR/PSD Basic Technical Modification	Removed 13.6 MMBtu/hr Bryan standby boiler and installed new 17.0 MMBtu/hr Bryan stand-by boiler.
02/11/2015	Addendum 3 – Non-NSR/PSD Simple Technical Modification	Installed resorcinol formaldehyde (PRF) resin drying oven, incorporated into emission unit SF-1.
09/01/2016	Standard ACDP	Renewal
08/24/2017	Addendum 1– Non-NSR/PSD Basic Technical Modification	Changed facility name and clarified source testing frequency of the operating scenarios of SF-1.
09/13/2017	Addendum 2 – Non-NSR/PSD Simple Technical Modification	Installed two (2) additional resorcinol formaldehyde (PRF) resin drying ovens, incorporated into emission unit SF-1.
Upon Issuance	Standard ACDP	Renewal

Compliance History

6. This facility is regularly inspected by LRAPA. The following table indicates the inspection history of this facility:

Agency	Type of Inspection	Date	Results
LRAPA	Full Compliance Evaluation	09/30/2007	No areas of non-compliance discovered
LRAPA	Full Compliance Evaluation	09/27/2012	No areas of non-compliance discovered
LRAPA	Full Compliance Evaluation	09/07/2017	No areas of non-compliance discovered

7. LRAPA has not issued any violation notices or taken enforcement action against this facility since March 2002. Prior enforcement actions include:

7.a. Notice of Civil Penalty No. 02-2360 on March 15, 2002, and Notice of Non-Compliance (NON) No. 2360 issued on February 6, 2002, for failure to provide the required written notification to LRAPA of an asbestos abatement project.

7.b. Notice of Civil Penalty No. 02-2361 issued on April 18, 2002, and Notice of Non-Compliance No. 2361 issued February 13, 2002, for failure to install a secondary seal on tank SM-9.

7.c. Notice of Non-Compliance No. 99-1743 issued February 16, 1999. This was a permit violation for exceeding the Plant Site Emission Limits (PSELs).

7.d. Notice of Civil Penalty No. 97-1290 issued July 7, 1997, and Notice of Non-Compliance issued September 19, 1997, for failure to install a flow meter at reactor catalytic incinerator firebox, failure to demonstrate compliance with NSPS Leak Detection and Repair (LDAR) requirements, failure to comply with LDAR record keeping requirements and failure to submit semi-annual LDAR reports to the Administrator/LRAPA.

7.e. Notice of Non-Compliance No. 92-19 issued June 25, 1992, for performing asbestos abatement projects without notifying LRAPA, and for not having a certified asbestos contractor perform the project.

Emission Unit Description

8. The emission units regulated by this permit are the following:

EU ID	Emission Unit Description	Control Device
Boiler-1	Bryan 17.0 MMBtu/hr stand-by boiler (low NO_X burners, tangential-fired)	None
SF-1: Group 1 Resin Manufacturing		
	SF-1 Air Oxidation Formaldehyde Process	Regenerative Thermal Oxidizer (RTO)
	Six (6) Resin Kettles and Associated Equipment	
	Raw Material and Resin Storage Tanks	
	Raw Material, Intermediate Products, Operating Chemicals and Finished Products, Unloading, Storage, and Loading Processes	
SF-2: Group 2 Formaldehyde Manufacturing		
	SF-2 Dehydrogenation Formaldehyde Process	Tail Gas Boiler (TGB) – Zurn, 6.8 MM BTU/hr boiler, tangential-fired
SF-3: Group 3 Formaldehyde Manufacturing		
	SF-3 Air Oxidation Formaldehyde Process	Catalytic Incinerator (CI)
ST-1: Group 4 Storage Tanks and Containers		
	Methanol Storage Tank (SM-9)	Floating roof
	Methanol Storage Tanks (SM-1 and SM-2)	Floating roof
	Urea Bin Vents 1 and 2	Baghouse
	RTU Dry Material Hopper	Baghouse
	Melamine Dust Collector	Baghouse
	Storage Tanks and Containers	None
	5 Mixers (M-1 – M-5) and Associated Equipment	
	Raw Material, Intermediate Products, Operating Chemicals and Finished Products Unloading, Storage, and Loading Processes	
FUG-1	Fugitive Emission Components (Pumps, Blowers, Valves, and Flanges)	None
CIA-1	Categorically Insignificant Activity: Emergency Generator – 500 kW, diesel-fired, installed 2002	None

9. The stand-by boiler listed in emission unit Boiler-1 is only used when formaldehyde plant steam production is low or unavailable. Historically, the boiler operates at approximately half capacity throughout the year.

10. Although SF-1: Group 1 resin manufacturing contains the SF-1 formaldehyde air oxidation process, this portion of the emission unit group has been idle since September 2013. The remaining equipment, including the resin kettles and storage tanks, are still in operation and have emissions controlled by a regenerative thermal oxidizer (RTO).

11. SF-2: Group 2 resin manufacturing is a dehydrogenation process for formaldehyde production controlled by a tail gas boiler (TGB). Since the beginning of 2022, SF-2 has been operated sparingly, leaving most of the formaldehyde production to SF-3: Group 3.

12. SF-3: Group 3 resin manufacturing is an air oxidation process for formaldehyde production controlled by a catalytic incinerator (CI). The majority of the formaldehyde production at the facility is accomplished utilizing emission unit SF-3: Group 3.

13. Emission Unit ST-1: Group 4 lists additional tanks and bulk storage containers onsite that are associated with the resin manufacturing process. Methanol Storage Tank (SM-9) is an 82,000-gallon tank that is subject to NSPS subpart Kb, although this tank has been out of methanol service since 2008. The facility requested that the language of the subpart remain in the permit.

14. The fugitive emission components listed in FUG-1 are tracked and reported annually by the facility in an Equipment and Emission Point Information list required per Condition 64 of the permit.

15. During the permit renewal process, the facility notified LRAPA that there was a 500-kW emergency generator installed onsite. The emission unit CIA-1 has been added into the permit, along with the RICE 4Z NESHAP language applicable to this emergency generator installed in 2002.

Performance Test Results

16. This facility has conducted various source tests to comply with permit requirements. The table below shows the results of the test reports on file at LRAPA.

Test Date	Emission Unit and Device	Pollutant	Results		
			Inlet (lb/hr)	Outlet (lb/hr)	Destruction Efficiency (%)
04/04/1994	SF-1: Group 1 RTO	Formaldehyde	6.63	0.08	98.5
		Methanol	24.43	0.20	99.2
		Phenol	0.98	0.02	97.7
08/26/1998	SF-1: Group 1 RTO	Formaldehyde	5.15	0.04	99.2
		Methanol	23.59	0.10	99.6
		Phenol	1.17	ND	100
		Total VOC	4.88	0.06	98.8
	SF-2: Group 2 TGB	Formaldehyde	1.42	0.03	97.9
		Methanol	6.64	0.04	99.4
		Total VOC	31.62	11.75	62.8
	SF-3: Group 3 CI	Formaldehyde	0.79	ND	100
		Methanol	19.29	ND	100
		Total VOC	37.73	0.01	99.9
03/02/2000	SF-1: Group 1 RTO	Formaldehyde	12.39	0.18	98.6
		Methanol	14.16	0.30	97.9
		DME	40.15	0.48	98.9
		Phenol	4.03	<0.0001	>99.9
	SF-2: Group 2 TGB	Formaldehyde	16.24	0.09	98.6
		Methanol	74.91	<0.07	>99.8
	SF-3: Group 3 CI	Formaldehyde	1.91	<0.02	>99.4
		Methanol	7.22	<0.02	>99.9
		DME	64.84	1.24	98.1
03/20/2007	SF-1: Group 1 RTO – SF-1 Online	Formaldehyde	15.0	0.52	96.6
		Methanol	18.4	0.36	97.8
		DME	20.1	0.50	97.5
		Phenol	0.27	<0.013	95.2

Test Date	Emission Unit and Device	Pollutant	Results		
			Inlet (lb/hr)	Outlet (lb/hr)	Destruction Efficiency (%)
		Total VOC	70.7	<1.43	98.0
	SF-1: Group 1 RTO – SF-1 Offline	Formaldehyde	19.4	0.29	98.5
		Methanol	2.5	0.057	97.7
		DME	0.13	<0.041	>68.5
		Phenol	0.66	<0.013	>98.0
		Total VOC	24.4	<0.44	98.2
	SF-2: Group 2 TGB	Formaldehyde	7.1	<0.023	99.6
		Methanol	456	<0.011	100.0
		DME	0.84	<0.024	97.1
		Total VOC	596.1	<0.060	100.0
	SF-3: Group 3 CI	Formaldehyde	1.9	0.10	95.5
		Methanol	7.3	0.12	98.4
		DME	14.8	0.28	98.1
		Total VOC	37.4	0.91	97.6
06/21/2011	SF-1: Group 1 RTO – SF-1 Online	Formaldehyde	10.8	0.77	92.4
		Methanol	24.2	1.3	94.8
		DME	66.3	3.3	95.0
		Phenol	0.31	<0.045	85.4
		Total VOC	109.4	1.7	94.8
	SF-1: Group 1 RTO – SF-1 Offline	Formaldehyde	21.7	0.52	97.6
		Methanol	6.0	0.11	97.3
		DME	0.24	<0.013	94.6
		Phenol	0.58	<0.033	97.3
		Total VOC	28.7	<0.68	>97.4
	SF-2: Group 2 TGB	Formaldehyde	1.5	<0.013	>99.0
		Methanol	92.6	<0.012	100
		DME	2.5	<0.01	99.6
		Total VOC	96.6	0.16	100
	SF-3: Group 3 CI	Formaldehyde	2.2	0.027	98.8
		Methanol	4.2	0.012	99.7
		DME	26.9	0.26	99.0
		Total VOC	42.5	1.44	99.3
08/30/2011	SF-1: Group 1 RTO – SF-1 Offline	Formaldehyde	8.7	0.44	95.0
		Methanol	2.0	0.14	92.9
		DME	<0.13	<0.008	93.8
		Phenol	0.15	<0.036	>76.2
		Total VOC	11.1	<0.62	>94.4
		CO	0.028	0.068	--

Test Date	Emission Unit and Device	Pollutant	Results		
			Inlet (lb/hr)	Outlet (lb/hr)	Destruction Efficiency (%)
05/30/2013	SF-1: Group 1 RTO – SF-1 Online (Heat Exchange Media Replaced in 2012)	Formaldehyde	2.00	1.24	38.0
		Methanol	12.82	1.50	88.3
		DME	17.8	0.69	96.1
		Phenol	0.14	0.036	74.4

		Total VOC	15.4	0.62	96.1
		CO	1.09	0.15	86.2
	SF-1: Group 1 RTO – SF-1 Offline (Heat Exchange Media Replaced in 2012)	Formaldehyde	4.159	0.082	98.0
		Methanol	0.567	0.022	96.1
		DME	0.020	0.022	0
		Phenol	0.257	0.001	>99.6
		Total VOC	0.637	0.009	98.6
		CO	0.111	0.051	54.1
08/23/2017	SF-1: Group 1 RTO – SF-1 Offline	Formaldehyde	3.76	0.17	95.5
		Methanol	1.22	0.07	94.3
		DME	0.10	<0.02	80.0
		Phenol	0.04	*0.02*	*52.0*
		Total VOC	5.59	0.31	94.5
		CO	*0.16*	<0.05	>68.8
	SF-2: Group 2 TGB	Formaldehyde	1.22	0.03	97.5
		Methanol	0.40	*0.03*	*92.5*
		DME	0.37	<0.02	>94.6
		Total VOC	43.8	<0.11	>99.7
		CO	<0.9	<0.04	>95.6
	SF-3: Group 3 CI	Formaldehyde	4.0	0.28	93.0
		Methanol	10.2	0.47	95.4
		DME	49.2	0.31	99.4
		Total VOC	69.9	1.07	98.5
		CO	244	0.55	99.8

NOTE: Italicized data indicate averages which included both detected and non-detected values. If the value of the runs were below the method reporting limit (MRL) or the method detection limit (MDL), then the results are labeled "less than, <".

17. The permittee is required to perform emission factor verification testing. The table below shows a summary of the emission factor verification testing.

Emissions Unit(s)	Pollutant	Fuels/Species/ Conditions		Emission Factor	Emission Factor Units	Emission Factor Verification Testing	
						Yes/No	Test Method
EU: SF-1 Group 1 (RTO)	HCHO	SF-1 On-line	RTO On-line	1.78	lb/hr	Within 6 months of SF-1 restart	EPA Method 323 or Method 320
			RTO Off-line	4.35	lb/hr		
		SF-1 Off-line	RTO On-line	1.44	lb/hr	Yes	
			RTO Off-line	6.31	lb/hr		
	MeOH	SF-1 On-line	RTO On-line	1.50	lb/hr	Within 6 months of SF-1 restart	EPA Method 18 or Method 308
			RTO Off-line	12.82	lb/hr		
		SF-1 Off-line	RTO On-line	0.05	lb/hr	Yes	
			RTO Off-line	0.89	lb/hr		
	Phenol	SF-1 On-line	RTO On-line	0.19	lb/hr	Within 6 months of SF-1 restart	EPA Method 18
			RTO Off-line	0.73	lb/hr		
		SF-1 Off-line	RTO On-line	0.19	lb/hr	Yes	

Emissions Unit(s)	Pollutant	Fuels/Species/ Conditions		Emission Factor	Emission Factor Units	Emission Factor Verification Testing	
						Yes/No	Test Method
			RTO Off-line	0.74	lb/hr		
	DME	SF-1 On-line	RTO On-line	0.69	lb/hr	Within 6 months of SF-1 restart	EPA Method 18
			RTO Off-line	17.80	lb/hr		
		SF-1 Off-line	RTO On-line	0.02	lb/hr	Yes	
			RTO Off-line	0.06	lb/hr		
	CO	SF-1 On-line	RTO On-line	5.98	lb/hr	Within 6 months of SF-1 restart	EPA Method 10
			RTO Off-line	115.8	lb/hr		
		SF-1 Off-line	RTO On-line	0.05	lb/hr	Yes	
			RTO Off-line	0.14	lb/hr		
	VOC	SF-1 On-line	RTO On-line	0.70	lb/hr	Within 6 months of SF-1 restart	EPA Method 25A
			RTO Off-line	17.56	lb/hr		
		SF-1 Off-line	RTO On-line	0.24	lb/hr	Yes	
			RTO Off-line	5.27	lb/hr		
EU: SF-2 (TGB)	HCHO	SF-2 On-line	TGB On-line	0.02	lb/hr	Within 6 months of SF-2 restart	EPA Method 323 or Method 320
			TGB Off-line	1.36	lb/hr		
	MeOH	SF-2 On-line	TGB On-line	0.02	lb/hr	Within 6 months of SF-2 restart	EPA Method 18 or Method 308
			TGB Off-line	46.5	lb/hr		
	DME	SF-2 On-line	TGB On-line	0.02	lb/hr	Within 6 months of SF-2 restart	EPA Method 18
			TGB Off-line	1.44	lb/hr		
	CO	SF-2 On-line	TGB On-line	0.02	lb/hr	Within 6 months of SF-2 restart	EPA Method 10
			TGB Off-line	18.05	lb/hr		
	VOC	SF-2 On-line	TGB On-line	0.07	lb/hr	Within 6 months of SF-2 restart	EPA Method 25A
			TGB Off-line	70.2	lb/hr		

Emissions Unit(s)	Pollutant	Fuels/Species/ Conditions		Emission Factor	Emission Factor Units	Emission Factor Verification Testing	
						Yes/No	Test Method
EU: SF-3 (CI)	HCHO	SF-3 On-line	CI On-line	0.15	lb/hr	Yes	EPA Method 323 or Method 320
	MeOH	SF-3 On-line	CI On-line	0.24	lb/hr	Yes	EPA Method 18 or Method 308
	DME	SF-3 On-line	CI On-line	0.29	lb/hr	Yes	EPA Method 18
	CO	SF-3 On-line	CI On-line	0.83	lb/hr	Yes	EPA Method 10
	VOC	SF-3 On-line	CI On-line	0.69	lb/hr	Yes	EPA Method 25A

Plant Site Emission Limits (PSELs)

18. Provided below is a summary of the baseline emissions rate, netting basis, plant site emission limit, potential-to-emit and the 2022 plant site emissions:

Pollutant	Baseline Emission Rate (TPY)	Netting Basis		Plant Site Emission Limit (PSEL)		PTE (TPY)	2022 Emissions (TPY)
		Previous (TPY)	Proposed (TPY)	Previous PSEL (TPY)	Proposed PSEL (TPY)		
PM	0	0	0	24	NA	0.4	--
PM_{10}	0	0	0	14	NA	0.4	--
$PM_{2.5}$	NA	0	0	9	NA	0.4	--
CO	1,259	199	199	99	17	17	4.7
NO_X	11	11	11	39	11	11	1.5
SO_2	0	0	0	NA	NA	0.2	--
VOC	11	11	11	50	20	20	5.8
GHG	3,036	3,036	3,036	74,000	14,771	14,771	1,762
Individual HAP	NA	NA	NA	9	9.4	9.4	8.1
Total HAP	NA	NA	NA	24	24	24	11

18.a. The baseline emission rates for PM, PM_{10}, CO, NO_X, SO_2 and VOC were determined in previous permitting actions and there have been no changes.

18.b. A baseline emission rate is not required for $PM_{2.5}$ in accordance with the definition of "baseline emission rate" in LRAPA title 12.

18.c. In accordance with OAR 340-222-0041(3) the PSELs for CO, NO_X, and VOC are set to the facility's potential to emit, which incorporates the effect on emissions due to downtime limits for the RTO and the TGB as specified in the permit.

18.d. No PSELs are set for PM, PM_{10}, $PM_{2.5}$, and SO_2 in accordance with LRAPA 42-020(3)(a) because these pollutants are emitted below the de minimis as defined in LRAPA title 12.

18.e. The netting basis for CO was reduced to 199 tons/year in the previous permitting action and there have been no changes.

18.f. For GHGs, the baseline emission rate is any consecutive 12 calendar month period during calendar years 2000 through 2010.The baseline for GHGs is based upon actual emissions from the 2000 calendar year. The PSEL for greenhouse gases (GHGs) has been set at the facility's potential to emit in accordance with OAR 340-222-0041(3).

18.g. The baseline year, netting basis, and SER are not applicable for federal HAPs. The PSELs for individual federal HAPs and total federal HAPs of 9.4 TPY and 24 TPY, respectively, were established under previous ACDPs and have not been revised under this renewal. The facility does have a capacity for federal HAPs that exceeds the major source thresholds for individual federal HAPs and total federal HAPs of 10 TPY and 25 TPY, respectively. The HAP PSEL limits restrict the facility to less than major source thresholds.

Significant Emission Rate

19. The PSEL increase over the netting basis is less than the Significant Emission Rate (SER) as defined in LRAPA title 12 for all pollutants.

Pollutant	Netting Basis (TPY)	Proposed PSEL (TPY)	Increase Over the Netting Basis (TPY)	SER (TPY)
CO	199	17	-182	100
NO_X	11	11	0	40
VOC	11	20	9	40
GHG	3,036	14,771	11,735	75,000

Unassigned Emissions and Emission Reduction Credits

20. The facility has unassigned emissions as shown in the table below. Unassigned emissions are equal to the netting basis minus the source's current PTE, minus any banked emission reduction credits. The facility has zero (0) tons of emission reduction credits. Unassigned emissions are established with this renewal and will be reduced to no more than the significant emission rate (SER) at the following renewal in accordance with LRAPA's Title 42 (Section 42-0055).

Pollutant	Proposed PSEL (TPY)	Previous Unassigned Emissions (TPY)	Proposed Unassigned Emissions (TPY)	SER (TPY)
CO	17	100	182	100
NO_X	11	0	0	40
VOC	20	0	0	40

General Emissions Limitations

21. All emission units at the facility are subject to the visible emission limitations under LRAPA 32-010(3). These emission units may not have visible emissions equal to or greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour.

22. The emission units that meet the definition of "fuel burning equipment" under LRAPA title 12 are subject to the particulate matter emission limitations under LRAPA 32-030(1)(b) and 32-030(2). For fuel burning equipment installed, constructed or modified after June 1, 1970, but prior to April 16, 2015, the particulate matter emission limit is 0.14 grains per dry standard cubic foot if there are no representative compliance source test results collected prior to April 16, 2015. For fuel burning equipment sources installed, constructed, or modified after April 16, 2015, the particulate matter emission limit is 0.10 grains per dry standard cubic foot.

23. All other emission units at the facility that do not meet the definition of "fuel burning equipment" under LRAPA title 12 are subject to the particulate matter emission limitations under LRAPA 32-015(2)(b)(B) and 32-015(2)(c). For fuel burning equipment installed, constructed or modified after June 1, 1970, but prior to April 16, 2015, the particulate matter emission limit is 0.14 grains per dry standard cubic foot if there are no representative compliance source test results collected prior to April 16, 2015. For fuel burning equipment sources installed, constructed, or modified after April 16, 2015, the particulate matter emission limit is 0.10 grains per dry standard cubic foot.

24. All emission units are subject to the process weight rate emission limitation under LRAPA 32-045. Particulate matter emissions in any one hour may not exceed the amount shown in LRAPA 32-8010 for the process weight allocated to each process.

25. Under LRAPA 32-007, the facility must prepare an Operation and Maintenance Plan (O&M Plan). The O&M Plan must include requirements for the proper operation and maintenance of all particulate matter emission control devices at the facility, including but not limited to, baghouses and dust collectors. The permittee must submit a copy of the O&M Plan to LRAPA for review upon request. If LRAPA determines the O&M Plan is deficient, LRAPA may require the permittee to amend the plan. At a minimum, the O&M Plan must identify the frequency of inspections and procedures for documenting each inspection.

Typically Achievable Control Technology (TACT)

26. LRAPA Title 32-008(1) requires an existing emission unit at a facility to meet TACT if the emissions unit meets the following criteria: The emission unit is not already subject to emission standards for the regulated pollutant under LRAPA title 30, title 32, title 33, title 38, title 39 or title 46 at the time TACT is required; the source is required to have a permit; the emission unit has emissions of criteria pollutants equal to or greater than five (5) tons per year of particulate or ten (10) tons per year of any gaseous pollutant; and LRAPA determines that air pollution control devices and emission reduction processes in use for the emissions do not represent TACT and that further emission control is necessary to address documented nuisance conditions, address an increase in emissions, ensure that the source is in compliance with other applicable requirements, or to protect public health or welfare or the environment.

27. Emission unit SF-3: Group 3 is subject to the standards in LRAPA title 46, therefore, is not subject to the TACT requirement. SF-1 and SF-2 emit more than ten (10) tons per year of gaseous pollutants and are therefore required to meet TACT. While a formal TACT determination has not been conducted, the RTO controlling VOC emissions from SF-1: Group 1 and the TGB controlling VOC emissions from SF-2: Group 2 likely meet TACT requirements at this facility.

New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

28. This source is located in an area that is designated attainment or unclassified for all regulated pollutants other than CO and PM_{10}. For pollutants other than CO and PM_{10}, the proposed PSELs are less than the federal major source threshold for listed sources of 100 TPY per regulated pollutant and are not subject to Major NSR. For CO and PM_{10}, the source is located in a maintenance area. There is no proposed PSEL for PM_{10} and the proposed PSEL for CO is less than the 100 TPY threshold that determines the applicability of Major NSR.

New Source Performance Standards (NSPS)

29. Emission Unit SF-3: Group 3 is subject to 40 CFR 60 subpart III: Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes because it was installed in 1990 after the October 1983 applicability date. The facility utilizes a catalytic incinerator (CI) to comply with the provisions of the subpart. The 40 CFR Part 60 subpart III requirements that are applicable to EU SF-3: Group 3 are identified in the following table:

40 CFR Part 60, subpart III Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.610	Applicability and designation of affected facility	Yes	None	NA
60.611	Definitions	Yes	None	NA
60.612	Standards	Yes	Reduce emissions of TOC by 98 weight-%, or to a TOC concentration of 20 ppmvd @ 3% O_2	25
60.613	Monitoring of emissions and operations	Yes	CI temperature monitoring	26
60.614	Test methods and procedures	Yes	None	27 & 28
60.615	Reporting and recordkeeping requirements	Yes	Up-to-date, readily accessible continuous records of CI temperature and flow	29 – 35
60.616	Reconstruction	Yes	None	NA
60.617	Chemicals affected by subpart III	Yes	Formaldehyde is a listed chemical	NA
60.618	Delegation of authority	No	None	NA

30. The equipment of Emission Unit SF-3: Group 3 is subject to 40 CFR 60 subpart VV: Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006, because it was installed after the applicability date. The 40 CFR Part 60 subpart VV requirements that are applicable to EU SF-3: Group 3 are identified in the following table:

40 CFR Part 60, subpart VV Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.480	Applicability and designation of affected facility	Yes	None	NA
60.481	Definitions	Yes	None	NA
60.482-1	Standards: General	Yes	None	36

40 CFR Part 60, subpart VV Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.482-2	Standards: Pumps in light liquid service	Yes	None	37
60.482-3	Standards: Compressors	No	No compressors onsite applicable to the subpart	NA
60.482-4	Standards: Pressure relief devices in gas/vapor service	No	No pressure relief devices onsite applicable to the subpart	NA
60.482-5	Standards: Sampling connection systems	No	No sampling connection systems onsite applicable to the subpart	NA
60.482-6	Standards: Open-ended valves or lines	Yes	None	38
60.482-7	Standards: Valves in gas/vapor service and in light liquid service	Yes	None	39
60.482-8	Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors	Yes	None	37
60.482-9	Standards: Delay of repair	Yes	None	41
60.482-10	Standards: Closed vent systems and control devices	No	No closed vent systems onsite applicable to the subpart	NA
60.483-1	Alternative standards for valves – allowable percentage of valves leaking	No	The facility did not request alternative standards	NA
60.483-2	Alternative standards for valves – skip period leak detection and repair	No	The facility did not request alternative standards	NA
60.484	Equivalence means of emission limitation	No	The facility did not request emission limitation equivalence determination	NA
60.485	Test methods and procedures	Yes	None	42
60.486	Recordkeeping requirements	Yes	None	43
60.487	Reporting requirements	Yes	None	44
60.488	Reconstruction	Yes	None	NA
60.489	List of chemicals produced by affected facilities	Yes	Formaldehyde and methanol are listed chemicals	NA

31. The Bryan boiler in EU Boiler-1 is rated at 17.0 MMBtu/hr and was constructed after June 9, 1989. Therefore, the boiler is subject to 40 CFR 60 subpart Dc New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units, including, but not limited to, record keeping of fuel usage and annual reporting. The 40 CFR Part 60 subpart Dc requirements that are applicable to EU Boiler-1 are identified in the following table:

40 CFR Part 60, subpart Dc Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.40c	Applicability and designation of affected facility	Yes	The boiler has a maximum heat input capacity between 10 and 100 MMBtu per hour	NA
60.41c	Definitions	Yes	The boiler meets the definition of *steam generating unit*	NA
60.42c	Standard for sulfur dioxide (SO_2)	No	None	NA
60.43c	Standard for particulate matter (PM)	No	None	NA
60.44c	Compliance and performance test methods and procedures for sulfur dioxide	No	None	NA
60.45c	Compliance and performance test methods and procedures for particulate matter	No	None	NA
60.46c	Emission monitoring for sulfur dioxide	No	None	NA
60.47c	Emission monitoring for particulate matter	No	None	NA
60.48c	Reporting and recordkeeping requirements	Yes	Maintain records of monthly usage of natural gas by the boiler	45 & 46

32. Storage tank SM-9 in EU ST-1: Group 4 is subject to 40 CFR 60 subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984, based on the date it was installed, the size and content vapor pressure of the tank. The 40 CFR Part 60 subpart Kb requirements that are applicable to SM-9 in EU ST-1: Group 4 are identified in the following table:

40 CFR Part 60, subpart Kb Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.110b	Applicability and designation of affected facility	Yes	Storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) used to store volatile organic liquids (VOL)	NA
60.111b	Definitions	Yes	Meets the definition of *storage vessel*	NA
60.112b	Standard for volatile organic compounds (VOC)	Yes	None	47 & 48
60.113b	Testing and procedures	Yes	None	49
60.114b	Alternative means of emission limitation	No	The facility did not request alternative standards	NA
60.115b	Reporting and recordkeeping requirements	Yes	None	50
60.116b	Monitoring of operations	Yes	None	51 – 56

40 CFR Part 60, subpart Kb Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.117b	Delegation of authority	No	None	NA

33. The facility is not subject to the 40 CFR 60 subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engine or 40 CFR 60 subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines because the facility does not have a generator that was installed after the applicability dates of the subparts.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

34. The facility is subject to 40 CFR 63 subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines because the facility has one, 500-kW emergency generator CIA-1 that was installed in May 2002. The 40 CFR Part 63 subpart ZZZZ requirements that are applicable to CIA-1 are identified in the following table:

40 CFR Part 63, subpart ZZZZ Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
63.6580	Purpose	Yes	None	NA
63.6585	Applicability	Yes	Facility operates a stationary RICE at an area source of HAP	NA
63.6590	Applicability	Yes	Meets definition of *existing stationary RICE*	NA
63.6595	Compliance timeline	Yes	Comply with the applicable requirements no later than May 3, 2013	NA
63.6600	Emission and operating limitations	No	Not a major source of HAP	NA
63.6601	Emission and operating limitations	No	Not a major source of HAP	NA
63.6602	Emission and operating limitations	No	Not a major source of HAP	NA
63.6603	Emission and operating limitations	Yes	Area source of HAP	57 & 58
63.6604	Fuel requirements	No	Does not operate for purpose listed in 40 CFR 63.6640(f)(4)(ii)	NA
63.6605	General requirements	Yes	None	60
63.6610	Initial compliance	No	Not a major source of HAP	NA
63.6611	Initial performance test	No	Not a major source of HAP	NA
63.6612	Initial performance test	No	No testing requirements listed in Table 4 or 5 of the subpart for emission unit	NA
63.6615	Subsequent performance tests	No	None	NA
63.6620	Performance test procedures	No	None	NA
63.6625	Monitoring and maintenance requirements	Yes	Requires a non-resettable hour meter	59
63.6630	Initial compliance	No	None	NA
63.6635	Continuous compliance	No	None	NA

40 CFR Part 63, subpart ZZZZ Citation	Description	Applicable to Source (Yes/No)	Comments	Permit Condition
63.6640	Continuous compliance	Yes	None	61
63.6645	Notifications	No	None	NA
63.6650	Reports	No	None	NA
63.6655	Records	Yes	None	62
63.6660	Record retention	Yes	None	63
63.6665	General provisions	No	None	NA
63.6670	Implementation and enforcement	No	None	NA
63.6675	Definitions	No	None	NA

35. The facility is not subject to 40 CFR 63 subpart H – National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks because the facility has not elected to comply with the provisions of 40 CFR 60 subpart VV by applying this subpart per 40 CFR 63.160(c).

36. The facility is not subject to 40 CFR 63 subpart W – National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamide Production because the facility is not a major source of HAPs.

37. The facility is not subject to 40 CFR 63 subpart VVVVVV – National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources because it does not manufacture any of the chemicals noted in Table 1 of 40 CFR 63, Subpart VVVVVV.

38. The facility is not subject to 40 CFR 63, Subpart CCCCCCC – National Emission Standards for Hazardous Air Pollutants for Area Sources: Paints and Allied Production Manufacturing because the resin manufactured at the plant does not meet the definition of paints and allied products manufacturing.

Cleaner Air Oregon

39. Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants. LRAPA required reporting of approximately 600 toxic air contaminants in 2016 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in rule. All federal HAPs are on the list of approximately 600 toxic air contaminants. The federal HAPs and toxic air contaminants listed below are based upon source testing and standard emission factors for the types of emission units at this facility. After the source is notified by LRAPA, they must update their inventory and perform a risk assessment to see if they must reduce risk from their toxic air contaminant emissions. Until then, sources will be required to report toxic air contaminant emissions triennially.

40. As part of the CAO program, sources must submit an Air Toxics Emission Inventory (ATEI) triennially for the purpose of assessing risk from air toxics emitted from the facility. A source must assess, estimate, and report actual emissions of any air toxics emitted from the facility which are listed air toxic contaminants (OAR 340-247-8010 Table 1). In the 2020 ATEI, the facility reported the following air toxic emissions:

Pollutant	CAS Number	2020 ATEI Reported Emissions (pounds)	Federal HAP	CAO Air Toxic
Acetaldehyde	75-07-0	0.13	Y	Y
Acrolein	107-02-8	0.09	Y	Y
Ammonia	7664-41-7	440	N	Y

Pollutant	CAS Number	2020 ATEI Reported Emissions (pounds)	Federal HAP	CAO Air Toxic
Arsenic and compounds	7440-38-2	0.01	Y	Y
Barium and compounds	7440-39-3	0.15	N	Y
Benzene	71-43-2	0.24	Y	Y
Benzo[a]pyrene	50-32-8	4.0E-05	Y	Y
Beryllium and compounds	7440-41-7	4.0E-04	Y	Y
Cadmium and compounds	7440-43-9	0.04	Y	Y
Chromium VI	18540-29-9	0.05	Y	Y
Cobalt and compounds	7440-48-4	2.8E-03	Y	Y
Copper and compounds	7440-50-8	0.03	N	Y
Diethylene glycol	111-46-6	0.01	N	Y
Ethyl benzene	100-41-4	0.28	Y	Y
Ethylene glycol	107-21-1	0.10	Y	Y
Formaldehyde	50-00-0	4,697	Y	Y
Hexane	110-54-3	0.19	Y	Y
Lead and compounds	7439-92-1	0.02	Y	Y
Manganese and compounds	7439-96-5	0.01	Y	Y
Mercury and compounds	7439-97-6	0.01	Y	Y
Methanol	67-56-1	9,284	Y	Y
Molybdenum trioxide	1313-27-5	0.06	N	Y
Naphthalene	91-20-3	0.01	Y	Y
Nickel compounds	365	0.07	Y	Y
Phenol	108-95-2	5,264	Y	Y
Polycyclic aromatic hydrocarbons	401	3.4E-03	Y	Y
Selenium and compounds	7782-49-2	8.1E-04	Y	Y
Toluene	108-88-3	1.08	Y	Y
Vanadium (fume or dust)	7440-62-2	0.08	N	Y
Xylene (mixture)	1330-20-7	0.80	Y	Y
Zinc and compounds	7440-66-6	0.97	N	Y

Toxic Release Inventory

41. The Toxics Release Inventory (TRI) is a federal program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment, over which LRAPA has no regulatory authority. It is a resource for learning about toxic chemical releases and pollution prevention activities reported by certain industrial facilities. Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI Program. In general, chemicals covered by the TRI Program are those that cause:

- Cancer or other chronic human health effects;
- Significant adverse acute human health effects; or
- Significant adverse environmental effects.

There are currently over 650 chemicals covered by the TRI Program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual TRI reports on each chemical. NOTE: The TRI Program is a federal program over which LRAPA has no regulatory authority. LRAPA does not guarantee the accuracy of any information copied from EPA's TRI website.

42. In order to report emissions to the TRI program, a facility must operate under a reportable NAICS code, meet a minimum employee threshold, and manufacture, process, or otherwise use chemicals in excess of the applicable reporting threshold for the chemical. For calendar year

2021, this facility reported the emissions of the following chemicals:

Chemical Name	CAS Number	Fugitive Release (pounds)	Stack Release (pounds)	Total (pounds)
Methanol	67-56-1	3272.2	2739	6,011.2
Formaldehyde	50-00-0	1638	365	2,003
Phenol	108-95-2	5076	179	5,255
Ammonia	7664-41-7	68	250	318

Recordkeeping Requirements

43. The facility is required to keep and maintain a record of the following information for a period of five (5) years:

Activity	Units	Minimum Recording Frequency
PSEL Recordkeeping		
Amount of formaldehyde produced	Pounds	Monthly
Hours of operation identifying the operating status of EU SF-1, EU SF-2 and EU SF-3 and the associated emissions control device operational status	Hours	Daily
Amount of natural gas burned in EU Boiler-1	Cubic feet	Monthly
Facility-wide natural gas usage	Cubic feet	Semi-annually
Fugitive emission survey logs	NA	Monthly
Operation and Maintenance Plans	NA	Maintain the current version on-site
Emission Control Device Recordkeeping		
Temperature excursions in the destruction bed of EU SF-1 RTO below 1,400°F (760°C)	°F or °C	Hourly
Temperature excursions in the exhaust gas from EU SF-2 Tail Gas Boiler below 125°C (257°F)	°F or °C	Hourly
Temperature records for EU SF-3 Catalytic Incinerator as required per Condition 30 of the draft permit.	°F or °C	Hourly
40 CFR 63 Subpart 4Z Recordkeeping		
The date and time of operation in hours of CIA-1	Date, Hours of operation	Each occurrence
Reason for operation of CIA-1	NA	Each occurrence
The total hours that CIA-1 operates for emergency reasons in a calendar year	Hours	Monthly
The total hours that CIA-1 operates for non-emergency reasons in a calendar year	Hours	Monthly

Activity	Units	Minimum Recording Frequency
Records of actions taken during periods of malfunction to minimize emissions	NA	Each occurrence
Records of inspections and maintenance performed according to the manufacturer's or the permittee's maintenance plan	NA	Each occurrence

Reporting Requirements

44. The facility must submit to LRAPA the following reports by the dates indicated in the table below:

Report	Reporting Period	Due Date
Annual emissions as calculated according to Condition 5 of the permit, including the supporting process parameter and emission factor information.	Semiannual	February 15th & August 15th
EU SF-3: Group 3 40 CFR 60 subpart III reporting required per Condition 33 of the permit.	Semiannual	February 15th & August 15th
EU SF-3: Group 3 40 CFR 60 subpart VV reporting required per Condition 44 of the permit.	Semiannual	February 15th & August 15th
A revised Equipment and Emission Point Information list for EU FUG-1 (fugitive emission components) when new devices are added at the facility.	Semiannual	February 15th & August 15th
The upset log information required by Condition G13 of the permit, if required by G13.	Semiannual	February 15th & August 15th
GHG Report, if required by Condition 68 of the permit.	Annual	March 31

Public Notice

45. Pursuant to LRAPA 37-0066(4)(a)(A), issuance of renewed Standard Air Contaminant Discharge Permit requires public notice in accordance with LRAPA 31-0033(3)(c), which requires LRAPA to provide notice off the proposed permit action and a minimum of 35 days for interested persons to submit written comments.

The draft permit will be on public notice October 30, 2023 to December 5, 2023. Written comments may be submitted during the 35-day comment period. If requested by ten (10) or more individuals or an individual representing a group of more than ten (10) individuals, there will be a public hearing following the comment period.

After the comment period and hearing (if requested), LRAPA will respond to comments received and then take final action to issue or deny the permit within 45 days of the close of the public comment period or hearing period.

Emission Detail Sheets:

Attachment A: PTE Emissions Detail Sheet
Attachment B: HAP PTE Emissions Detail Sheet
Attachment C: EU-FUG VOC Emissions Calculations

Attachment D: EU ST-1: Storage Tank Emissions Calculations
Attachment E: GHG PTE and Baseline Calculations

KE/JJW/cmw
10/30/2023

PTE Emissions Detail Sheet

Pollutant	Emission Unit	Annual Production or Process Rate		Emissions Factor			Emissions
		Rate	Units	Rate	Units	Reference	tons/yr
PM	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.18
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.053
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.07
	EU ST-1: Group 4 (Baghouses)	8,760	hr/yr	1.60E-02	lb/hr	LRAPA Estimate	0.07
Total PM							**0.4**
PM_{10}	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.18
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.053
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.07
	EU ST-1: Group 4 (Baghouses)	8,760	hr/yr	1.60E-02	lb/hr	LRAPA Estimate	0.07
Total PM_{10}							**0.4**
$PM_{2.5}$	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.18
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.053
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	2.44E-03	lb/MMBtu	ODEQ AQ-EF05	0.07
	EU ST-1: Group 4 (Baghouses)	8,760	hr/yr	1.60E-02	lb/hr	LRAPA Estimate	0.07
Total $PM_{2.5}$							**0.4**
SO_2	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	1.66E-03	lb/MMBtu	ODEQ AQ-EF05	0.12
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	1.66E-03	lb/MMBtu	ODEQ AQ-EF05	0.036
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	1.66E-03	lb/MMBtu	ODEQ AQ-EF05	0.05
Total SO_2							**0.2**
NO_x	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	9.75E-02	lb/MMBtu	ODEQ AQ-EF05	7.26
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	0.10	lb/MMBtu	ODEQ AQ-EF05	2.13
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	4.87E-02	lb/MMBtu	ODEQ AQ-EF05	1.45
Total NO_x							**10.8**

VOC and CO PTE emissions are reduced by the downtime limitations prescribed in Conditions 20.c (2500 hrs “RTO Off-line”) and 21.c. (280 hrs “TGB Off-line”) in the permit and are detailed below:

Pollutant	Emission Unit	Annual Production or Process Rate		Emissions Factor			Emissions
		Rate	Units	Rate	Units	Reference	tons/yr
CO	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	8.19E-02	lb/MMBtu	ODEQ AQ-EF05	6.10
	EU SF-1: Group 1 RTO (Process gas)	2,500	hr/yr	0.14	lb/hr	ST - 2013 & 2017, “SF-1 Off-line, RTO Off-line”	0.17
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	8.19E-02	lb/MMBtu	ODEQ AQ-EF05	1.79
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	8.19E-02	lb/MMBtu	ODEQ AQ-EF05	2.44
	EU SF-2: Group 2 TGB (Process Gas)	280	hr/yr	18.05	lb/hr	ST - 2011 & 2017, “SF-2 On-line, TGB Off-line”	2.53
	EU SF-3: Group 3 CI	8,760	hr/yr	0.83	lb/hr	ST - 2011 & 2017	3.61
Total CO							**16.6**
VOC	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	5.36E-03	lb/MMBtu	ODEQ AQ-EF05	0.40
	EU SF-1: Group 1 RTO (Process gas)	2,500	hr/yr	5.27	lb/hr	ST - 2013 & 2017, “SF-1 Off-line, RTO Off-line”	3.89
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	5.36E-03	lb/MMBtu	ODEQ AQ-EF05	0.12
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	5.36E-03	lb/MMBtu	ODEQ AQ-EF05	0.16
	EU SF-2: Group 2 TGB (Process Gas)	280	hr/yr	70.2	lb/hr	ST - 2011 & 2017, “SF-2 On-line, TGB Off-line”	9.83
	EU SF-3: Group 3 CI	8,760	hr/yr	0.69	lb/hr	ST - 2011 & 2017	3.00
	EU FUG-1	TCEQ Air Permit Technical Guidance for Chemical Sources Fugitive Guidance - See Attachment C					1.08
	EU ST-1 Group 4 (Storage Tanks and Containers)	8,760	hr/yr	0.26	lb/hr	AP-42 Section 7.1- See Attachment D	1.14
Total VOC							**19.6**

HAP PTE Emission Detail Sheet

Individual HAP PTE emissions are reduced to less than the major source threshold of 10 tpy by the downtime limitations prescribed in Conditions 20.c (2500 hrs “RTO Off-line”) and 21.c. (280 hrs “TGB Off-line”) in the permit and are detailed below:

Pollutant	Emission Unit	Annual Production or Process Rate		Emissions Factor			Emissions
		Rate	Units	Rate	Units	Reference	tons/yr
Formaldehyde	EU Boiler-1 (Firing Natural Gas)	148,920	MMBtu/yr	7.31E-05	lb/MMbtu	AP 42 Table 1.4-3	0.005
	EU SF-1: Group 1 RTO (Process gas)	2,500	hr/yr	3.96	lb/hr	ST - 2013 & 2017, “SF-1 Off-line, RTO Off-line”	4.95
	EU SF-1: Group 1 RTO (Firing Natural Gas)	43,800	MMBtu/yr	7.31E-05	lb/MMBtu	AP 42 Table 1.4-3	0.002
	EU SF-2: Group 2 TGB (Firing Natural Gas)	59,568	MMBtu/yr	7.31E-05	lb/MMBtu	AP 42 Table 1.4-3	0.002
	EU SF-2: Group 2 (Process Gas)	280	hr/yr	1.36	lb/hr	ST - 2011 & 2017, “SF-2 On-line, TGB Off-line”	1.0E-5
	EU SF-3: Group 3 CI	8,760	hr/yr	0.15	lb/hr	ST - 2011 & 2017	0.67
	EU FUG-1	TCEQ Air Permit Technical Guidance for Chemical Sources Fugitive Guidance - See Attachment C					0.86
	EU ST-1: Group 4 (Storage Tanks and Containers)	8,760	hr/yr	0.15	lb/hr	AP-42 Section 7.1- See Attachment D	0.67
Total Formaldehyde							**7.2**
Methanol	EU SF-1: Group 1 RTO (Process gas)	2,500	hr/yr	0.89	lb/hr	ST - 2013 & 2017 “SF-1 Off-line, RTO Off-line”	1.12
	EU SF-2: Group 2 (Process Gas)	280	hr/yr	46.5	lb/hr	ST - 2011 & 2017, “SF-2 On-line, TGB Off-line”	6.51
	EU SF-3: Group 3 CI	8,760	hr/yr	0.24	lb/hr	ST - 2011 & 2017	1.06
	EU FUG-1	TCEQ Air Permit Technical Guidance for Chemical Sources Fugitive Guidance - See Attachment C					0.23
	EU ST-1: Group 4 (Storage Tanks and Containers)	8,760	hr/yr	0.11	lb/hr	AP-42 Section 7.1- See Attachment D	0.48
Total Methanol							**9.4**
Phenol	EU SF-1: Group 1 RTO (Process gas)	2,500	hr/yr	0.15	lb/hr	ST - 2013 & 2017, “SF-1 Off-line, RTO Off-line”	0.19
	EU ST-1: Group 4 (Storage Tanks and Containers)	8,760	hr/yr	7.19E-07	lb/hr	AP-42 Section 7.1- See Attachment D	3.15E-06
Total Phenol							**0.19**

Total HAP		**16.7**

EU-FUG VOC Emissions Calculations

SOCMI Emission Factors

Component Type	Emission Factor[1] (lb/hr/source)	Control Efficiency (%)
Agitators (LL/GV)	0.0386	75%
Connectors (LL)	0.0005	75%
Connectors (GV)	0.0029	75%
Connectors (HL)	0.00007	30%
PRD (GV)	0.2293	75%
Pumps (LL)	0.0386	75%
Pumps (HL)	0.0161	0%
Valves (LL)	0.0035	75%
Valves (GV)	0.0089	75%
Valves (HL)	0.0007	0%

[1]NOTE: Emission factors and control efficiencies are taken from the TCEQ "Air Permit Technical Guidance for Chemical Sources Fugitive Guidance" (June 2018). Factors based on SOCMI without C2. G/V = Gas/Vapor, LL = Light Liquid, HL = Heavy Liquid

LDAR Sources

Individual Liquid Streams

Methanol						
Component Type	Emission Factor[2] (lb/hr/source)	Control Efficiency (%)	Concentration	Component Count	Methanol Emission Rate	
					lb/hr	tpy
Valve (LL)	0.0035	75%	100%	38	3.33E-02	1.46E-01
Pump (LL)	0.0386	75%	100%	2	1.93E-02	8.45E-02
Total VOC Emissions for Methanol					**0.05**	**0.23**

Formaldehyde						
Component Type	Emission Factor[2] (lb/hr/source)	Control Efficiency (%)	Concentration	Component Count	Formaldehyde Emission Rate	
					lb/hr	tpy
Pump (LL)	0.0386	75%	52%	3	1.51E-02	6.59E-02
Valve (LL)	0.0035	75%	52%	62	2.82E-02	1.24E-01
Valve (LL)	0.0035	75%	35%	18	5.51E-03	2.41E-02
Total VOC Emissions for Formaldehyde					**0.02**	**0.21**

Non-LDAR Sources

Individual Liquid Streams

Phenol						
Component Type	**Emission Factor[2] (lb/hr/source)**	**Control Efficiency (%)**	**Concentration**	**Component Count**	**Phenol Emission Rate**	
					lb/hr	**tpy**
Valve (HL)	0.0007	0%	100%	50	3.50E-02	1.53E-01
Pump (HL)	0.0161	0%	100%	3	4.83E-02	2.12E-01
Connectors (HL)	0.00007	0%	100%	110	7.70E-03	3.37E-02
OE Lines (HL)	0.004	100%	100%	12	0.00E+00	0.00E+00
Total VOC Emissions for Phenol					**0.09**	**0.40**

TOTAL FUGITIVE VOC EMISSIONS (tpy)	**0.84**	VOC lb/hr	0.16

2. The individual emission factors for Synthetic Organic Chemical Manufacturing Industry (SOCMI) processes for services that are "light liquid" and "heavy liquid". The definition of "light liquid" is based on 40 CFR 60.485(e)(1) and (2). These regulations define "light liquid" as 1) The vapor pressure of one or more of the components in greater than 0.3 kPa at 20°C. Standard reference texts or ASTM D-2879 (incorporated by reference-see §60.17) shall be used to determine the vapor pressures. 2) The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20°C is equal to or greater than 20 percent by weight.

EU ST-1: Storage Tank Emissions Calculations

Hours per year	8,760

				HAPs Emissions (lbs/yr)				HAPs Emissions (lbs/hr)		
Tank ID	**Contents**	**Throughput (gals/yr)**	**VOC Emissions (lb/yr)**	**Phenol**	**Formaldehyde**	**Methanol**	**VOC Emissions (lb/hr)**	**Phenol**	**Formaldehyde**	**Methanol**
Tk 4	TEA, Triethanolamine	3,209	1.74E-06	0	0	0	1.99E-10	0	0	0
Tk 36	PF Resin	508,183	115.50	0.0063	114.27	1.21	1.32E-02	7.19E-07	1.30E-02	1.39E-04
Tk 40	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 41	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 42	PF Resin	3,383,575	129.01	0	125.80	3.21	1.47E-02	0	1.44E-02	3.67E-04
Tk 43	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 44	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 45	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 47	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 48	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 50	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 58	Diethylene Glycol	72,849	0.0048	0	0	0	5.48E-07	0	0	0
Tk 67	PF Resin	1,051,492	39.72	0	38.73	0.99	4.53E-03	0	4.42E-03	1.13E-04
Tk 91	MUF Resin	3,320,710	126.53	0	123.38	3.15	1.44E-02	0	1.41E-02	3.59E-04
Tk 100	Fertilizer	508,046	187.63	0	187.39	0.24	2.14E-02	0	2.14E-02	2.73E-05
Tk 103	Fertilizer	508,046	187.63	0	187.39	0.24	2.14E-02	0	2.14E-02	2.73E-05
Tk 104	UF Resin Overlays	927,905	177.83	0	176.07	1.76	2.03E-02	0	2.01E-02	2.01E-04
Tk 209	PF Resin	24,342	34.90	0	34.03	0.87	3.98E-03	0	3.88E-03	9.91E-05
Tk 210	PF Resin	24,342	34.90	0	34.03	0.87	3.98E-03	0	3.88E-03	9.91E-05
SM 1	Methanol	5,120,000	468.82	0	0	468.82	5.35E-02	0	0	5.35E-02
SM 2	Methanol	4,360,000	462.28	0	0	462.28	5.28E-02	0	0	5.28E-02

	Throughput	**VOC**	**Phenol**	**Formaldehyde**	**Methanol**	**VOC**	**Phenol**	**Formaldehyde**	**Methanol**
Resin Category	**gal/yr**	**lbs /yr**	**lbs /yr**	**lbs /yr**	**lbs /yr**	**lb/hr**	**lb/hr**	**lb/hr**	**lb/hr**
PF Resins	9,971,611	671.75	0.01	656.69	15.05	7.67E-02	7.19E-07	7.50E-02	1.72E-03
UF Resin Fertilizer	1,016,091	375.25	0.00	374.78	0.48	4.28E-02	0.00E+00	4.28E-02	5.46E-05
MUF Resin	3,320,710	126.53	0.00	123.38	3.15	1.44E-02	0.00E+00	1.41E-02	3.59E-04
UF Resin Overlays	927,905	177.83	0.00	176.07	1.76	2.03E-02	0.00E+00	2.01E-02	2.01E-04
Methanol	9,480,000	931	0	0	931	1.06E-01	0.00E+00	0.00E+00	1.06E-01

	VOC	**Phenol**	**Formaldehyde**	**Methanol**
Total (lb/hr)	**0.26**	**7.19E-07**	**0.15**	**0.11**
Total (lb/yr)	**2,282**	**0.01**	**1,331**	**952**

GHG PTE and Baseline Calculations

GHG Potential to Emit (PTE)

Emission Unit	Annual Production or Process Rate		Emissions Factor			Emissions
	Rate	Units	Rate	Units	Reference	metric tons CO_2e/yr[1]
EU Boiler-1 NG	145,146,199	scf/yr[2]	53.06	kg CO_2/mmBtu	Table C-1 to Subpart C of 40 CFR Part 98	7902
			0.001	kg CH_4/MMBtu (GWP=25)	Table C-2 to Subpart C of 40 CFR Part 98	4
			0.0001	kg N_2O/MMBtu (GWP=298)	Table C-2 to Subpart C of 40 CFR Part 98	4
EU: OX-1 RTO NG Combustion	42,690,058	scf/yr	53.06	kg CO2/mmBtu	Table C-1 to Subpart C of 40 CFR Part 98	2324
			0.001	kg CH4/MMBtu (GWP=25)	Table C-2 to Subpart C of 40 CFR Part 98	1.1
			0.0001	kg N2O/MMBtu (GWP=298)	Table C-2 to Subpart C of 40 CFR Part 98	1.3
EU: TGB Combustion	59,568	MMBtu/yr	53.06	kg CO2/mmBtu	Table C-1 to Subpart C of 40 CFR Part 98	3161
			0.001	kg CH4/MMBtu (GWP=25)	Table C-2 to Subpart C of 40 CFR Part 98	1.5
			0.0001	kg N2O/MMBtu (GWP=298)	Table C-2 to Subpart C of 40 CFR Part 98	1.8
					Total GHG (CO_2e metric tons)	**13,400**
					Total GHG (CO_2e short tons)	**14,771**

GHG 2000 Baseline

Emission Unit	Annual Production or Process Rate		Emissions Factor			Emissions
	Rate	Units	Rate	Units	Reference	metric tons CO_2e/yr
EU Boiler-1 NG	50,548,140	scf/yr	53.06	kg CO_2/mmBtu	Table C-1 to Subpart C of 40 CFR Part 98	2752
			0.001	kg CH_4/MMBtu (GWP=25)	Table C-2 to Subpart C of 40 CFR Part 98	1.3
			0.0001	kg N_2O/MMBtu (GWP=298)	Table C-2 to Subpart C of 40 CFR Part 98	1.5
					Total GHG (CO_2e metric tons)	**2,755**
					Total GHG (CO_2e short tons)	**3,036**

[1]NOTE: Global Warming Potentials of one (1) for CO_2, 25 for CH_4, and 298 for N_2O were used to convert emissions to CO_2e.
[2]NOTE: Standard cubic feet (scf) of natural gas combusted was converted to MMBtu using the conversion in Table C-1 to Subpart C of 40 CFR Part 98 for natural gas of $1.026x10^{-3}$ MMBtu/scf.