

Table 1
Input Assumptions and Parameters
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Throughput					
	2021			PTE		
	Daily		Annual	Daily		Annual
FACILITY WIDE OPERATION						
Hours of Operation	24.0	(hrs/day) ⁽¹⁾	8,760	(hrs/yr) ⁽¹⁾	24.0	(hrs/day) ⁽²⁾ 8,760 (hrs/yr) ⁽²⁾
NATURAL GAS USAGE						
Glass Plant Natural Gas Usage	2.48	(MMscf/day) ^(a)	391	(MMscf/yr) ⁽¹⁾	2.79	(MMscf/day) ⁽²⁾ 1,020 (MMscf/yr) ⁽²⁾
Non-Production Natural Gas Usage	0.062	(MMscf/day) ^(b)	9.77	(MMscf/yr) ⁽¹⁾	0.070	(MMscf/day) ^(b) 25.5 (MMscf/yr) ^(b)
GLASS PLANT PRODUCTION						
Rotary Fine Fiber Production	5.70	(tons/day) ^(a)	1,199	(tons/yr) ⁽¹⁾	8.55	(tons/day) ⁽²⁾ 3,122 (tons/yr) ⁽²⁾
Rotary Coarse and Ultra Rotary Coarse Fiber Production	47.7	(tons/day) ⁽⁴⁾	6,006	(tons/yr) ⁽¹⁾	47.7	(tons/day) ⁽²⁾ 17,424 (tons/yr) ⁽²⁾
Flameblown Production	2.16	(tons/day) ⁽⁴⁾	594	(tons/yr) ⁽¹⁾	2.16	(tons/day) ⁽²⁾ 788 (tons/yr) ⁽²⁾
Glass Melt Throughput	64.8	(tons/day) ⁽⁴⁾	8,078	(tons/yr) ⁽¹⁾	64.8	(tons/day) ⁽²⁾ 23,652 (tons/yr) ⁽²⁾
RAW MATERIAL HANDLING						
Barium Carbonate Usage	0.84	(tons/day) ^(c)	257	(tons/yr) ⁽¹⁾	1.01	(tons/day) ^(c) 307 (tons/yr) ⁽²⁾
Zinc Oxide Usage	0.53	(tons/day) ^(c)	162	(tons/yr) ⁽¹⁾	0.64	(tons/day) ^(c) 194 (tons/yr) ⁽¹⁾
EMERGENCY GENERATORS						
Emergency Generator 1						
Hours of Operation	2.00	(hrs/day) ⁽¹⁾	7.00	(hrs/yr) ⁽¹⁾	2.00	(hrs/day) ⁽²⁾ 100 (hrs/yr) ⁽⁶⁾
Diesel Usage	46.8	(gal/day) ^(d)	164	(gal/yr) ^(d)	46.8	(gal/day) ^(d) 2,340 (gal/yr) ^(d)
Emergency Generator 2						
Hours of Operation	2.00	(hrs/day) ⁽¹⁾	8.00	(hrs/yr) ⁽¹⁾	2.00	(hrs/day) ⁽²⁾ 100 (hrs/yr) ⁽⁶⁾
Diesel Usage	33.0	(gal/day) ^(d)	132	(gal/yr) ^(d)	33.0	(gal/day) ^(d) 1,650 (gal/yr) ^(d)
COOLING TOWERS						
Hours of Operation	24.0	(hrs/day) ⁽¹⁾	8,760	(hrs/yr) ⁽¹⁾	24.0	(hrs/day) ⁽¹⁾ 8,760 (hrs/yr) ⁽¹⁾
Shock Biocide Usage	17.0	(lb/day) ⁽⁸⁾	310	(lb/yr) ⁽¹⁾	--	(9)
MISCELLANEOUS						
TCE Remediation System Hours of Operation	24.0	(hrs/day) ⁽¹⁾	8,760	(hrs/yr) ⁽¹⁾	24.0	(hrs/day) ⁽¹⁾ 8,760 (hrs/yr) ⁽¹⁾

NOTES:

MMBtu = million British thermal units.

MMscf = million standard cubic feet.

PTE = potential to emit.

TCE = trichloroethylene.

(a) 2021 daily parameter ('unit'/day) = (PTE daily parameter ['unit'/day]) - (Line 3 PTE daily parameter ['unit'/day]); see Reference (3).

Line 3 PTE natural gas usage (MMscf/day) = 0.31 (2)

Line 3 PTE rotary fine fiber production (tons/day) = 2.85 (2)

(b) Non-production natural gas usage (MMscf/"period") = (glass plant natural gas usage [MMscf/"period"]) x (2021 annual non-production natural gas usage [MMscf/yr]) / (2021 annual glass plant natural gas usage [MMscf/yr])

(c) Daily parameter ("unit"/day) = (annual parameter ["unit"/yr]) x (daily hours of operation [hrs/day]) / (annual hours of operation [hrs/yr]) x (short-term variability factor)

Short-term variability factor = 1.20 (5)

(d) Diesel fuel usage (gal/"unit") = (diesel fuel usage [gal/hr]) x (hours of operation [hrs/"unit"])

Emergency generator 1 diesel fuel usage (gal/hr) = 23.4 (7)

Emergency generator 2 diesel fuel usage (gal/hr) = 16.5 (7)

REFERENCES:

(1) Information provided by Hollingsworth & Vose Fiber Company.

(2) From Draft PSD permit provided by the DEQ in June 2020.

(3) Conservatively assumes PTE input excluding Line 3 production for maximum daily as 2021 actual daily parameter is unavailable. Contribution of Glass Plant 1, Production Line 3 is subtracted as Line 3 was not operated in 2021.

(4) Conservatively assumes PTE input for maximum daily as actual daily parameter is unavailable.

(5) Factor of 1.2 applied to average daily parameters to account for short-term variability in production.

(6) 40 CFR §63.6640(f)(2), any operation for non-emergency situations are limited to 100 hours per year.

(7) Information provided by vendor.

(8) Product used once monthly for system "shock". Only one cooling tower is dosed per day and product usage varies between cooling towers. Represents maximum usage cooling tower.

(9) Hollingsworth & Vose Fiber Company will be using an alternative product in the future which does not contain any regulated toxic air contaminants.

Table 2
Input Assumptions and Parameters - Cooling Towers
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	(Units)	Value
Annual Days of Operation ⁽¹⁾	--	365
Drift Loss of Circulating Water ⁽²⁾	(%)	0.005
Density of Water	(lb/gal)	8.34
COOLING TOWER CHEMICALS		
Phosphoric Acid Concentration ^(a)	(ppm)	7.20
Sulfuric Acid Concentration ^(a)	(ppm)	7.20
PRODUCTION LINE 1 AND 2		
Number of Cells ⁽¹⁾	--	1
Total Water Circulation Rate ⁽¹⁾	(gpm)	900
PRODUCTION LINE 3		
Number of Cells ⁽¹⁾	--	1
Total Water Circulation Rate ⁽¹⁾	(gpm)	1,000
PRODUCTION LINE 4		
Number of Cells ⁽¹⁾	--	1
Total Water Circulation Rate ⁽¹⁾	(gpm)	800

NOTES:

gpm = gallons per minute.

ppm = parts per million.

TAC = toxic air contaminant.

(a) TAC concentration (ppm) = (corrosion inhibitor dosage [ppm]) x (weight percentage of TAC [%]) / 100

Corrosion inhibitor dosage (ppm) = 240 (3)

Weight percentage of phosphoric acid (%) = 3.00 (4)

Weight percentage of sulfuric acid (%) = 3.00 (4)

REFERENCES:

(1) Information provided by Hollingsworth & Vose Fiber Company.

(2) Information provided by manufacturer.

(3) Information provided by vendor. Average of dosage range.

(4) Composition information from vendor SDS.

Table 3
Emission Factor Summary for Toxic Air Contaminants
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS/ODEQ Sequence Number	CFU Outlet					
		Emission Factor (lb/ton)					
		Rotary Fine	Rotary Coarse and Ultra Rotary Coarse			Flameblown	Glass Melt
Rotary Coarse	Ultra Rotary Coarse		Maximum ⁽¹⁾				
METALS							
Antimony	7440-36-0	ND 0 ⁽²⁾	ND 0 ⁽²⁾	5.39E-05 ⁽³⁾	5.39E-05	3.24E-04 ⁽³⁾	3.55E-06 ⁽³⁾
Arsenic	7440-38-2	ND 0 ⁽²⁾	ND 0 ⁽²⁾	ND 0 ⁽²⁾	0	ND 0 ⁽²⁾	ND 0 ⁽²⁾
Barium	7440-39-3	5.21E-05 ⁽³⁾	3.32E-05 ⁽³⁾	2.27E-05 ⁽³⁾	3.32E-05	2.16E-04 ⁽³⁾	2.47E-06 ⁽³⁾
Beryllium	7440-41-7	ND 0 ⁽²⁾	ND 0 ⁽²⁾	ND 0 ⁽²⁾	0	ND 0 ⁽²⁾	ND 0 ⁽²⁾
Cadmium	7440-43-9	ND 0 ⁽²⁾	3.44E-05 ⁽³⁾	2.12E-06 ⁽³⁾	3.44E-05	5.98E-05 ⁽³⁾	2.96E-06 ⁽³⁾
Chromium (total)	7440-47-3	1.82E-05 ⁽³⁾	3.20E-05 ⁽³⁾	1.34E-05 ⁽³⁾	3.20E-05	6.95E-05 ⁽³⁾	1.27E-06 ⁽³⁾
Cobalt	7440-48-4	ND 0 ⁽²⁾	ND 0 ⁽²⁾	1.40E-06 ⁽³⁾	1.40E-06	ND 0 ⁽²⁾	5.35E-07 ⁽³⁾
Copper	7440-50-8	4.39E-04 ⁽³⁾	1.90E-04 ⁽³⁾	1.83E-04 ⁽³⁾	1.90E-04	9.90E-04 ⁽³⁾	1.93E-05 ⁽³⁾
Lead	7439-92-1	ND 0 ⁽²⁾	3.03E-04 ⁽³⁾	ND 0 ⁽²⁾	3.03E-04	ND 0 ⁽²⁾	2.64E-05 ⁽³⁾
Manganese	7439-96-5	8.69E-05 ⁽³⁾	2.91E-05 ⁽³⁾	4.81E-05 ⁽³⁾	4.81E-05	2.26E-04 ⁽³⁾	7.05E-07 ⁽³⁾
Mercury	7439-97-6	4.52E-06 ⁽³⁾	1.91E-06 ⁽³⁾	3.66E-06 ⁽³⁾	3.66E-06	1.13E-05 ⁽³⁾	3.59E-04 ⁽³⁾
Nickel	7440-02-0	3.87E-05 ⁽³⁾	7.27E-05 ⁽³⁾	ND 0 ⁽²⁾	7.27E-05	3.74E-04 ⁽³⁾	ND 0 ⁽²⁾
Phosphorus	504	7.25E-04 ⁽³⁾	8.61E-04 ⁽³⁾	6.48E-05 ⁽³⁾	8.61E-04	1.85E-03 ⁽³⁾	7.69E-05 ⁽³⁾
Selenium	7782-49-2	ND 0 ⁽²⁾	ND 0 ⁽²⁾	ND 0 ⁽²⁾	0	ND 0 ⁽²⁾	ND 0 ⁽²⁾
Zinc	7440-66-6	1.08E-03 ⁽³⁾	5.39E-04 ⁽³⁾	3.41E-04 ⁽³⁾	5.39E-04	5.96E-03 ⁽³⁾	4.05E-05 ⁽³⁾
INORGANIC COMPOUNDS							
Total Fluoride	--	0.0225 ⁽⁴⁾	0.0069 ⁽⁴⁾	0.0027 ⁽⁴⁾	0.0069	0.052 ⁽⁴⁾	0.000158 ⁽⁴⁾
Hydrogen fluoride	7664-39-3	0.03275 ⁽⁴⁾	0.000717 ⁽⁴⁾	0.0002285 ⁽⁴⁾	0.000717	0.0484 ⁽⁴⁾	0.0000201 ⁽⁴⁾
Fluorides	239	0 ^(a)	6.2E-03 ^(a)	2.5E-03 ^(a)	6.2E-03	3.6E-03 ^(a)	1.4E-04 ^(a)
ORGANIC COMPOUNDS							
Benzene	71-43-2	0.787 ⁽⁶⁾	1.45E-02 ⁽⁶⁾	--	1.45E-02	0.787 ⁽⁶⁾	--
Formaldehyde	50-00-0	0.780 ⁽³⁾	6.50E-02 ⁽³⁾	2.55E-02 ⁽³⁾	6.50E-02	4.65E-02 ⁽³⁾	2.90E-03 ⁽³⁾
Hexane	110-54-3	1.60E-02 ⁽⁶⁾	7.78E-03 ⁽⁶⁾	--	7.78E-03	1.60E-02 ⁽⁶⁾	--
Toluene	108-88-3	0.863 ⁽⁶⁾	1.00E-02 ⁽⁶⁾	--	1.00E-02	0.863 ⁽⁶⁾	--

NOTES:

CFU = ceramic filtration unit.

HAP = hazardous air pollutant

ND = non-detect.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Fluorides emission factor (lb/ton) = (total fluoride emission factor [lb/ton]) - (hydrogen fluoride emission factor [lb/ton]); see Reference (5).

- REFERENCES:
- (1) The maximum of emission factor of either rotary coarse and ultra rotary coarse will be used for emissions estimates.
- (2) Results of all source tests runs were below the minimum detection limit. The pollutant assumed not to be present in a measurable quantity.
- (3) Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.
- (4) Summary of 2018 source tests provided by DEQ with draft PSD permit (June 2020). Controlled production-based emission factors represent the average emission factor derived from multiple source tests conducted at the CFU outlet.
- (5) Represents emission factor for total fluorides minus hydrogen fluoride. If difference is less than zero, shown as zero.
- (6) Emission Factor from 2016 PSD application submitted by Hollingsworth & Vose Fiber Company.

Table 4
Glass Plant TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt
Daily Throughput (tons/day) ⁽¹⁾	8.55	47.7	2.16	64.8
Annual Throughput (tons/yr) ⁽¹⁾	3,122	17,424	788	23,652

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor ⁽²⁾ (lb/ton)				Emission Estimates								Total Facility Emission Estimates	
					Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)					Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)			
METALS																		
Antimony	7440-36-0	Yes	Yes	Yes	0	5.4E-05	3.2E-04	3.6E-06	--	--	2.6E-03	0.94	7.0E-04	0.26	2.3E-04	0.084	3.5E-03	1.28
Arsenic	7440-38-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	5.2E-05	3.3E-05	2.2E-04	2.5E-06	4.5E-04	0.16	1.6E-03	0.58	4.7E-04	0.17	1.6E-04	0.058	2.7E-03	0.97
Beryllium	7440-41-7	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	0	3.4E-05	6.0E-05	3.0E-06	--	--	1.6E-03	0.60	1.3E-04	0.047	1.9E-04	0.070	2.0E-03	0.72
Chromium (total)	7440-47-3	No	Yes	No	1.8E-05	3.2E-05	7.0E-05	1.3E-06	1.6E-04	0.057	1.5E-03	0.56	1.5E-04	0.055	8.2E-05	0.030	1.9E-03	0.70
Cobalt	7440-48-4	Yes	Yes	Yes	0	1.4E-06	0	5.4E-07	--	--	6.7E-05	0.024	--	--	3.5E-05	0.013	1.0E-04	0.037
Copper	7440-50-8	Yes	No	Yes	4.4E-04	1.9E-04	9.9E-04	1.9E-05	3.8E-03	1.37	9.1E-03	3.31	2.1E-03	0.78	1.3E-03	0.46	0.016	5.92
Lead	7439-92-1	Yes	Yes	Yes	0	3.0E-04	0	2.6E-05	--	--	0.014	5.28	--	--	1.7E-03	0.62	0.016	5.90
Manganese	7439-96-5	Yes	Yes	Yes	8.7E-05	4.8E-05	2.3E-04	7.1E-07	7.4E-04	0.27	2.3E-03	0.84	4.9E-04	0.18	4.6E-05	0.017	3.6E-03	1.30
Mercury	7439-97-6	Yes	Yes	Yes	4.5E-06	3.7E-06	1.1E-05	3.6E-04	3.9E-05	0.014	1.7E-04	0.064	2.4E-05	8.9E-03	0.023	8.49	0.024	8.58
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-05	7.3E-05	3.7E-04	0	3.3E-04	0.12	3.5E-03	1.27	8.1E-04	0.29	--	--	4.6E-03	1.68
Phosphorus	504	Yes	Yes	No	7.3E-04	8.6E-04	1.9E-03	7.7E-05	6.2E-03	2.26	0.041	15.0	4.0E-03	1.46	5.0E-03	1.82	0.056	20.5
Selenium	7782-49-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	1.1E-03	5.4E-04	6.0E-03	4.1E-05	9.2E-03	3.37	0.026	9.39	0.013	4.70	2.6E-03	0.96	0.050	18.4
INORGANIC COMPOUNDS																		
Fluorides	239	Yes	No	Yes	0	6.2E-03	3.6E-03	1.4E-04	--	--	0.29	108	7.8E-03	2.84	8.9E-03	3.26	0.31	114
Hydrogen fluoride	7664-39-3	Yes	Yes	Yes	0.033	7.2E-04	0.048	2.0E-05	0.28	102	0.034	12.5	0.10	38.1	1.3E-03	0.48	0.42	153
ORGANIC COMPOUNDS																		
Benzene	71-43-2	Yes	Yes	Yes	0.79	0.015	0.79	--	6.73	2,457	0.69	253	1.70	620	--	--	9.12	3,330
Formaldehyde	50-00-0	Yes	Yes	Yes	0.78	0.065	0.047	2.9E-03	6.67	2,435	3.10	1,133	0.10	36.6	0.19	68.6	10.1	3,673
Hexane	110-54-3	Yes	Yes	Yes	0.016	7.8E-03	0.016	--	0.14	50.0	0.37	136	0.035	12.6	--	--	0.54	198
Toluene	108-88-3	Yes	Yes	Yes	0.86	0.010	0.86	--	7.38	2,694	0.48	174	1.86	680	--	--	9.72	3,549

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

Table 5
Raw Material Handling TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS	Regulatory Category (Yes/No)			Product Usage ⁽¹⁾		Weight Percent (%)	Emissions Estimate	
			TAC	HAP	RBC	Daily (tons/day)	Annual (tons/yr)		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)
Barium Carbonate	Barium	7440-39-3 ⁽³⁾	Yes	No	No	1.01	307	97.0 ⁽⁴⁾	0.038	11.6
Zinc Oxide	Zinc Oxide	1314-13-2	Yes	No	No	0.64	194	100 ⁽⁵⁾	0.025	7.55
	Lead Oxide	7439-92-1 ⁽⁶⁾	Yes	Yes	Yes			0.10 ⁽⁷⁾	2.5E-05	7.5E-03
	Cadmium Oxide	7440-43-9 ⁽⁸⁾	Yes	Yes	Yes			0.010 ⁽⁷⁾	2.5E-06	7.5E-04

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.039 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.039 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Information provided by Hollingsworth & Vose Fiber Company. See PSD permit application. Represents total PM emissions across raw material points.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Composition information from vendor SDS. Conservatively assumes 100 percent of composition.

(6) Assigned CAS for lead and compounds.

(7) Composition information from vendor SDS. Compound present in trace quantities.

(8) Assigned CAS for cadmium and compounds.

Table 6
TCE Remediation System Equipment TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS	Regulatory Category (Yes/No)			Emission Rate ⁽¹⁾ (lb/hr)		Emissions Estimates	
		TAC	HAP	RBC	Maximum Daily	Annual Average	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)
Acetone	67-64-1	Yes	No	Yes	1.3E-04	3.0E-05	3.1E-03	0.26
Allyl Chloride	107-05-1	Yes	Yes	Yes	7.1E-04	4.5E-05	0.017	0.39
Benzene	71-43-2	Yes	Yes	Yes	3.4E-04	1.1E-04	8.1E-03	0.97
Carbon Disulfide	75-15-0	Yes	Yes	Yes	1.0E-03	7.7E-05	0.025	0.68
1,3-Dichlorobenzene	541-73-1	Yes	No	No	6.5E-05	8.0E-06	1.6E-03	0.070
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	5.7E-06	1.3E-06	1.4E-04	0.011
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	5.8E-05	1.4E-05	1.4E-03	0.12
Chloroform	67-66-3	Yes	Yes	Yes	5.4E-06	1.3E-06	1.3E-04	0.012
Isopropylbenzene	98-82-8	Yes	Yes	Yes	1.2E-05	1.2E-06	2.8E-04	0.010
Cyclohexane	110-82-7	Yes	No	Yes	9.8E-04	3.0E-04	0.023	2.62
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	2.1E-06	7.9E-07	5.0E-05	6.9E-03
1,4-Dioxane	123-91-1	Yes	Yes	Yes	6.0E-06	8.5E-07	1.4E-04	7.5E-03
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.0E-05	7.4E-06	7.2E-04	0.065
Chloroethane	75-00-3	Yes	Yes	Yes	2.9E-06	6.7E-07	6.8E-05	5.9E-03
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	4.2E-06	1.5E-06	1.0E-04	0.013
Dichlorodifluoromethane	75-71-8	Yes	No	No	1.2E-05	5.3E-06	2.9E-04	0.047
Trichlorofluoromethane	75-69-4	Yes	No	No	4.7E-06	2.0E-06	1.1E-04	0.017
N-Hexane	110-54-3	Yes	Yes	Yes	6.6E-04	2.5E-04	0.016	2.23
2-Propanol	67-63-0	Yes	No	Yes	7.3E-05	1.1E-05	1.7E-03	0.092
Chloromethane	74-87-3	Yes	Yes	Yes	1.8E-05	3.1E-06	4.3E-04	0.027
Methylene Chloride	75-09-2	Yes	Yes	Yes	2.3E-05	3.6E-06	5.4E-04	0.032
2-Butanone (MEK)	78-93-3	Yes	No	Yes	6.5E-05	6.6E-06	1.6E-03	0.058
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	4.7E-05	8.8E-06	1.1E-03	0.077
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	3.7E-06	8.4E-07	8.8E-05	7.3E-03
Naphthalene	91-20-3	Yes	Yes	Yes	3.8E-05	3.9E-06	9.0E-04	0.034
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	7.9E-05	9.5E-06	1.9E-03	0.083
Propene	115-07-1	Yes	No	Yes	2.8E-06	1.0E-06	6.6E-05	8.8E-03
Styrene	100-42-5	Yes	Yes	Yes	2.5E-06	8.4E-07	6.0E-05	7.4E-03
Toluene	108-88-3	Yes	Yes	Yes	4.4E-04	1.3E-04	0.011	1.11
Trichloroethylene	79-01-6	Yes	Yes	Yes	7.4E-04	9.1E-05	0.018	0.80
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	5.0E-05	5.6E-06	1.2E-03	0.049
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	1.4E-05	1.8E-06	3.3E-04	0.015
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	9.1E-05	8.5E-06	2.2E-03	0.074
Vinyl Chloride	75-01-4	Yes	Yes	Yes	8.7E-05	1.9E-05	2.1E-03	0.16
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	4.2E-05	1.3E-05	1.0E-03	0.11
M&P-Xylene	1330-20-7	Yes	Yes	Yes	1.2E-04	2.7E-05	3.0E-03	0.24
O-Xylene	95-47-6	Yes	Yes	Yes	3.9E-05	8.4E-06	9.3E-04	0.074

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

(a) Daily emissions estimate (lb/day) = (emission rate [lb/hr]) x (daily hours of operation [hrs/day])

Daily hours of operation (hrs/day) = 24.0 (2)

(b) Annual emissions estimate (lb/yr) = (emission rate [lb/hr]) x (annual hours of operation [hrs/yr])

Annual hours of operation (hrs/yr) = 8,760 (2)

REFERENCES:

(1) Hourly emission rates derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations observed downstream of the carbon system (i.e., post control). Annual average scenario emission rates represent average emission rates concentrations measured downstream of the carbon system. Results from analyses conducted between May 2019 and December 2021 were evaluated.

(2) See Table 1, Input Assumptions and Parameters.

Table 7
TCE Remediation System Equipment Leaks VOC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Component(s)			Default Zero Method			Leak Rate/Screening Value Correlation Method					Total VOC Emissions Estimate		
Type	Service	Total Count	VOC Emission Rate ⁽¹⁾ (kg/hr-source)	Number of Components ⁽²⁾	VOC Emissions Estimate ^(a) (lb/hr)	Max VOC Concentration ⁽³⁾ (ppm)	Screening Value, SV ⁽⁴⁾ (ppm)	VOC Emission Rate (kg/hr-source)	Number of Components ⁽⁵⁾	VOC Emissions Estimate ^(b) (lb/hr)	Hourly ^(d) (lb/hr)	Daily (lb/day)	Annual (lb/yr)
SVE													
Connectors	Gas	37 ⁽⁷⁾	6.1E-07	36	4.8E-05	270	297	4.7E-04 ^(c)	1	1.0E-03	1.1E-03	0.026 ^(e)	9.51 ^(f)
Total SVE Exhaust VOC Emissions Estimate											1.1E-03	0.026 ^(d)	9.51 ^(d)
COMBINED SVE AND STRIPPER EXHAUST													
Valves	Gas	1 ⁽¹⁰⁾	6.6E-07	0	0	161	178	1.7E-04 ^(d)	1	3.8E-04	3.8E-04	9.1E-03 ^(e)	3.33 ^(f)
Connectors	Gas	16 ⁽⁷⁾	6.1E-07	15	2.0E-05	161	178	3.0E-04 ^(c)	1	6.6E-04	6.8E-04	0.016 ^(e)	5.96 ^(f)
Total Combined SVE and Stripper Exhaust VOC Emissions Estimate											1.1E-03	0.025 ^(d)	9.28 ^(d)
POST CARBON VESSEL 1													
Connectors	Gas	7 ⁽⁷⁾	6.1E-07	6	8.1E-06	17.3	20.0	4.3E-05 ^(c)	1	9.5E-05	1.0E-04	2.5E-03 ^(e)	0.91 ^(f)
Total Post Carbon Vessel 1 VOC Emissions Estimate											1.0E-04	2.5E-03 ^(d)	0.91 ^(d)
POST CARBON VESSEL 2													
Connectors	Gas	4 ⁽⁷⁾	6.1E-07	3	4.0E-06	1.94	2.20	6.1E-06 ^(c)	1	1.4E-05	1.8E-05	4.2E-04 ^(e)	0.15 ^(f)
Total Post Carbon Vessel 2 VOC Emissions Estimate											1.8E-05	4.2E-04 ^(d)	0.15 ^(d)

NOTES:

kg/hr-source = kilogram per hour per source.

SOCMI = Synthetic Organic Chemical Manufacturing Industry.

SV = screening value.

SVE = soil vapor extraction.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) Default zero emissions estimate (lb/hr) = (default zero emission rate [kg/hr-source]) x (number of components) x (2.205 lb/kg)

(b) Leak rate/screening value correlation method emissions estimate (lb/hr) = (leak rate/screening value correlation method emission rate [kg/hr-source] x (number of components) x (2.205 lb/kg)

(c) VOC emission rate (kg/hr-source) = (3.05E-06) x (screening value [ppm])^{0.885}; see Reference (8).

(d) VOC emission rate (kg/hr-source) = (1.87E-06) x (screening value [ppm])^{0.873}; see Reference (8).

(e) Daily VOC emissions estimate (lb/day) = (hourly VOC emissions estimate [lb/hr]) x (daily hours of operation [hrs/day])

Daily hours of operation (hrs/day) = 24.0 (9)

(f) Annual VOC emissions estimate (lb/yr) = (hourly VOC emissions estimate [lb/hr]) x (annual hours of operation [hrs/yr])

Annual hours of operation (hrs/yr) = 8,760 (9)

REFERENCES:

(1) EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017) published in November 1995. See Table 2-11.

(2) System configuration was evaluated and a component count was conducted using observations and process flow diagrams.

(3) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company.

(4) Conservative engineering estimate based on actual measured concentration data. Assume 10% higher than total VOC concentration.

(5) To estimate maximum potential emissions, it is conservatively assumed that up to one component of each type and in each service grouping could be leaking at any given time.

(6) Value represents the total VOC emissions estimate.

(7) Information obtained during site visit conducted on January 29, 2020. Value represents the sum total of connectors, flanges, sampling connections, and flow meter connections.

(8) EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017) published in November 1995. See Table 2-9.

(9) See Table 1, Input Assumptions and Parameters.

(10) Information obtained during site visit conducted on January 29, 2020. Count represents the slide gate post-air stripper control device.

Table 8
TCE Remediation System Equipment Leaks (SVE) TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	0.026 ⁽²⁾	9.51 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	1,848	139	1.3E-03	8.6E-04	3.4E-05 ^(b)	8.2E-03 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	2,956	99.5	2.1E-03	6.2E-04	5.4E-05 ^(b)	5.9E-03 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	380	20.5	2.7E-04	1.3E-04	7.0E-06 ^(b)	1.2E-03 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	281	16.7	2.0E-04	1.0E-04	5.2E-06 ^(b)	9.9E-04 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	297	21.7	2.1E-04	1.3E-04	5.5E-06 ^(b)	1.3E-03 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	10,233	1,847	7.2E-03	0.011	--	--
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	193	20.6	1.4E-04	1.3E-04	3.6E-06 ^(b)	1.2E-03 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	217	12.7	1.5E-04	7.9E-05	4.0E-06 ^(b)	7.5E-04 ^(b)
Isopropylbenzene	98-82-8	Yes	Yes	Yes	120	219	12.5	1.5E-04	7.8E-05	4.0E-06 ^(b)	7.4E-04 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	153	11.6	1.1E-04	7.2E-05	2.8E-06 ^(b)	6.9E-04 ^(b)
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	113	37.4	2.80	2.6E-05	1.7E-05	6.9E-07 ^(b)	1.7E-04 ^(b)
1,4-Dioxane	123-91-1	Yes	Yes	Yes	88.1	161	9.11	1.1E-04	5.7E-05	3.0E-06 ^(b)	5.4E-04 ^(b)
Ethanol	64-17-5	No	No	No	46.1	1,567	114	1.1E-03	7.1E-04	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	2,130	78.4	1.5E-03	4.9E-04	3.9E-05 ^(b)	4.6E-03 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	219	14.1	1.5E-04	8.8E-05	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	21.4	1.62	1.5E-05	1.0E-05	3.9E-07 ^(b)	9.6E-05 ^(b)
1,2-Dichloroethane	107-06-2	Yes	Yes	Yes	99.0	32.8	2.44	2.3E-05	1.5E-05	6.0E-07 ^(b)	1.4E-04 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	621	37.2	4.4E-04	2.3E-04	1.1E-05 ^(b)	2.2E-03 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	220	13.8	1.6E-04	8.6E-05	4.0E-06 ^(b)	8.2E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	250	14.7	1.8E-04	9.1E-05	4.6E-06 ^(b)	8.7E-04 ^(b)
Heptane	142-82-5	No	No	No	100	182	14.5	1.3E-04	9.0E-05	--	--
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	54,316	1,841	0.038	0.011	1.0E-03 ^(b)	0.11 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	6,846	526	4.8E-03	3.3E-03	1.3E-04 ^(b)	0.031 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	92.0	6.06	6.5E-05	3.8E-05	1.7E-06 ^(b)	3.6E-04 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	242	15.6	1.7E-04	9.7E-05	4.5E-06 ^(b)	9.2E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	155	13.5	1.1E-04	8.4E-05	2.9E-06 ^(b)	8.0E-04 ^(b)
Methyl Butyl Ketone	591-78-6	No	No	No	100	2,071	117	1.5E-03	7.3E-04	--	--
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	821	51.6	5.8E-04	3.2E-04	1.5E-05 ^(b)	3.0E-03 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	1,140	66.0	8.1E-04	4.1E-04	2.1E-05 ^(b)	3.9E-03 ^(b)
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	100	227	23.2	1.6E-04	1.4E-04	4.2E-06 ^(b)	1.4E-03 ^(b)
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	88.1	161	9.36	1.1E-04	5.8E-05	3.0E-06 ^(b)	5.5E-04 ^(b)
Naphthalene	91-20-3	Yes	Yes	Yes	128	134	10.8	9.5E-05	6.7E-05	2.5E-06 ^(b)	6.4E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	862	60.4	6.1E-04	3.7E-04	1.6E-05 ^(b)	3.6E-03 ^(b)
Propene	115-07-1	Yes	No	Yes	42.1	174	14.9	1.2E-04	9.2E-05	3.2E-06 ^(b)	8.8E-04 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	210	12.7	1.5E-04	7.9E-05	3.9E-06 ^(b)	7.5E-04 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	157	10.1	1.1E-04	6.3E-05	--	--
Toluene	108-88-3	Yes	Yes	Yes	92.1	454	32.5	3.2E-04	2.0E-04	8.4E-06 ^(b)	1.9E-03 ^(b)
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	133	242	24.3	1.7E-04	1.5E-04	4.5E-06 ^(b)	1.4E-03 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	1,322,943	155,594	0.93	0.97	0.024 ^(b)	9.19 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	250	17.8	1.8E-04	1.1E-04	4.6E-06 ^(b)	1.1E-03 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	219	13.5	1.5E-04	8.4E-05	4.0E-06 ^(b)	8.0E-04 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	208	12.6	1.5E-04	7.8E-05	3.8E-06 ^(b)	7.4E-04 ^(b)
Vinyl Acetate	108-05-4	Yes	Yes	Yes	86.1	285	15.7	2.0E-04	9.7E-05	5.2E-06 ^(b)	9.3E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	114	9.56	8.1E-05	5.9E-05	2.1E-06 ^(b)	5.6E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	177	12.1	1.2E-04	7.5E-05	3.3E-06 ^(b)	7.1E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	957	56.9	6.8E-04	3.5E-04	1.8E-05 ^(b)	3.4E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	460	24.3	3.2E-04	1.5E-04	8.5E-06 ^(b)	1.4E-03 ^(b)
Total						1,416,136	161,096	1.00	1.00	0.026	9.39

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

SVE = soil vapor extraction.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

- REFERENCES:
- (1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent the average of the maximum measured concentrations at the two SVE blowers. Annual average scenario represent the average of the average concentrations measured at the two SVE blowers. Results from analyses conducted between May 2019 and December 2021 were evaluated.
- (2) See Table 7, TCE Remediation System Equipment Leaks VOC Emission Estimates - PTE.

Table 9
TCE Remediation System Equipment Leaks (Combined SVE and Stripper Exhaust) TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	0.025 ⁽²⁾	9.28 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	508	59.1	5.9E-04	4.9E-04	1.5E-05 ^(b)	4.5E-03 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	25.9	4.15	3.0E-05	3.4E-05	7.6E-07 ^(b)	3.2E-04 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	25.2	3.70	2.9E-05	3.1E-05	7.4E-07 ^(b)	2.8E-04 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	51.0	8.09	5.9E-05	6.7E-05	1.5E-06 ^(b)	6.2E-04 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	65.1	9.18	7.5E-05	7.6E-05	1.9E-06 ^(b)	7.1E-04 ^(b)
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	147	97.4	11.5	1.1E-04	9.5E-05	2.9E-06 ^(b)	8.8E-04 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	5,177	1,982	6.0E-03	0.016	--	--
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	39.0	19.2	4.5E-05	1.6E-04	1.1E-06 ^(b)	1.5E-03 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	39.4	6.41	4.6E-05	5.3E-05	1.2E-06 ^(b)	4.9E-04 ^(b)
Isopropylbenzene	98-82-8	Yes	Yes	Yes	120	39.8	3.78	4.6E-05	3.1E-05	1.2E-06 ^(b)	2.9E-04 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	27.9	4.76	3.2E-05	3.9E-05	8.2E-07 ^(b)	3.7E-04 ^(b)
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	98.0	32.5	3.07	3.8E-05	2.5E-05	9.6E-07 ^(b)	2.4E-04 ^(b)
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	113	37.4	5.54	4.3E-05	4.6E-05	1.1E-06 ^(b)	4.3E-04 ^(b)
Ethanol	64-17-5	No	No	No	46.1	2,749	398	3.2E-03	3.3E-03	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	35.1	7.23	4.1E-05	6.0E-05	1.0E-06 ^(b)	5.6E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	39.8	6.29	4.6E-05	5.2E-05	--	--
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	62.1	5.87	7.2E-05	4.9E-05	1.8E-06 ^(b)	4.5E-04 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	40.1	7.28	4.6E-05	6.0E-05	1.2E-06 ^(b)	5.6E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	45.5	7.25	5.3E-05	6.0E-05	1.3E-06 ^(b)	5.6E-04 ^(b)
Heptane	142-82-5	No	No	No	100	33.1	5.25	3.8E-05	4.3E-05	--	--
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	184	22.0	2.1E-04	1.8E-04	5.4E-06 ^(b)	1.7E-03 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	796	83.7	9.2E-04	6.9E-04	2.3E-05 ^(b)	6.4E-03 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	16.7	3.23	1.9E-05	2.7E-05	4.9E-07 ^(b)	2.5E-04 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	44.1	7.72	5.1E-05	6.4E-05	1.3E-06 ^(b)	5.9E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	90.0	10.4	1.0E-04	8.6E-05	2.7E-06 ^(b)	8.0E-04 ^(b)
Methyl Butyl Ketone	591-78-6	No	No	No	100	207	19.3	2.4E-04	1.6E-04	--	--
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	149	27.0	1.7E-04	2.2E-04	4.4E-06 ^(b)	2.1E-03 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	207	31.6	2.4E-04	2.6E-04	6.1E-06 ^(b)	2.4E-03 ^(b)
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	88.1	29.2	4.94	3.4E-05	4.1E-05	8.6E-07 ^(b)	3.8E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	55.0	21.2	6.4E-05	1.8E-04	1.6E-06 ^(b)	1.6E-03 ^(b)
Propene	115-07-1	Yes	No	Yes	42.1	27.9	3.28	3.2E-05	2.7E-05	8.2E-07 ^(b)	2.5E-04 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	34.5	5.06	4.0E-05	4.2E-05	1.0E-06 ^(b)	3.9E-04 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	58.2	5.94	6.7E-05	4.9E-05	--	--
Toluene	108-88-3	Yes	Yes	Yes	92.1	76.3	16.1	8.8E-05	1.3E-04	2.2E-06 ^(b)	1.2E-03 ^(b)
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	133	44.1	11.8	5.1E-05	9.8E-05	1.3E-06 ^(b)	9.1E-04 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	851,762	117,860	0.99	0.98	0.025 ^(b)	9.06 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	39.8	6.92	4.6E-05	5.7E-05	1.2E-06 ^(b)	5.3E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	39.8	5.90	4.6E-05	4.9E-05	1.2E-06 ^(b)	4.5E-04 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	37.8	3.56	4.4E-05	2.9E-05	1.1E-06 ^(b)	2.7E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	22.7	10.3	2.6E-05	8.5E-05	6.7E-07 ^(b)	7.9E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	32.1	10.8	3.7E-05	8.9E-05	9.5E-07 ^(b)	8.3E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	70.2	19.2	8.1E-05	1.6E-04	2.1E-06 ^(b)	1.5E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	35.1	7.68	4.1E-05	6.4E-05	1.0E-06 ^(b)	5.9E-04 ^(b)
Total						863,229	120,755	1.00	1.00	0.025	9.10

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

SVE = soil vapor extraction.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations from the combined SVE and Stripper exhaust sampling port. Annual average scenario represent average concentrations measured at the combined SVE and Stripper exhaust sampling port. Results from analyses conducted between May 2019 and December 2021 were evaluated.

(2) See Table 7, TCE Remediation System Equipment Leaks VOC Emission Estimates - PTE.

Table 10
TCE Remediation System Equipment Leaks (Post Carbon Vessel 1) TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	2.5E-03 ⁽²⁾	0.91 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	80.1	20.3	8.9E-04	1.1E-03	2.2E-06 ^(b)	9.6E-04 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	375	171	4.2E-03	8.9E-03	1.0E-05 ^(b)	8.1E-03 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	6.30	1.76	7.0E-05	9.2E-05	1.7E-07 ^(b)	8.3E-05 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	12.8	2.01	1.4E-04	1.0E-04	3.5E-07 ^(b)	9.5E-05 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	30.3	4.50	3.4E-04	2.3E-04	8.3E-07 ^(b)	2.1E-04 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	4,174	1,472	0.046	0.077	--	--
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	44.5	15.4	4.9E-04	8.0E-04	1.2E-06 ^(b)	7.3E-04 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	9.86	1.40	1.1E-04	7.3E-05	2.7E-07 ^(b)	6.6E-05 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	446	198	5.0E-03	0.010	1.2E-05 ^(b)	9.3E-03 ^(b)
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	98.0	8.12	1.08	9.0E-05	5.6E-05	2.2E-07 ^(b)	5.1E-05 ^(b)
1,4-Dioxane	123-91-1	Yes	Yes	Yes	88.1	7.30	0.70	8.1E-05	3.6E-05	2.0E-07 ^(b)	3.3E-05 ^(b)
Ethanol	64-17-5	No	No	No	46.1	158	42.4	1.8E-03	2.2E-03	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	22.0	6.73	2.4E-04	3.5E-04	6.1E-07 ^(b)	3.2E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	9.94	2.14	1.1E-04	1.1E-04	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	5.34	0.78	5.9E-05	4.1E-05	1.5E-07 ^(b)	3.7E-05 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	15.5	2.51	1.7E-04	1.3E-04	4.3E-07 ^(b)	1.2E-04 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	10.0	3.53	1.1E-04	1.8E-04	2.8E-07 ^(b)	1.7E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	11.4	2.30	1.3E-04	1.2E-04	3.1E-07 ^(b)	1.1E-04 ^(b)
Heptane	142-82-5	No	No	No	100	318	73.5	3.5E-03	3.8E-03	--	--
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	1,842	453	0.020	0.024	5.1E-05 ^(b)	0.021 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	70.2	9.11	7.8E-04	4.7E-04	1.9E-06 ^(b)	4.3E-04 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	10.9	1.89	1.2E-04	9.8E-05	3.0E-07 ^(b)	8.9E-05 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	11.0	2.64	1.2E-04	1.4E-04	3.0E-07 ^(b)	1.2E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	12.3	2.34	1.4E-04	1.2E-04	3.4E-07 ^(b)	1.1E-04 ^(b)
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	37.3	8.43	4.1E-04	4.4E-04	1.0E-06 ^(b)	4.0E-04 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	51.8	8.54	5.8E-04	4.4E-04	1.4E-06 ^(b)	4.0E-04 ^(b)
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	100	8.29	1.21	9.2E-05	6.3E-05	2.3E-07 ^(b)	5.7E-05 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	34.4	2.21	3.8E-04	1.2E-04	9.5E-07 ^(b)	1.0E-04 ^(b)
Propene	115-07-1	Yes	No	Yes	42.1	21.8	1.32	2.4E-04	6.9E-05	6.0E-07 ^(b)	6.2E-05 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	8.61	1.18	9.6E-05	6.1E-05	2.4E-07 ^(b)	5.6E-05 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	59.1	3.41	6.6E-04	1.8E-04	--	--
Toluene	108-88-3	Yes	Yes	Yes	92.1	393	129	4.4E-03	6.7E-03	1.1E-05 ^(b)	6.1E-03 ^(b)
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	133	16.5	1.43	1.8E-04	7.4E-05	4.5E-07 ^(b)	6.7E-05 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	81,378	16,508	0.90	0.86	2.2E-03 ^(b)	0.78 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	9.94	2.71	1.1E-04	1.4E-04	2.7E-07 ^(b)	1.3E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	9.94	1.33	1.1E-04	6.9E-05	2.7E-07 ^(b)	6.3E-05 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	161	7.22	1.8E-03	3.8E-04	4.4E-06 ^(b)	3.4E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	22.1	10.1	2.5E-04	5.3E-04	6.1E-07 ^(b)	4.8E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	24.7	9.84	2.7E-04	5.1E-04	6.8E-07 ^(b)	4.6E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	89.1	22.7	9.9E-04	1.2E-03	2.5E-06 ^(b)	1.1E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	24.0	6.52	2.7E-04	3.4E-04	6.6E-07 ^(b)	3.1E-04 ^(b)
Total						90,040	19,216	1.00	1.00	2.4E-03	0.83

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations between the carbon treatment beds. Annual average scenario represent average concentrations measured between the carbon vessels 1 and 2. Results from analyses conducted between May 2019 and December 2021 were evaluated.

(2) See Table 7, TCE Remediation System Equipment Leaks VOC Emission Estimates - PTE.

Table 11
TCE Remediation System Equipment Leaks (Post Carbon Vessel 2) TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	4.2E-04 ⁽²⁾	0.15 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	58.2	17.5	8.4E-03	9.2E-03	3.5E-06 ^(b)	1.4E-03 ^(b)
Allyl Chloride	107-05-1	Yes	Yes	Yes	76.5	313	26.4	0.045	0.014	1.9E-05 ^(b)	2.1E-03 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	149	65.3	0.022	0.035	9.1E-06 ^(b)	5.3E-03 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	457	45.3	0.066	0.024	2.8E-05 ^(b)	3.7E-03 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	28.7	4.67	4.1E-03	2.5E-03	1.7E-06 ^(b)	3.8E-04 ^(b)
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	147	2.53	0.77	3.7E-04	4.1E-04	1.5E-07 ^(b)	6.3E-05 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	3,664	1,082	0.53	0.57	--	--
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	25.8	7.93	3.7E-03	4.2E-03	1.6E-06 ^(b)	6.4E-04 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	2.40	0.77	3.5E-04	4.1E-04	1.5E-07 ^(b)	6.3E-05 ^(b)
Isopropylbenzene	98-82-8	Yes	Yes	Yes	120	5.13	0.69	7.4E-04	3.6E-04	3.1E-07 ^(b)	5.6E-05 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	432	175	0.062	0.092	2.6E-05 ^(b)	0.014 ^(b)
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	98.0	0.93	0.46	1.3E-04	2.4E-04	5.7E-08 ^(b)	3.7E-05 ^(b)
1,4-Dioxane	123-91-1	Yes	Yes	Yes	88.1	2.64	0.50	3.8E-04	2.6E-04	1.6E-07 ^(b)	4.1E-05 ^(b)
Ethanol	64-17-5	No	No	No	46.1	498	67.1	0.072	0.035	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	13.3	4.32	1.9E-03	2.3E-03	8.1E-07 ^(b)	3.5E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	15.9	2.36	2.3E-03	1.2E-03	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	1.26	0.39	1.8E-04	2.1E-04	7.7E-08 ^(b)	3.2E-05 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	1.88	0.88	2.7E-04	4.7E-04	1.1E-07 ^(b)	7.1E-05 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	5.31	3.12	7.7E-04	1.6E-03	3.2E-07 ^(b)	2.5E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	2.06	1.16	3.0E-04	6.1E-04	1.3E-07 ^(b)	9.4E-05 ^(b)
Heptane	142-82-5	No	No	No	100	77.0	30.0	0.011	0.016	--	--
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	291	149	0.042	0.079	1.8E-05 ^(b)	0.012 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	32.1	6.17	4.6E-03	3.3E-03	2.0E-06 ^(b)	5.0E-04 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	7.93	1.81	1.1E-03	9.6E-04	4.8E-07 ^(b)	1.5E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	9.95	2.12	1.4E-03	1.1E-03	6.0E-07 ^(b)	1.7E-04 ^(b)
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	28.8	3.86	4.2E-03	2.0E-03	1.8E-06 ^(b)	3.1E-04 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	20.8	5.13	3.0E-03	2.7E-03	1.3E-06 ^(b)	4.2E-04 ^(b)
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	100	1.62	0.49	2.3E-04	2.6E-04	9.8E-08 ^(b)	4.0E-05 ^(b)
Naphthalene	91-20-3	Yes	Yes	Yes	128	16.6	2.29	2.4E-03	1.2E-03	1.0E-06 ^(b)	1.9E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	35.1	5.56	5.1E-03	2.9E-03	2.1E-06 ^(b)	4.5E-04 ^(b)
Propene	115-07-1	Yes	No	Yes	42.1	1.22	0.59	1.8E-04	3.1E-04	7.4E-08 ^(b)	4.8E-05 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	1.12	0.49	1.6E-04	2.6E-04	6.8E-08 ^(b)	4.0E-05 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	8.30	1.39	1.2E-03	7.3E-04	--	--
Toluene	108-88-3	Yes	Yes	Yes	92.1	194	74.5	0.028	0.039	1.2E-05 ^(b)	6.1E-03 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	328	53.5	0.047	0.028	2.0E-05 ^(b)	4.3E-03 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	22.1	3.26	3.2E-03	1.7E-03	1.3E-06 ^(b)	2.6E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	6.11	1.03	8.8E-04	5.4E-04	3.7E-07 ^(b)	8.4E-05 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	40.3	4.96	5.8E-03	2.6E-03	2.4E-06 ^(b)	4.0E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	38.6	11.0	5.6E-03	5.8E-03	2.3E-06 ^(b)	8.9E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	18.7	7.49	2.7E-03	4.0E-03	1.1E-06 ^(b)	6.1E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	54.4	15.8	7.8E-03	8.4E-03	3.3E-06 ^(b)	1.3E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	17.2	4.94	2.5E-03	2.6E-03	1.0E-06 ^(b)	4.0E-04 ^(b)
Total						6,930	1,892	1.00	1.00	1.6E-04	0.058

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations post carbon treatment. Annual average scenario represent average concentrations measured post carbon treatment. Results from analyses conducted between May 2019 and December 2021 were evaluated.

(2) See Table 7, TCE Remediation System Equipment Leaks VOC Emission Estimates - PTE.

Table 12
Cooling Tower - Circulation Drift - TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Production Line 1 and 2	Production Line 3	Production Line 4
Total Water Circulation Rate (gpm) ⁽¹⁾	900	1,000	800

Pollutant	CAS	Regulatory Category (Yes/No)			Concentration ⁽¹⁾ (ppm)	Emission Estimates						Total Facility Emission Estimates	
						Production Line 1 and 2		Production Line 3		Production Line 4			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Drift Loss	--	--	--	--	--	540 ^(a)	197,258 ^(b)	600 ^(a)	219,175 ^(b)	480 ^(a)	175,340 ^(b)	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	7.20	3.9E-03 ^(c)	1.42 ^(d)	4.3E-03 ^(c)	1.58 ^(d)	3.5E-03 ^(c)	1.26 ^(d)	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	7.20	3.9E-03 ^(c)	1.42 ^(d)	4.3E-03 ^(c)	1.58 ^(d)	3.5E-03 ^(c)	1.26 ^(d)	0.012	4.26

NOTES:

gpm = gallons per minute.

HAP = hazardous air pollutant

ppm = parts per million.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily drift loss (lb/day) = (total water circulation rate [gpm]) x (density of water [lb/gal]) x (drift loss percent of circulating water [%] / 100) x (60 min/hr) x (daily hours of operation [hrs/day])

Density of water (lb/gal) = 8.34 (1)

Daily hours of operation (hrs/day) = 24.0 (2)

Drift loss percent of circulating water (%) = 5.0E-03 (1)

(b) Annual drift loss (lb/yr) = (daily drift loss [lb/day]) x (annual days of operation [days/yr])

Annual days of operation (days/yr) = 365 (1)

(c) Daily emissions estimate (lb/day) = (daily drift loss [lb/day]) x (concentration [ppm] / 1,000,000); see Reference (3).

(d) Annual emissions estimate (lb/yr) = (annual drift loss [lb/yr]) x (concentration [ppm] / 1,000,000); see Reference (3).

REFERENCES:

(1) See Table 2, Input Assumptions and Parameters - Cooling Towers.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assumes the composition of the drift loss is same as the cooling tower makeup water.

Table 13
Emergency Generator TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Emergency Generator 1	Emergency Generator 1
Daily Fuel Consumption (gal/day) ⁽¹⁾	46.8	33.0
Annual Fuel Consumption (gal/yr) ⁽¹⁾	2,340	1,650

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/Mgal)	Emissions Estimates				Total Facility Emissions Estimates	
		Emergency Generator 1		Emergency Generator 1							
		TAC	HAP	RBC		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS											
Arsenic	7440-38-2	Yes	Yes	Yes	1.6E-03 ⁽³⁾	5.5E-05	2.8E-03	3.9E-05	2.0E-03	9.4E-05	4.7E-03
Cadmium	7440-43-9	Yes	Yes	Yes	1.5E-03 ⁽³⁾	5.2E-05	2.6E-03	3.7E-05	1.8E-03	8.9E-05	4.4E-03
Chromium VI	18540-29-9	Yes	Yes	Yes	1.0E-04 ⁽³⁾	3.5E-06	1.7E-04	2.4E-06	1.2E-04	5.9E-06	3.0E-04
Copper	7440-50-8	Yes	No	Yes	4.1E-03 ⁽³⁾	1.4E-04	7.1E-03	1.0E-04	5.0E-03	2.4E-04	0.012
Lead	7439-92-1	Yes	Yes	Yes	8.3E-03 ⁽³⁾	2.9E-04	0.014	2.0E-04	0.010	4.9E-04	0.025
Manganese	7439-96-5	Yes	Yes	Yes	3.1E-03 ⁽³⁾	1.1E-04	5.4E-03	7.6E-05	3.8E-03	1.8E-04	9.2E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.0E-03 ⁽³⁾	6.9E-05	3.5E-03	4.9E-05	2.4E-03	1.2E-04	5.9E-03
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-03 ⁽³⁾	1.4E-04	6.8E-03	9.5E-05	4.8E-03	2.3E-04	0.012
Selenium	7782-49-2	Yes	Yes	Yes	2.2E-03 ⁽³⁾	7.6E-05	3.8E-03	5.4E-05	2.7E-03	1.3E-04	6.5E-03
ORGANIC COMPOUNDS											
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.78 ⁽³⁾	0.027	1.36	0.019	0.96	0.046	2.31
Acrolein	107-02-8	Yes	Yes	Yes	0.034 ⁽³⁾	1.2E-03	0.059	8.3E-04	0.041	2.0E-03	0.10
Benzene	71-43-2	Yes	Yes	Yes	0.19 ⁽³⁾	6.5E-03	0.32	4.5E-03	0.23	0.011	0.55
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.22 ⁽³⁾	7.5E-03	0.38	5.3E-03	0.27	0.013	0.64
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.011 ⁽³⁾	3.8E-04	0.019	2.7E-04	0.013	6.4E-04	0.032
Formaldehyde	50-00-0	Yes	Yes	Yes	1.73 ⁽³⁾	0.060	2.99	0.042	2.11	0.10	5.10
Hexane	110-54-3	Yes	Yes	Yes	0.027 ⁽³⁾	9.3E-04	0.047	6.6E-04	0.033	1.6E-03	0.079
Toluene	108-88-3	Yes	Yes	Yes	0.11 ⁽³⁾	3.7E-03	0.18	2.6E-03	0.13	6.2E-03	0.31
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.042 ⁽³⁾	1.5E-03	0.073	1.0E-03	0.052	2.5E-03	0.13
INORGANIC COMPOUNDS											
Ammonia	7664-41-7	Yes	No	Yes	0.80 ⁽⁴⁾	0.028	1.39	0.020	0.98	0.047	2.36
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.19 ⁽³⁾	6.5E-03	0.32	4.5E-03	0.23	0.011	0.55
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)											
PAHs	401	Yes	Yes	Yes	0.036 ⁽³⁾	1.3E-03	0.063	8.8E-04	0.044	2.1E-03	0.11
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	3.6E-05 ⁽³⁾	1.2E-06	6.2E-05	8.7E-07	4.4E-05	2.1E-06	1.1E-04
Naphthalene	91-20-3	Yes	Yes	Yes	0.020 ⁽³⁾	6.8E-04	0.034	4.8E-04	0.024	1.2E-03	0.058
DIESEL PARTICULATE MATTER (DPM)											
DPM	200	Yes	No	Yes	33.5 ⁽³⁾	1.16	58.0	0.82	40.9	1.98	98.9

NOTES:

HAP = hazardous air pollutant

Mgal = thousand gallons.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (daily fuel consumption [gal/day]) x (load factor)

Load factor = 0.74 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (annual fuel consumption [gal/yr]) x (load factor)

Load factor = 0.74 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Default load factor for generators in URBEMIS emissions model.

(3) DEQ approved diesel combustion emission factors for stationary and portable internal combustion engines.

(4) Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory published by the South Coast Air Quality Management District (SCAQMD) in December 2016. See Appendix B, Table B-2 "Default EF for Diesel/Distillate Oil Fuel Combustion (lb/1000 gal)" for stationary and portable internal combustion engines (ICE). Assumes no control.

Table 14
Facility Natural Gas Usage TAC Emission Estimates - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Glass Plant	Non-Production
Daily Fuel Usage (MMscf/day)	2.79 ⁽¹⁾	0.070 ⁽¹⁾
Annual Fuel Usage (MMscf/yr)	1,020 ⁽¹⁾	25.5 ⁽¹⁾

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/MMscf)	Emissions Estimates				Total Facility Emissions Estimates	
		Glass Plant		Non-Production							
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS											
Arsenic	7440-38-2	Yes	Yes	Yes	2.0E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.4E-05 ^(a)	5.1E-03 ^(b)	1.4E-05	5.1E-03
Barium	7440-39-3	Yes	No	No	4.4E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	3.1E-04 ^(a)	0.11 ^(b)	3.1E-04	0.11
Beryllium	7440-41-7	Yes	Yes	Yes	1.2E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	8.4E-07 ^(a)	3.1E-04 ^(b)	8.4E-07	3.1E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.1E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	7.7E-05 ^(a)	0.028 ^(b)	7.7E-05	0.028
Chromium (total)	7440-47-3	No	Yes	No	1.4E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	9.8E-05 ^(a)	0.036 ^(b)	9.8E-05	0.036
Chromium VI	18540-29-9	Yes	Yes	Yes	5.6E-05 ^(c)	1.6E-04 ^(a)	0.057 ^(b)	3.9E-06 ^(a)	1.4E-03 ^(b)	1.6E-04	0.059
Cobalt	7440-48-4	Yes	Yes	Yes	8.4E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.9E-06 ^(a)	2.1E-03 ^(b)	5.9E-06	2.1E-03
Copper	7440-50-8	Yes	No	Yes	8.5E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.9E-05 ^(a)	0.022 ^(b)	5.9E-05	0.022
Lead	7439-92-1	Yes	Yes	Yes	5.0E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	3.5E-05 ^(a)	0.013 ^(b)	3.5E-05	0.013
Manganese	7439-96-5	Yes	Yes	Yes	3.8E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.6E-05 ^(a)	9.7E-03 ^(b)	2.6E-05	9.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.8E-05 ^(a)	6.6E-03 ^(b)	1.8E-05	6.6E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	1.7E-03 ⁽³⁾	4.6E-03 ^(a)	1.68 ^(b)	1.2E-04 ^(a)	0.042 ^(b)	4.7E-03	1.73
Nickel	7440-02-0	Yes	Yes	Yes	2.1E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.5E-04 ^(a)	0.054 ^(b)	1.5E-04	0.054
Selenium	7782-49-2	Yes	Yes	Yes	2.4E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.7E-06 ^(a)	6.1E-04 ^(b)	1.7E-06	6.1E-04
Vanadium	7440-62-2	Yes	No	Yes	2.3E-03 ⁽³⁾	6.4E-03 ^(a)	2.35 ^(b)	1.6E-04 ^(a)	0.059 ^(b)	6.6E-03	2.40
Zinc	7440-66-6	Yes	No	No	0.029 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.0E-03 ^(a)	0.74 ^(b)	2.0E-03	0.74
INORGANIC COMPOUNDS											
Ammonia	7664-41-7	Yes	No	Yes	3.20 ⁽⁵⁾	8.93 ^(a)	3,264 ^(b)	0.22 ^(a)	81.6 ^(b)	9.15	3,346
ORGANIC COMPOUNDS											
Acetaldehyde	75-07-0	Yes	Yes	Yes	4.3E-03 ⁽³⁾	0.012 ^(a)	4.39 ^(b)	3.0E-04 ^(a)	0.11 ^(b)	0.012	4.50
Acrolein	107-02-8	Yes	Yes	Yes	2.7E-03 ⁽³⁾	7.5E-03 ^(a)	2.75 ^(b)	1.9E-04 ^(a)	0.069 ^(b)	7.7E-03	2.82
Benzene	71-43-2	Yes	Yes	Yes	8.0E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.6E-04 ^(a)	0.20 ^(b)	5.6E-04	0.20
Ethylbenzene	100-41-4	Yes	Yes	Yes	9.5E-03 ⁽³⁾	0.027 ^(a)	9.69 ^(b)	6.6E-04 ^(a)	0.24 ^(b)	0.027	9.93
Formaldehyde	50-00-0	Yes	Yes	Yes	0.017 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.2E-03 ^(a)	0.43 ^(b)	1.2E-03	0.43
Hexane	110-54-3	Yes	Yes	Yes	6.3E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	4.4E-04 ^(a)	0.16 ^(b)	4.4E-04	0.16
Toluene	108-88-3	Yes	Yes	Yes	0.037 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.6E-03 ^(a)	0.93 ^(b)	2.6E-03	0.93
Xylenes	1330-20-7	Yes	Yes	Yes	0.027 ⁽³⁾	0.076 ^(a)	27.7 ^(b)	1.9E-03 ^(a)	0.69 ^(b)	0.078	28.4
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)											
PAHs	401	Yes	Yes	Yes	1.0E-04 ⁽³⁾	2.8E-04 ^(a)	0.10 ^(b)	7.0E-06 ^(a)	2.5E-03 ^(b)	2.9E-04	0.10
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.2E-06 ⁽³⁾	3.3E-06 ^(a)	1.2E-03 ^(b)	8.4E-08 ^(a)	3.1E-05 ^(b)	3.4E-06	1.3E-03
Naphthalene	91-20-3	Yes	Yes	Yes	3.0E-04 ⁽³⁾	8.4E-04 ^(a)	0.31 ^(b)	2.1E-05 ^(a)	7.6E-03 ^(b)	8.6E-04	0.31

NOTES:

HAP = hazardous air pollutant

MMscf = million standard cubic feet.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emission estimates (lb/day) = (emission factor [lb/MMscf]) x (daily fuel usage [MMscf/day])

(b) Annual emission estimates (lb/yr) = (emission factor [lb/MMscf]) x (annual fuel usage [MMscf/yr])

(c) Chromium VI emission factor (lb/MMscf) = (chromium emission factor [lb/MMscf]) x (chromium VI percentage of total chromium [%]) /100

Chromium VI percentage of total chromium (%) = 4.00 (4)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Source-specific emissions calculated in Table 4, Glass Plant TAC Emission Estimates - PTE. Emissions of this pollutant are included with the emission estimates for the production-based TEU emission factors.

(3) Emission factors provided by Oregon Department of Environmental Quality for Natural Gas External Combustion Sources. Emission factors for sources <10 MMBtu/hr were used.

(4) Based on assumptions used by the EPA as outlined in the 2011 National Emissions Inventory. EPA assumes that 4% of chromium emitted during natural gas combustion is in the form of hexavalent chromium.

(5) EPA Webfire Clearinghouse for Inventories and Emission Factors. Assumes uncontrolled natural gas combustion.

Table 15
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate												TCE Remediation System	
					Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt Operations		Raw Material Handling					
		Post Treatment																
		TAC	HAP	RBC	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS																		
Antimony	7440-36-0	Yes	Yes	Yes	--	--	2.6E-03	0.94	7.0E-04	0.26	2.3E-04	0.084	--	--	--	--	--	
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Barium	7440-39-3	Yes	No	No	4.5E-04	0.16	1.6E-03	0.58	4.7E-04	0.17	1.6E-04	0.058	0.038	11.6	--	--	--	
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	1.6E-03	0.60	1.3E-04	0.047	1.9E-04	0.070	2.5E-06	7.5E-04	--	--	--	
Chromium (total)	7440-47-3	No	Yes	No	1.6E-04	0.057	1.5E-03	0.56	1.5E-04	0.055	8.2E-05	0.030	--	--	--	--	--	
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	6.7E-05	0.024	--	--	3.5E-05	0.013	--	--	--	--	--	
Copper	7440-50-8	Yes	No	Yes	3.8E-03	1.37	9.1E-03	3.31	2.1E-03	0.78	1.3E-03	0.46	--	--	--	--	--	
Lead	7439-92-1	Yes	Yes	Yes	--	--	0.014	5.28	--	--	1.7E-03	0.62	2.5E-05	7.5E-03	--	--	--	
Manganese	7439-96-5	Yes	Yes	Yes	7.4E-04	0.27	2.3E-03	0.84	4.9E-04	0.18	4.6E-05	0.017	--	--	--	--	--	
Mercury	7439-97-6	Yes	Yes	Yes	3.9E-05	0.014	1.7E-04	0.064	2.4E-05	8.9E-03	0.023	8.49	--	--	--	--	--	
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nickel	7440-02-0	Yes	Yes	Yes	3.3E-04	0.12	3.5E-03	1.27	8.1E-04	0.29	--	--	--	--	--	--	--	
Phosphorus	504	Yes	Yes	No	6.2E-03	2.26	0.041	15.0	4.0E-03	1.46	5.0E-03	1.82	--	--	--	--	--	
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Zinc	7440-66-6	Yes	No	No	9.2E-03	3.37	0.026	9.39	0.013	4.70	2.6E-03	0.96	--	--	--	--	--	
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	0.025	7.55	--	--	--	
INORGANIC COMPOUNDS																		
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluorides	239	Yes	No	Yes	--	--	0.29	108	7.8E-03	2.84	8.9E-03	3.26	--	--	--	--	--	
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.28	102	0.034	12.5	0.10	38.1	1.3E-03	0.48	--	--	--	--	--	
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
ORGANIC COMPOUNDS																		
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	3.1E-03	0.26	
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	0.017	0.39	
Benzene	71-43-2	Yes	Yes	Yes	6.73	2,457	0.69	253	1.70	620	--	--	--	--	--	8.1E-03	0.97	
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbon Disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	0.025	0.68	
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
1,3-Dichlorobenzene	541-73-1	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	1.6E-03	0.070	
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.4E-04	0.011	
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	1.4E-03	0.12	
Chloroform	67-66-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.3E-04	0.012	
Isopropylbenzene	98-82-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	2.8E-04	0.010	
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	0.023	2.62	
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	5.0E-05	6.9E-03	
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
1,4-Dioxane	123-91-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.4E-04	7.5E-03	
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	7.2E-04	0.065	
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	6.8E-05	5.9E-03	
1,2-Dichloroethane	107-06-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	1.0E-04	0.013	
Dichlorodifluoromethane	75-71-8	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	2.9E-04	0.047	
Trichlorofluoromethane	75-69-4	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	1.1E-04	0.017	
Formaldehyde	50-00-0	Yes	Yes	Yes	6.67	2,435	3.10	1,133	0.10	36.6	0.19	68.6	--	--	--	--	--	
Hexane	110-54-3	Yes	Yes	Yes	0.14	50.0	0.37	136	0.035	12.6	--	--	--	--	--	0.016	2.23	
2-Propanol	67-63-0	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	1.7E-03	0.092	
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	4.3E-04	0.027	
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Methylene Chloride	75-09-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	5.4E-04	0.032	
2-Butanone (MEK)	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	1.6E-03	0.058	
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.1E-03	0.077	
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	8.8E-05	7.3E-03	
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.9E-03	0.083	
Propene	115-07-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	6.6E-05	8.8E-03	
Styrene	100-42-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	6.0E-05	7.4E-03	
Toluene	108-88-3	Yes	Yes	Yes	7.38	2,694	0.48	174	1.86	680	--	--	--	--	--	0.011	1.11	
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Trichloroethylene	79-01-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	0.018	0.80	
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	1.2E-03	0.049	
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	3.3E-04	0.015	
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	--	--	--	--	--	--	--	--	--	--	--	2.2E-03	0.074	
Vinyl Acetate	108-05-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vinyl Chloride	75-01-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	2.1E-03	0.16	
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	1.0E-03	0.11	
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	3.0E-03	0.24	
o-xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	9.3E-04	0.074	
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)																		
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--</							

Table 15
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate									
					TCE Remediation System								Cooling Towers	
		TAC	HAP	RBC	Leaks								Circulation Drift	
					SVE		Combined SVE and Stripper Exhaust		Post Carbon Vessel 1		Post Carbon Vessel 2			
					Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
METALS														
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--
INORGANIC COMPOUNDS														
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	0.012	4.26
ORGANIC COMPOUNDS														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	3.4E-05	8.2E-03	1.5E-05	4.5E-03	2.2E-06	9.6E-04	3.5E-06	1.4E-03	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	1.9E-05	2.1E-03	--	--
Benzene	71-43-2	Yes	Yes	Yes	5.4E-05	5.9E-03	7.6E-07	3.2E-04	1.0E-05	8.1E-03	9.1E-06	5.3E-03	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	75-15-0	Yes	Yes	Yes	7.0E-06	1.2E-03	7.4E-07	2.8E-04	1.7E-07	8.3E-05	2.8E-05	3.7E-03	--	--
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	5.2E-06	9.9E-04	1.5E-06	6.2E-04	3.5E-07	9.5E-05	--	--	--	--
1,3-Dichlorobenzene	541-73-1	Yes	No	No	5.5E-06	1.3E-03	1.9E-06	7.1E-04	8.3E-07	2.1E-04	1.7E-06	3.8E-04	--	--
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	2.9E-06	8.8E-04	--	--	1.5E-07	6.3E-05	--	--
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	3.6E-06	1.2E-03	1.1E-06	1.5E-03	1.2E-06	7.3E-04	1.6E-06	6.4E-04	--	--
Chloroform	67-66-3	Yes	Yes	Yes	4.0E-06	7.5E-04	1.2E-06	4.9E-04	2.7E-07	6.6E-05	1.5E-07	6.3E-05	--	--
Isopropylbenzene	98-82-8	Yes	Yes	Yes	4.0E-06	7.4E-04	1.2E-06	2.9E-04	--	--	3.1E-07	5.6E-05	--	--
Cyclohexane	110-82-7	Yes	No	Yes	2.8E-06	6.9E-04	8.2E-07	3.7E-04	1.2E-05	9.3E-03	2.6E-05	0.014	--	--
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	9.6E-07	2.4E-04	2.2E-07	5.1E-05	5.7E-08	3.7E-05	--	--
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	6.9E-07	1.7E-04	1.1E-06	4.3E-04	--	--	--	--	--	--
1,4-Dioxane	123-91-1	Yes	Yes	Yes	3.0E-06	5.4E-04	--	--	2.0E-07	3.3E-05	1.6E-07	4.1E-05	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.9E-05	4.6E-03	1.0E-06	5.6E-04	6.1E-07	3.2E-04	8.1E-07	3.5E-04	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	3.9E-07	9.6E-05	--	--	1.5E-07	3.7E-05	7.7E-08	3.2E-05	--	--
1,2-Dichloroethane	107-06-2	Yes	Yes	Yes	6.0E-07	1.4E-04	--	--	--	--	--	--	--	--
1,1,1-Trichlorotrifluoroethane	76-13-1	Yes	No	No	1.1E-05	2.2E-03	1.8E-06	4.5E-04	4.3E-07	1.2E-04	1.1E-07	7.1E-05	--	--
Dichlorodifluoromethane	75-71-8	Yes	No	No	4.0E-06	8.2E-04	1.2E-06	5.6E-04	2.8E-07	1.7E-04	3.2E-07	2.5E-04	--	--
Trichlorofluoromethane	75-69-4	Yes	No	No	4.6E-06	8.7E-04	1.3E-06	5.6E-04	3.1E-07	1.1E-04	1.3E-07	9.4E-05	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Hexane	110-54-3	Yes	Yes	Yes	1.0E-03	0.11	5.4E-06	1.7E-03	5.1E-05	0.021	1.8E-05	0.012	--	--
2-Propanol	67-63-0	Yes	No	Yes	1.3E-04	0.031	2.3E-05	6.4E-03	1.9E-06	4.3E-04	2.0E-06	5.0E-04	--	--
Chloromethane	74-87-3	Yes	Yes	Yes	1.7E-06	3.6E-04	4.9E-07	2.5E-04	3.0E-07	8.9E-05	4.8E-07	1.5E-04	--	--
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	4.5E-06	9.2E-04	1.3E-06	5.9E-04	3.0E-07	1.2E-04	--	--	--	--
Methylene Chloride	75-09-2	Yes	Yes	Yes	2.9E-06	8.0E-04	2.7E-06	8.0E-04	3.4E-07	1.1E-04	6.0E-07	1.7E-04	--	--
2-Butanone (MEK)	78-93-3	Yes	No	Yes	1.5E-05	3.0E-03	4.4E-06	2.1E-03	1.0E-06	4.0E-04	1.8E-06	3.1E-04	--	--
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	2.1E-05	3.9E-03	6.1E-06	2.4E-03	1.4E-06	4.0E-04	1.3E-06	4.2E-04	--	--
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	4.2E-06	1.4E-03	--	--	2.3E-07	5.7E-05	9.8E-08	4.0E-05	--	--
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	3.0E-06	5.5E-04	8.6E-07	3.8E-04	--	--	--	--	--	--
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	1.6E-05	3.6E-03	1.6E-06	1.6E-03	9.5E-07	1.0E-04	2.1E-06	4.5E-04	--	--
Propene	115-07-1	Yes	No	Yes	3.2E-06	8.8E-04	8.2E-07	2.5E-04	6.0E-07	6.2E-05	7.4E-08	4.8E-05	--	--
Styrene	100-42-5	Yes	Yes	Yes	3.9E-06	7.5E-04	1.0E-06	3.9E-04	2.4E-07	5.6E-05	6.8E-08	4.0E-05	--	--
Toluene	108-88-3	Yes	Yes	Yes	8.4E-06	1.9E-03	2.2E-06	1.2E-03	1.1E-05	6.1E-03	1.2E-05	6.1E-03	--	--
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	4.5E-06	1.4E-03	1.3E-06	9.1E-04	4.5E-07	6.7E-05	--	--	--	--
Trichloroethylene	79-01-6	Yes	Yes	Yes	0.024	9.19	0.025	9.06	2.2E-03	0.78	2.0E-05	4.3E-03	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	4.6E-06	1.1E-03	1.2E-06	5.3E-04	2.7E-07	1.3E-04	1.3E-06	2.6E-04	--	--
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	4.0E-06	8.0E-04	1.2E-06	4.5E-04	2.7E-07	6.3E-05	3.7E-07	8.4E-05	--	--
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	3.8E-06	7.4E-04	1.1E-06	2.7E-04	4.4E-06	3.4E-04	2.4E-06	4.0E-04	--	--
Vinyl Acetate	108-05-4	Yes	Yes	Yes	5.2E-06	9.3E-04	--	--	--	--	--	--	--	--
Vinyl Chloride	75-01-4	Yes	Yes	Yes	2.1E-06	5.6E-04	6.7E-07	7.9E-04	6.1E-07	4.8E-04	2.3E-06	8.9E-04	--	--
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	3.3E-06	7.1E-04	9.5E-07	8.3E-04	6.8E-07	4.6E-04	1.1E-06	6.1E-04	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	1.8E-05	3.4E-03	2.1E-06	1.5E-03	2.5E-06	1.1E-03	3.3E-06	1.3E-03	--	--
o-xylene	95-47-6	Yes	Yes	Yes	8.5E-06	1.4E-03	1.0E-06	5.9E-04	6.6E-07	3.1E-04	1.0E-06	4.0E-04	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	2.5E-06	6.4E-04	--	--	--	--	1.0E-06	1.9E-04	--	--
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--
Total TACs					0.026	9.39	0.025	9.10	2.4E-03	0.83	1.6E-04	0.058	0.023	8.52
Total HAPs					0.026	9.34	0.025	9.08	2.3E-03	0.82	1.2E-04	0.039	0	0

Table 15
TAC Emissions Estimate Summary - PTE
Hollingsworth & Vose Fiber Company—Corvallis, OR

Toxic Air Contaminant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate						Total Facility Emissions Estimate	
					Emergency Generators				Natural Gas Combustion			
		Line 1		Line 2		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)			Annual (lb/yr)	
		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)				Daily (lb/day)	Annual (lb/yr)		Daily (lb/day)
METALS												
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	3.5E-03	1.28
Arsenic	7440-38-2	Yes	Yes	Yes	5.5E-05	2.8E-03	3.9E-05	2.0E-03	1.4E-05	5.1E-03	1.1E-04	9.8E-03
Barium	7440-39-3	Yes	No	No	--	--	--	--	3.1E-04	0.11	0.041	12.7
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	8.4E-07	3.1E-04	8.4E-07	3.1E-04
Cadmium	7440-43-9	Yes	Yes	Yes	5.2E-05	2.6E-03	3.7E-05	1.8E-03	7.7E-05	0.028	2.1E-03	0.75
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	9.8E-05	0.036	2.0E-03	0.73
Chromium VI	18540-29-9	Yes	Yes	Yes	3.5E-06	1.7E-04	2.4E-06	1.2E-04	1.6E-04	0.059	1.7E-04	0.059
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	5.9E-06	2.1E-03	1.1E-04	0.039
Copper	7440-50-8	Yes	No	Yes	1.4E-04	7.1E-03	1.0E-04	5.0E-03	5.9E-05	0.022	0.017	5.95
Lead	7439-92-1	Yes	Yes	Yes	2.9E-04	0.014	2.0E-04	0.010	3.5E-05	0.013	0.017	5.95
Manganese	7439-96-5	Yes	Yes	Yes	1.1E-04	5.4E-03	7.6E-05	3.8E-03	2.6E-05	9.7E-03	3.8E-03	1.32
Mercury	7439-97-6	Yes	Yes	Yes	6.9E-05	3.5E-03	4.9E-05	2.4E-03	1.8E-05	6.6E-03	0.024	8.59
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	4.7E-03	1.73	4.7E-03	1.73
Nickel	7440-02-0	Yes	Yes	Yes	1.4E-04	6.8E-03	9.5E-05	4.8E-03	1.5E-04	0.054	5.0E-03	1.75
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	0.056	20.5
Selenium	7782-49-2	Yes	Yes	Yes	7.6E-05	3.8E-03	5.4E-05	2.7E-03	1.7E-06	6.1E-04	1.3E-04	7.1E-03
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	6.6E-03	2.40	6.6E-03	2.40
Zinc	7440-66-6	Yes	No	No	--	--	--	--	2.0E-03	0.74	0.052	19.2
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	0.025	7.55
INORGANIC COMPOUNDS												
Ammonia	7664-41-7	Yes	No	Yes	0.028	1.39	0.020	0.98	9.15	3,346	9.20	3,348
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	0.31	114
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	0.42	153
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	6.5E-03	0.32	4.5E-03	0.23	--	--	0.011	0.55
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	0.012	4.26
ORGANIC COMPOUNDS												
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.027	1.36	0.019	0.96	0.012	4.50	0.059	6.81
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	3.2E-03	0.28
Acrolein	107-02-8	Yes	Yes	Yes	1.2E-03	0.059	8.3E-04	0.041	7.7E-03	2.82	9.7E-03	2.92
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	0.017	0.40
Benzene	71-43-2	Yes	Yes	Yes	6.5E-03	0.32	4.5E-03	0.23	5.6E-04	0.20	9.14	3,332
1,3-Butadiene	106-99-0	Yes	Yes	Yes	7.5E-03	0.38	5.3E-03	0.27	--	--	0.013	0.64
Carbon Disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	0.025	0.68
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	--	--	--	--	--	--	7.0E-06	1.7E-03
1,3-Dichlorobenzene	541-73-1	Yes	No	No	--	--	--	--	--	--	1.6E-03	0.072
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	--	--	--	--	1.4E-04	0.012
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	--	--	--	--	--	--	1.4E-03	0.12
Chloroform	67-66-3	Yes	Yes	Yes	--	--	--	--	--	--	1.4E-04	0.013
Isopropylbenzene	98-82-8	Yes	Yes	Yes	--	--	--	--	--	--	2.8E-04	0.011
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	0.023	2.64
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	--	--	--	--	5.1E-05	7.2E-03
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	--	--	--	--	--	--	1.8E-06	5.9E-04
1,4-Dioxane	123-91-1	Yes	Yes	Yes	--	--	--	--	--	--	1.5E-04	8.1E-03
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.8E-04	0.019	2.7E-04	0.013	0.027	9.93	0.029	10.0
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	6.9E-05	6.0E-03
1,2-Dichloroethane	107-06-2	Yes	Yes	Yes	--	--	--	--	--	--	6.0E-07	1.4E-04
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	--	--	--	--	--	--	1.2E-04	0.016
Dichlorodifluoromethane	75-71-8	Yes	No	No	--	--	--	--	--	--	2.9E-04	0.048
Trichlorofluoromethane	75-69-4	Yes	No	No	--	--	--	--	--	--	1.2E-04	0.019
Formaldehyde	50-00-0	Yes	Yes	Yes	0.060	2.99	0.042	2.11	1.2E-03	0.43	10.2	3,678
Hexane	110-54-3	Yes	Yes	Yes	9.3E-04	0.047	6.6E-04	0.033	4.4E-04	0.16	0.56	201
2-Propanol	67-63-0	Yes	No	Yes	--	--	--	--	--	--	1.9E-03	0.13
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	4.3E-04	0.028
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	--	--	--	--	--	--	6.1E-06	1.6E-03
Methylene Chloride	75-09-2	Yes	Yes	Yes	--	--	--	--	--	--	5.5E-04	0.034
2-Butanone (MEK)	78-93-3	Yes	No	Yes	--	--	--	--	--	--	1.6E-03	0.064
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	1.2E-03	0.084
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	--	--	--	--	--	--	9.2E-05	8.8E-03
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	--	--	--	--	--	--	3.8E-06	9.3E-04
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	--	--	--	--	--	--	1.9E-03	0.089
Propene	115-07-1	Yes	No	Yes	--	--	--	--	--	--	7.1E-05	0.010
Styrene	100-42-5	Yes	Yes	Yes	--	--	--	--	--	--	6.6E-05	8.6E-03
Toluene	108-88-3	Yes	Yes	Yes	3.7E-03	0.18	2.6E-03	0.13	2.6E-03	0.93	9.74	3,551
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	--	--	--	--	--	--	6.2E-06	2.4E-03
Trichloroethylene	79-01-6	Yes	Yes	Yes	--	--	--	--	--	--	0.069	19.8
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	1.2E-03	0.051
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	--	--	--	--	--	--	3.4E-04	0.017
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	--	--	--	--	--	--	2.2E-03	0.076
Vinyl Acetate	108-05-4	Yes	Yes	Yes	--	--	--	--	--	--	5.2E-06	9.3E-04
Vinyl Chloride	75-01-4	Yes	Yes	Yes	--	--	--	--	--	--	2.1E-03	0.17
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	--	--	--	--	--	--	1.0E-03	0.11
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	1.5E-03	0.073	1.0E-03	0.052	0.078	28.4	0.083	28.8
o-xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	9.4E-04	0.077
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)												
PAHs	401	Yes	Yes	Yes	1.3E-03	0.063	8.8E-04	0.044	2.9E-04	0.10	2.4E-03	0.21
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	1.2E-06	6.2E-05	8.7E-07	4.4E-05	3.4E-06	1.3E-03	5.5E-06	1.4E-03
Naphthalene	91-20-3	Yes	Yes	Yes	6.8E-04	0.034	4.8E-04	0.024	8.6E-04	0.31	2.9E-03	0.41
Diesel Particulate Matter (DPM)												
DPM	200	Yes	No	Yes	1.16	58.0	0.82	40.9	--	--	1.98	98.9
Total TACs					1.31	65.3	0.92	46.0	9.30	3,399	42.2	14,650
Total HAPs					0.12	5.88	0.083	4.15	0.13	48.05079	30.47	11,028

Table 16
Glass Plant TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Process Type	Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt
Daily Throughput (tons/day) ⁽¹⁾	5.70	47.7	2.16	64.8
Annual Throughput (tons/yr) ⁽¹⁾	1,199	6,006	594	8,078

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Process Emission Factor ⁽²⁾ (lb/ton)				Emissions Estimate								Total Facility Emissions Estimates	
					Rotary Fine	Rotary Coarse/Ultra Rotary Coarse	Flameblown	Glass Melt	Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt			
		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)					Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily (lb/day)	Annual (lb/yr)			
Metals																		
Antimony	7440-36-0	Yes	Yes	Yes	0	5.4E-05	3.2E-04	3.6E-06	--	--	2.6E-03	0.32	7.0E-04	0.19	2.3E-04	0.029	3.5E-03	0.54
Arsenic	7440-38-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	5.2E-05	3.3E-05	2.2E-04	2.5E-06	3.0E-04	0.062	1.6E-03	0.20	4.7E-04	0.13	1.6E-04	0.020	2.5E-03	0.41
Beryllium	7440-41-7	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	0	3.4E-05	6.0E-05	3.0E-06	--	--	1.6E-03	0.21	1.3E-04	0.036	1.9E-04	0.024	2.0E-03	0.27
Chromium (total)	7440-47-3	No	Yes	No	1.8E-05	3.2E-05	7.0E-05	1.3E-06	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010	1.9E-03	0.27
Cobalt	7440-48-4	Yes	Yes	Yes	0	1.4E-06	0	5.4E-07	--	--	6.7E-05	8.4E-03	--	--	3.5E-05	4.3E-03	1.0E-04	0.013
Copper	7440-50-8	Yes	No	Yes	4.4E-04	1.9E-04	9.9E-04	1.9E-05	2.5E-03	0.53	9.1E-03	1.14	2.1E-03	0.59	1.3E-03	0.16	0.015	2.41
Lead	7439-92-1	Yes	Yes	Yes	0	3.0E-04	0	2.6E-05	--	--	0.014	1.82	--	--	1.7E-03	0.21	0.016	2.03
Manganese	7439-96-5	Yes	Yes	Yes	8.7E-05	4.8E-05	2.3E-04	7.1E-07	5.0E-04	0.10	2.3E-03	0.29	4.9E-04	0.13	4.6E-05	5.7E-03	3.3E-03	0.53
Mercury	7439-97-6	Yes	Yes	Yes	4.5E-06	3.7E-06	1.1E-05	3.6E-04	2.6E-05	5.4E-03	1.7E-04	0.022	2.4E-05	6.7E-03	0.023	2.90	0.023	2.93
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-05	7.3E-05	3.7E-04	0	2.2E-04	0.046	3.5E-03	0.44	8.1E-04	0.22	--	--	4.5E-03	0.71
Phosphorus	504	Yes	Yes	No	7.3E-04	8.6E-04	1.9E-03	7.7E-05	4.1E-03	0.87	0.041	5.17	4.0E-03	1.10	5.0E-03	0.62	0.054	7.76
Selenium	7782-49-2	Yes	Yes	Yes	0	0	0	0	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	1.1E-03	5.4E-04	6.0E-03	4.1E-05	6.2E-03	1.29	0.026	3.24	0.013	3.54	2.6E-03	0.33	0.047	8.40
Inorganic Compounds																		
Fluorides	239	Yes	No	Yes	0	6.2E-03	3.6E-03	1.4E-04	--	--	0.29	37.1	7.8E-03	2.14	8.9E-03	1.11	0.31	40.4
Hydrogen fluoride	7664-39-3	Yes	Yes	Yes	0.033	7.2E-04	0.048	2.0E-05	0.19	39.3	0.034	4.31	0.10	28.7	1.3E-03	0.16	0.33	72.5
Organic Compounds																		
Benzene	71-43-2	Yes	Yes	Yes	0.79	0.015	0.79	--	4.49	944	0.69	87.1	1.70	467	--	--	6.88	1,498
Formaldehyde	50-00-0	Yes	Yes	Yes	0.78	0.065	0.047	2.9E-03	4.45	935	3.10	390	0.10	27.6	0.19	23.4	7.83	1,377
Hexane	110-54-3	Yes	Yes	Yes	0.016	7.8E-03	0.016	--	0.091	19.2	0.37	46.7	0.035	9.50	--	--	0.50	75.4
Toluene	108-88-3	Yes	Yes	Yes	0.86	0.010	0.86	--	4.92	1,035	0.48	60.1	1.86	513	--	--	7.26	1,607

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (process emission factor [lb/ton]) x (daily throughput [tons/day])

(b) Annual emissions estimate (lb/yr) = (process emission factor [lb/ton]) x (annual throughput [tons/yr])

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) See Table 3, Emission Factor Summary for Toxic Air Contaminants.

Table 17
Raw Material Handling TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Product	TAC	CAS	Regulatory Category (Yes/No)			Product Usage ⁽¹⁾		Weight Percent (%)	Emissions Estimate	
			TAC	HAP	RBC	Daily (tons/day)	Annual (tons/yr)		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)
Barium Carbonate	Barium	7440-39-3 ⁽³⁾	Yes	No	No	0.84	257	97.0 ⁽⁴⁾	0.032	9.72
Zinc Oxide	Zinc Oxide	1314-13-2	Yes	No	No	0.53	162	100 ⁽⁵⁾	0.021	6.32
	Lead Oxide	7439-92-1 ⁽⁶⁾	Yes	Yes	Yes			0.10 ⁽⁷⁾	2.1E-05	6.3E-03
	Cadmium Oxide	7440-43-9 ⁽⁸⁾	Yes	Yes	Yes			0.010 ⁽⁷⁾	2.1E-06	6.3E-04

NOTES:

HAP = hazardous air pollutant

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (PM emission factor [lb/ton]) x (daily product throughput [tons/day]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.039 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/ton]) x (annual product throughput [tons/yr]) x (weight percent [%])/100

PM emission factor (lb/ton) = 0.039 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Information provided by Hollingsworth & Vose Fiber Company. See PSD permit application. Represents total PM emissions across raw material points.

(3) Assigned CAS for barium and compounds.

(4) Composition information from vendor SDS.

(5) Composition information from vendor SDS. Conservatively assumes 100 percent of composition.

(6) Assigned CAS for lead and compounds.

(7) Composition information from vendor SDS. Compound present in trace quantities.

(8) Assigned CAS for cadmium and compounds.

Table 18
TCE Remediation System Equipment TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

TAC	CAS	Regulatory Category (Yes/No)			Emission Rate ⁽¹⁾ (lb/hr)		Emissions Estimates	
		TAC	HAP	RBC	Maximum Daily	Annual Average	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)
Acetone	67-64-1	Yes	No	Yes	7.6E-05	2.6E-05	1.8E-03	0.23
Allyl Chloride	107-05-1	Yes	Yes	Yes	7.1E-04	4.5E-05	0.017	0.39
Benzene	71-43-2	Yes	Yes	Yes	3.4E-04	1.1E-04	8.1E-03	0.97
Carbon Disulfide	75-15-0	Yes	Yes	Yes	1.0E-03	7.7E-05	0.025	0.68
1,3-Dichlorobenzene	541-73-1	Yes	No	No	2.1E-05	4.1E-06	5.0E-04	0.036
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	5.7E-06	1.3E-06	1.4E-04	0.011
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	5.8E-05	1.4E-05	1.4E-03	0.12
Chloroform	67-66-3	Yes	Yes	Yes	5.4E-06	1.3E-06	1.3E-04	0.012
Cyclohexane	110-82-7	Yes	No	Yes	9.8E-04	3.0E-04	0.023	2.62
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	2.1E-06	7.7E-07	5.0E-05	6.7E-03
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.0E-05	7.4E-06	7.2E-04	0.065
Chloroethane	75-00-3	Yes	Yes	Yes	2.9E-06	6.7E-07	6.8E-05	5.9E-03
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	4.2E-06	1.5E-06	1.0E-04	0.013
Dichlorodifluoromethane	75-71-8	Yes	No	No	1.1E-05	5.3E-06	2.6E-04	0.047
Trichlorofluoromethane	75-69-4	Yes	No	No	4.7E-06	2.0E-06	1.1E-04	0.017
N-Hexane	110-54-3	Yes	Yes	Yes	6.6E-04	2.5E-04	0.016	2.23
2-Propanol	67-63-0	Yes	No	Yes	3.2E-05	8.0E-06	7.6E-04	0.070
Chloromethane	74-87-3	Yes	Yes	Yes	1.1E-05	3.1E-06	2.7E-04	0.027
Methylene Chloride	75-09-2	Yes	Yes	Yes	1.5E-05	2.3E-06	3.5E-04	0.020
2-Butanone (MEK)	78-93-3	Yes	No	Yes	1.5E-05	4.5E-06	3.6E-04	0.039
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	4.7E-05	8.8E-06	1.1E-03	0.077
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	7.9E-05	9.5E-06	1.9E-03	0.083
Styrene	100-42-5	Yes	Yes	Yes	2.5E-06	8.3E-07	6.0E-05	7.3E-03
Toluene	108-88-3	Yes	Yes	Yes	4.4E-04	1.3E-04	0.011	1.11
Trichloroethylene	79-01-6	Yes	Yes	Yes	5.7E-04	9.1E-05	0.014	0.80
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.1E-05	3.3E-06	2.6E-04	0.029
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	2.8E-06	1.1E-06	6.6E-05	9.6E-03
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	9.1E-05	8.5E-06	2.2E-03	0.074
Vinyl Chloride	75-01-4	Yes	Yes	Yes	3.8E-05	1.7E-05	9.1E-04	0.14
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	4.2E-05	1.3E-05	1.0E-03	0.11
M&P-Xylene	1330-20-7	Yes	Yes	Yes	1.2E-04	2.7E-05	2.8E-03	0.24
O-Xylene	95-47-6	Yes	Yes	Yes	3.9E-05	8.4E-06	9.3E-04	0.074

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

(a) Daily emissions estimate (lb/day) = (emission rate [lb/hr]) x (daily hours of operation [hrs/day])

Daily hours of operation (hrs/day) = 24.0 (2)

(b) Annual emissions estimate (lb/yr) = (emission rate [lb/hr]) x (annual hours of operation [hrs/yr])

Annual hours of operation (hrs/yr) = 8,760 (2)

REFERENCES:

(1) Hourly emission rates derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations observed downstream of the carbon system (i.e., post control). Annual average scenario emission rates represent average emission rates concentrations measured downstream of the carbon system. Results from analyses conducted between January 2021 and December 2021 were evaluated.

(2) See Table 1, Input Assumptions and Parameters.

Table 19
TCE Remediation System Equipment Leaks VOC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Component(s)			Default Zero Method			Leak Rate/Screening Value Correlation Method					Total VOC Emissions Estimate		
Type	Service	Total Count	VOC Emission Rate ⁽¹⁾ (kg/hr-source)	Number of Components ⁽²⁾	VOC Emissions Estimate ^(a) (lb/hr)	Max VOC Concentration ⁽³⁾ (ppm)	Screening Value, SV ⁽⁴⁾ (ppm)	VOC Emission Rate (kg/hr-source)	Number of Components ⁽⁵⁾	VOC Emissions Estimate ^(b) (lb/hr)	Hourly ^(d) (lb/hr)	Daily (lb/day)	Annual (lb/yr)
SVE													
Connectors	Gas	37 ⁽⁷⁾	6.1E-07	36	4.8E-05	22.4	25.0	5.3E-05	1	1.2E-04	1.6E-04	3.9E-03 ^(e)	1.44 ^(f)
Total SVE Exhaust VOC Emissions Estimate											1.6E-04	3.9E-03 ^(e)	1.44 ^(f)
COMBINED SVE AND STRIPPER EXHAUST													
Valves	Gas	1 ⁽¹⁰⁾	6.6E-07	0	0	160	176	1.7E-04	1	3.8E-04	3.8E-04	9.0E-03 ^(e)	3.30 ^(f)
Connectors	Gas	16 ⁽⁷⁾	6.1E-07	15	2.0E-05	160	176	3.0E-04	1	6.5E-04	6.7E-04	0.016 ^(e)	5.90 ^(f)
Total Combined SVE and Stripper Exhaust VOC Emissions Estimate											1.0E-03	0.025 ^(e)	9.19 ^(f)
POST CARBON VESSEL 1													
Connectors	Gas	7 ⁽⁷⁾	6.1E-07	6	8.1E-06	17.2	19.0	4.1E-05	1	9.1E-05	9.9E-05	2.4E-03 ^(e)	0.87 ^(f)
Total Post Carbon Vessel 1 VOC Emissions Estimate											9.9E-05	2.4E-03 ^(e)	0.87 ^(f)
POST CARBON VESSEL 2													
Connectors	Gas	4 ⁽⁷⁾	6.1E-07	3	4.0E-06	1.87	2.10	5.9E-06	1	1.3E-05	1.7E-05	4.1E-04 ^(e)	0.15 ^(f)
Total Post Carbon Vessel 2 VOC Emissions Estimate											1.7E-05	4.1E-04 ^(e)	0.15 ^(f)

NOTES:

kg/hr-source = kilogram per hour per source.

SOCMI = Synthetic Organic Chemical Manufacturing Industry.

SV = screening value.

SVE = soil vapor extraction.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) Default zero emissions estimate (lb/hr) = (default zero emission rate [kg/hr-source]) x (number of components) x (2.205 lb/kg)

(b) Leak rate/screening value correlation method emissions estimate (lb/hr) = (leak rate/screening value correlation method emission rate [kg/hr-source]) x (number of components) x (2.205 lb/kg)

(c) VOC emission rate (kg/hr-source) = (3.05E-06) x (screening value [ppm])^{0.885}; see Reference (8).

(d) VOC emission rate (kg/hr-source) = (1.87E-06) x (screening value [ppm])^{0.873}; see Reference (8).

(e) Daily VOC emissions estimate (lb/day) = (hourly VOC emissions estimate [lb/hr]) x (daily hours of operation [hrs/day])

Daily hours of operation (hrs/day) = 24.0 (9)

(f) Annual VOC emissions estimate (lb/yr) = (hourly VOC emissions estimate [lb/hr]) x (annual hours of operation [hrs/yr])

Annual hours of operation (hrs/yr) = 8,760 (9)

REFERENCES:

(1) EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017) published in November 1995. See Table 2-11.

(2) System configuration was evaluated and a component count was conducted using observations and process flow diagrams.

(3) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company.

(4) Conservative engineering estimate based on actual measured concentration data. Assume 10% higher than total VOC concentration.

(5) To estimate maximum potential emissions, it is conservatively assumed that up to one component of each type and in each service grouping could be leaking at any given time.

(6) Value represents the total VOC emissions estimate.

(7) Information obtained during site visit conducted on January 29, 2020. Value represents the sum total of connectors, flanges, sampling connections, and flow meter connections.

(8) EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017) published in November 1995. See Table 2-9.

(9) See Table 1, Input Assumptions and Parameters.

(10) Information obtained during site visit conducted on January 29, 2020. Count represents the slide gate post-air stripper control device.

Table 20
TCE Remediation System Equipment Leaks (SVE) TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	3.9E-03 ⁽²⁾	1.44 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	71.7	23.9	6.0E-04	4.5E-04	2.4E-06 ^(b)	6.5E-04 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	6.60	3.09	5.5E-05	5.9E-05	2.2E-07 ^(b)	8.5E-05 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	6.30	2.48	5.2E-05	4.7E-05	2.1E-07 ^(b)	6.8E-05 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	12.8	5.53	1.1E-04	1.1E-04	4.2E-07 ^(b)	1.5E-04 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	12.2	5.24	1.0E-04	1.0E-04	4.0E-07 ^(b)	1.4E-04 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	2,518	1,019	0.021	0.019	-- ^(b)	-- ^(b)
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	19.8	10.3	1.6E-04	2.0E-04	6.5E-07 ^(b)	2.8E-04 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	9.86	4.31	8.2E-05	8.2E-05	3.2E-07 ^(b)	1.2E-04 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	6.97	2.65	5.8E-05	5.0E-05	2.3E-07 ^(b)	7.3E-05 ^(b)
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	113	9.36	2.75	7.8E-05	5.2E-05	3.1E-07 ^(b)	7.5E-05 ^(b)
Ethanol	64-17-5	No	No	No	46.1	156	34.6	1.3E-03	6.6E-04	-- ^(b)	-- ^(b)
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	42.7	8.97	3.6E-04	1.7E-04	1.4E-06 ^(b)	2.5E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	17.2	5.08	1.4E-04	9.6E-05	-- ^(b)	-- ^(b)
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	5.34	1.62	4.4E-05	3.1E-05	1.8E-07 ^(b)	4.4E-05 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	15.5	7.25	1.3E-04	1.4E-04	5.1E-07 ^(b)	2.0E-04 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	10.0	5.13	8.3E-05	9.7E-05	3.3E-07 ^(b)	1.4E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	11.4	4.76	9.5E-05	9.0E-05	3.7E-07 ^(b)	1.3E-04 ^(b)
Heptane	142-82-5	No	No	No	100	8.28	3.18	6.9E-05	6.0E-05	-- ^(b)	-- ^(b)
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	22.5	6.86	1.9E-04	1.3E-04	7.4E-07 ^(b)	1.9E-04 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	31.9	14.8	2.7E-04	2.8E-04	1.0E-06 ^(b)	4.1E-04 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	5.30	2.45	4.4E-05	4.7E-05	1.7E-07 ^(b)	6.7E-05 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	11.0	5.68	9.2E-05	1.1E-04	3.6E-07 ^(b)	1.6E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	19.3	4.87	1.6E-04	9.2E-05	6.3E-07 ^(b)	1.3E-04 ^(b)
Methyl Butyl Ketone	591-78-6	No	No	No	100	125	33.5	1.0E-03	6.4E-04	-- ^(b)	-- ^(b)
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	37.3	16.2	3.1E-04	3.1E-04	1.2E-06 ^(b)	4.4E-04 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	51.8	21.5	4.3E-04	4.1E-04	1.7E-06 ^(b)	5.9E-04 ^(b)
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	88.1	7.30	3.11	6.1E-05	5.9E-05	2.4E-07 ^(b)	8.5E-05 ^(b)
Naphthalene	91-20-3	Yes	Yes	Yes	128	33.4	10.8	2.8E-04	2.1E-04	1.1E-06 ^(b)	3.0E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	33.3	16.1	2.8E-04	3.1E-04	1.1E-06 ^(b)	4.4E-04 ^(b)
Propene	115-07-1	Yes	No	Yes	42.1	69.7	12.3	5.8E-04	2.3E-04	2.3E-06 ^(b)	3.4E-04 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	8.61	3.96	7.2E-05	7.5E-05	2.8E-07 ^(b)	1.1E-04 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	5.97	2.76	5.0E-05	5.2E-05	-- ^(b)	-- ^(b)
Toluene	108-88-3	Yes	Yes	Yes	92.1	19.1	10.8	1.6E-04	2.1E-04	6.3E-07 ^(b)	3.0E-04 ^(b)
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	133	25.1	11.4	2.1E-04	2.2E-04	8.3E-07 ^(b)	3.1E-04 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	116,371	51,262	0.97	0.97	3.8E-03 ^(b)	1.40 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	56.7	8.84	4.7E-04	1.7E-04	1.9E-06 ^(b)	2.4E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	18.1	4.81	1.5E-04	9.1E-05	6.0E-07 ^(b)	1.3E-04 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	22.0	4.85	1.8E-04	9.2E-05	7.2E-07 ^(b)	1.3E-04 ^(b)
Vinyl Acetate	108-05-4	Yes	Yes	Yes	86.1	7.13	3.43	5.9E-05	6.5E-05	2.3E-07 ^(b)	9.4E-05 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	8.11	4.62	6.8E-05	8.8E-05	2.7E-07 ^(b)	1.3E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	8.03	4.97	6.7E-05	9.4E-05	2.6E-07 ^(b)	1.4E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	120	25.4	1.0E-03	4.8E-04	3.9E-06 ^(b)	7.0E-04 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	28.2	8.10	2.3E-04	1.5E-04	9.3E-07 ^(b)	2.2E-04 ^(b)
Total						120,086	52,654	1.00	1.00	3.9E-03	1.41

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

SVE = soil vapor extraction.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent the average of the maximum measured concentrations at the two SVE blowers. Annual average scenario represent the average of the average concentrations measured at the two SVE blowers. Results from analyses conducted between January 2021 and December 2021 were evaluated.

(2) See Table 19, TCE Remediation System Equipment Leaks VOC Emission Estimates - 2021.

Table 21
TCE Remediation System Equipment Leaks (Combined SVE and Stripper Exhaust) TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	0.025 ⁽²⁾	9.19 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	508	59.1	5.9E-04	4.9E-04	1.5E-05 ^(b)	4.5E-03 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	25.9	4.15	3.0E-05	3.4E-05	7.6E-07 ^(b)	3.2E-04 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	25.2	3.70	2.9E-05	3.1E-05	7.4E-07 ^(b)	2.8E-04 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	51.0	8.09	5.9E-05	6.7E-05	1.5E-06 ^(b)	6.2E-04 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	48.7	7.51	5.7E-05	6.2E-05	1.4E-06 ^(b)	5.7E-04 ^(b)
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	147	97.4	11.5	1.1E-04	9.6E-05	2.8E-06 ^(b)	8.8E-04 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	3,535	1,692	4.1E-03	0.014	-- ^(b)	-- ^(b)
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	32.1	15.6	3.7E-05	1.3E-04	9.4E-07 ^(b)	1.2E-03 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	39.4	6.41	4.6E-05	5.3E-05	1.2E-06 ^(b)	4.9E-04 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	27.9	4.76	3.2E-05	4.0E-05	8.2E-07 ^(b)	3.6E-04 ^(b)
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	113	37.4	5.54	4.3E-05	4.6E-05	1.1E-06 ^(b)	4.2E-04 ^(b)
Ethanol	64-17-5	No	No	No	46.1	2,749	398	3.2E-03	3.3E-03	-- ^(b)	-- ^(b)
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	35.1	7.23	4.1E-05	6.0E-05	1.0E-06 ^(b)	5.5E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	39.8	6.29	4.6E-05	5.2E-05	-- ^(b)	-- ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	40.1	7.28	4.7E-05	6.0E-05	1.2E-06 ^(b)	5.6E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	45.5	7.25	5.3E-05	6.0E-05	1.3E-06 ^(b)	5.5E-04 ^(b)
Heptane	142-82-5	No	No	No	100	33.1	5.25	3.8E-05	4.4E-05	-- ^(b)	-- ^(b)
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	184	22.0	2.1E-04	1.8E-04	5.4E-06 ^(b)	1.7E-03 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	796	83.7	9.2E-04	7.0E-04	2.3E-05 ^(b)	6.4E-03 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	16.7	3.23	1.9E-05	2.7E-05	4.9E-07 ^(b)	2.5E-04 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	44.1	7.72	5.1E-05	6.4E-05	1.3E-06 ^(b)	5.9E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	90.0	10.4	1.0E-04	8.6E-05	2.6E-06 ^(b)	7.9E-04 ^(b)
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	149	27.0	1.7E-04	2.2E-04	4.4E-06 ^(b)	2.1E-03 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	207	31.6	2.4E-04	2.6E-04	6.1E-06 ^(b)	2.4E-03 ^(b)
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	88.1	29.2	4.94	3.4E-05	4.1E-05	8.5E-07 ^(b)	3.8E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	55.0	18.9	6.4E-05	1.6E-04	1.6E-06 ^(b)	1.4E-03 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	34.5	5.06	4.0E-05	4.2E-05	1.0E-06 ^(b)	3.9E-04 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	23.9	3.96	2.8E-05	3.3E-05	-- ^(b)	-- ^(b)
Toluene	108-88-3	Yes	Yes	Yes	92.1	76.3	16.1	8.9E-05	1.3E-04	2.2E-06 ^(b)	1.2E-03 ^(b)
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	133	44.1	11.8	5.1E-05	9.8E-05	1.3E-06 ^(b)	9.0E-04 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	851,762	117,860	0.99	0.98	0.025 ^(b)	9.00 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	39.8	6.92	4.6E-05	5.7E-05	1.2E-06 ^(b)	5.3E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	39.8	5.90	4.6E-05	4.9E-05	1.2E-06 ^(b)	4.5E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	20.7	8.97	2.4E-05	7.4E-05	6.1E-07 ^(b)	6.8E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	32.1	10.4	3.7E-05	8.6E-05	9.4E-07 ^(b)	7.9E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	70.2	19.2	8.2E-05	1.6E-04	2.1E-06 ^(b)	1.5E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	35.1	7.68	4.1E-05	6.4E-05	1.0E-06 ^(b)	5.9E-04 ^(b)
Total						861,120	120,415	1.00	1.00	0.025	9.03

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

SVE = soil vapor extraction.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations from the combined SVE and Stripper exhaust sampling port. Annual average scenario represent average concentrations measured at the combined SVE and Stripper exhaust sampling port. Results from analyses conducted between January 2021 and December 2021 were evaluated.

(2) See Table 19, TCE Remediation System Equipment Leaks VOC Emission Estimates - 2021.

Table 22
TCE Remediation System Equipment Leaks (Post Carbon Vessel 1) TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	2.4E-03 ⁽²⁾	0.87 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	66.2	20.3	7.4E-04	1.1E-03	1.8E-06 ^(b)	9.2E-04 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	375	171	4.2E-03	8.9E-03	1.0E-05 ^(b)	7.7E-03 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	6.30	1.76	7.0E-05	9.2E-05	1.7E-07 ^(b)	8.0E-05 ^(b)
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	154	12.8	2.01	1.4E-04	1.0E-04	3.4E-07 ^(b)	9.1E-05 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	12.2	2.33	1.4E-04	1.2E-04	3.2E-07 ^(b)	1.1E-04 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	4,174	1,472	0.047	0.077	-- ^(b)	-- ^(b)
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	44.5	15.4	5.0E-04	8.0E-04	1.2E-06 ^(b)	7.0E-04 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	9.86	1.40	1.1E-04	7.3E-05	2.6E-07 ^(b)	6.3E-05 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	366	198	4.1E-03	0.010	9.7E-06 ^(b)	9.0E-03 ^(b)
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	98.0	8.12	1.08	9.1E-05	5.6E-05	2.2E-07 ^(b)	4.9E-05 ^(b)
Ethanol	64-17-5	No	No	No	46.1	158	42.4	1.8E-03	2.2E-03	-- ^(b)	-- ^(b)
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	22.0	6.73	2.5E-04	3.5E-04	5.8E-07 ^(b)	3.0E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	9.94	1.83	1.1E-04	9.5E-05	-- ^(b)	-- ^(b)
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	5.34	0.78	6.0E-05	4.1E-05	1.4E-07 ^(b)	3.5E-05 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	15.5	2.51	1.7E-04	1.3E-04	4.1E-07 ^(b)	1.1E-04 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	10.0	3.53	1.1E-04	1.8E-04	2.7E-07 ^(b)	1.6E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	11.4	2.30	1.3E-04	1.2E-04	3.0E-07 ^(b)	1.0E-04 ^(b)
Heptane	142-82-5	No	No	No	100	318	73.5	3.5E-03	3.8E-03	-- ^(b)	-- ^(b)
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	1,842	453	0.021	0.024	4.9E-05 ^(b)	0.020 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	31.1	8.40	3.5E-04	4.4E-04	8.3E-07 ^(b)	3.8E-04 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	4.18	1.87	4.7E-05	9.7E-05	1.1E-07 ^(b)	8.5E-05 ^(b)
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	133	11.0	2.64	1.2E-04	1.4E-04	2.9E-07 ^(b)	1.2E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	7.03	1.62	7.8E-05	8.4E-05	1.9E-07 ^(b)	7.3E-05 ^(b)
2-Butanone (MEK)	78-93-3	Yes	No	Yes	72.1	37.3	8.43	4.2E-04	4.4E-04	9.9E-07 ^(b)	3.8E-04 ^(b)
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	100	51.8	8.54	5.8E-04	4.4E-04	1.4E-06 ^(b)	3.9E-04 ^(b)
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	100	8.29	1.21	9.3E-05	6.3E-05	2.2E-07 ^(b)	5.5E-05 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	8.61	1.18	9.6E-05	6.1E-05	2.3E-07 ^(b)	5.3E-05 ^(b)
Tetrahydrofuran	109-99-9	No	No	No	72.1	5.97	0.94	6.7E-05	4.9E-05	-- ^(b)	-- ^(b)
Toluene	108-88-3	Yes	Yes	Yes	92.1	393	129	4.4E-03	6.7E-03	1.0E-05 ^(b)	5.8E-03 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	81,378	16,508	0.91	0.86	2.2E-03 ^(b)	0.75 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	9.94	2.32	1.1E-04	1.2E-04	2.6E-07 ^(b)	1.0E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	9.94	1.33	1.1E-04	6.9E-05	2.6E-07 ^(b)	6.0E-05 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	27.7	4.75	3.1E-04	2.5E-04	7.4E-07 ^(b)	2.1E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	17.9	10.1	2.0E-04	5.3E-04	4.8E-07 ^(b)	4.6E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	24.7	9.84	2.8E-04	5.1E-04	6.6E-07 ^(b)	4.5E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	89.1	22.7	9.9E-04	1.2E-03	2.4E-06 ^(b)	1.0E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	20.2	6.52	2.3E-04	3.4E-04	5.4E-07 ^(b)	2.9E-04 ^(b)
Total						89,603	19,201	1.00	1.00	2.3E-03	0.80

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations between the carbon treatment beds. Annual average scenario represent average concentrations measured between the carbon vessels 1 and 2. Results from analyses conducted between January 2021 and December 2021 were evaluated.

(2) See Table 19, TCE Remediation System Equipment Leaks VOC Emission Estimates - 2021.

Table 23
TCE Remediation System Equipment Leaks (Post Carbon Vessel 2) TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

VOC	CAS	Regulatory Category (Yes/No)			MW (g/mol)	Measured Concentration ⁽¹⁾ (ug/m ³)		VOC Weight Fraction ^(a)		Emissions Estimate	
		TAC	HAP	RBC		Max Daily	Annual Average	Max Daily	Annual Average	Daily (lb/day)	Annual (lb/yr)
Total VOC	--	--	--	--	--	--	--	--	--	4.1E-04 ⁽²⁾	0.15 ⁽²⁾
Acetone	67-64-1	Yes	No	Yes	58.1	33.4	15.5	5.0E-03	8.3E-03	2.0E-06 ^(b)	1.2E-03 ^(b)
Allyl Chloride	107-05-1	Yes	Yes	Yes	76.5	313	26.4	0.047	0.014	1.9E-05 ^(b)	2.1E-03 ^(b)
Benzene	71-43-2	Yes	Yes	Yes	78.1	149	65.3	0.022	0.035	9.1E-06 ^(b)	5.2E-03 ^(b)
Carbon Disulfide	75-15-0	Yes	Yes	Yes	76.1	457	45.3	0.069	0.024	2.8E-05 ^(b)	3.6E-03 ^(b)
1,3-Dichlorobenzene	541-73-1	Yes	No	No	147	9.19	2.38	1.4E-03	1.3E-03	5.6E-07 ^(b)	1.9E-04 ^(b)
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	147	2.53	0.77	3.8E-04	4.1E-04	1.5E-07 ^(b)	6.1E-05 ^(b)
Cis-1,2-Dichloroethene	156-59-2	No	No	No	96.9	3,664	1,082	0.55	0.58	-- ^(b)	-- ^(b)
Trans-1,2-Dichloroethene	156-60-5	Yes	No	Yes	96.9	25.8	7.93	3.9E-03	4.2E-03	1.6E-06 ^(b)	6.3E-04 ^(b)
Chloroform	67-66-3	Yes	Yes	Yes	119	2.40	0.77	3.6E-04	4.1E-04	1.5E-07 ^(b)	6.1E-05 ^(b)
Cyclohexane	110-82-7	Yes	No	Yes	84.2	432	175	0.065	0.093	2.6E-05 ^(b)	0.014 ^(b)
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	98.0	0.93	0.45	1.4E-04	2.4E-04	5.7E-08 ^(b)	3.6E-05 ^(b)
Ethanol	64-17-5	No	No	No	46.1	498	67.1	0.075	0.036	-- ^(b)	-- ^(b)
Ethylbenzene	100-41-4	Yes	Yes	Yes	106	13.3	4.32	2.0E-03	2.3E-03	8.1E-07 ^(b)	3.4E-04 ^(b)
4-Ethyltoluene	622-96-8	No	No	No	120	3.09	1.22	4.6E-04	6.5E-04	-- ^(b)	-- ^(b)
Chloroethane	75-00-3	Yes	Yes	Yes	64.5	1.26	0.39	1.9E-04	2.1E-04	7.7E-08 ^(b)	3.1E-05 ^(b)
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	187	1.88	0.87	2.8E-04	4.6E-04	1.2E-07 ^(b)	6.9E-05 ^(b)
Dichlorodifluoromethane	75-71-8	Yes	No	No	121	4.75	3.12	7.1E-04	1.7E-03	2.9E-07 ^(b)	2.5E-04 ^(b)
Trichlorofluoromethane	75-69-4	Yes	No	No	137	2.06	1.16	3.1E-04	6.2E-04	1.3E-07 ^(b)	9.2E-05 ^(b)
Heptane	142-82-5	No	No	No	100	77.0	30.0	0.012	0.016	-- ^(b)	-- ^(b)
N-Hexane	110-54-3	Yes	Yes	Yes	86.2	291	149	0.044	0.080	1.8E-05 ^(b)	0.012 ^(b)
2-Propanol	67-63-0	Yes	No	Yes	60.1	14.0	4.67	2.1E-03	2.5E-03	8.6E-07 ^(b)	3.7E-04 ^(b)
Chloromethane	74-87-3	Yes	Yes	Yes	50.5	4.98	1.81	7.5E-04	9.7E-04	3.0E-07 ^(b)	1.4E-04 ^(b)
Methylene Chloride	75-09-2	Yes	Yes	Yes	84.9	6.43	1.35	9.6E-04	7.2E-04	3.9E-07 ^(b)	1.1E-04 ^(b)
2-Butanone (Mek)	78-93-3	Yes	No	Yes	72.1	6.63	2.62	9.9E-04	1.4E-03	4.1E-07 ^(b)	2.1E-04 ^(b)
4-Methyl-2-Pentanone (Mibk)	108-10-1	Yes	Yes	Yes	100	20.8	5.13	3.1E-03	2.7E-03	1.3E-06 ^(b)	4.1E-04 ^(b)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	166	35.1	5.56	5.3E-03	3.0E-03	2.1E-06 ^(b)	4.4E-04 ^(b)
Styrene	100-42-5	Yes	Yes	Yes	104	1.12	0.49	1.7E-04	2.6E-04	6.9E-08 ^(b)	3.9E-05 ^(b)
Toluene	108-88-3	Yes	Yes	Yes	92.1	194	74.5	0.029	0.040	1.2E-05 ^(b)	5.9E-03 ^(b)
Trichloroethylene	79-01-6	Yes	Yes	Yes	131	253	53.5	0.038	0.029	1.5E-05 ^(b)	4.3E-03 ^(b)
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	120	4.88	1.95	7.3E-04	1.0E-03	3.0E-07 ^(b)	1.5E-04 ^(b)
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	120	1.22	0.64	1.8E-04	3.4E-04	7.5E-08 ^(b)	5.1E-05 ^(b)
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	114	40.3	4.96	6.0E-03	2.6E-03	2.5E-06 ^(b)	3.9E-04 ^(b)
Vinyl Chloride	75-01-4	Yes	Yes	Yes	62.5	16.9	9.66	2.5E-03	5.2E-03	1.0E-06 ^(b)	7.7E-04 ^(b)
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	96.9	18.7	7.49	2.8E-03	4.0E-03	1.1E-06 ^(b)	6.0E-04 ^(b)
M&P-Xylene	1330-20-7	Yes	Yes	Yes	106	51.4	15.8	7.7E-03	8.4E-03	3.1E-06 ^(b)	1.3E-03 ^(b)
O-Xylene	95-47-6	Yes	Yes	Yes	106	17.2	4.94	2.6E-03	2.6E-03	1.1E-06 ^(b)	3.9E-04 ^(b)
Total						6,668	1,874	1.00	1.00	1.5E-04	0.055

NOTES:

g/mol = grams per mole.

HAP = hazardous air pollutant

ug/m³ = micrograms per cubic meter.

RBC = risk based concentration.

TAC = toxic air contaminant.

TCE = trichloroethylene.

VOC = volatile organic compound.

(a) VOC weight fraction = (VOC measured concentration [ug/m³]) / (total VOC measured concentration [ug/m³])

(b) Emissions estimate (lb/"period") = (total VOC emissions estimate [lb/"period"]) x (TAC weight fraction)

REFERENCES:

(1) Concentrations derived from remediation system sampling results provided by Hollingsworth & Vose Fiber Company. Maximum daily scenario represent maximum measured concentrations post carbon treatment. Annual average scenario represent average concentrations measured post carbon treatment. Results from analyses conducted between January 2021 and December 2021 were evaluated.

(2) See Table 19, TCE Remediation System Equipment Leaks VOC Emission Estimates - 2021.

Table 24
Cooling Tower - Circulation Drift - TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Production Line 1 and 2	Production Line 3	Production Line 4
Total Water Circulation Rate (gpm) ⁽¹⁾	900	1,000	800

Pollutant	CAS	Regulatory Category (Yes/No)			Concentration ⁽¹⁾ (ppm)	Emissions Estimates						Total Facility Emissions Estimates	
						Production Line 1 and 2		Production Line 3		Production Line 4			
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual
PM	--	--	--	--	--	540 ^(a)	197,258 ^(b)	600 ^(a)	219,175 ^(b)	480 ^(a)	175,340 ^(b)	1,621	591,773
Phosphoric Acid	7664-38-2	Yes	No	Yes	7.20	3.9E-03 ^(c)	1.42 ^(d)	4.3E-03 ^(c)	1.58 ^(d)	3.5E-03 ^(c)	1.26 ^(d)	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	7.20	3.9E-03 ^(c)	1.42 ^(d)	4.3E-03 ^(c)	1.58 ^(d)	3.5E-03 ^(c)	1.26 ^(d)	0.012	4.26

NOTES:

gpm = gallons per minute.

HAP = hazardous air pollutant

ppm = parts per million.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily drift loss (lb/day) = (total water circulation rate [gpm]) x (density of water [lb/gal]) x (drift loss percent of circulating water [%] / 100) x (60 min/hr) x (daily hours of operation [hrs/day])

Density of water (lb/gal) = 8.34 (1)

Daily hours of operation (hr/day) = 24.0 (2)

Drift loss percent of circulating water (%) = 5.0E-03 (1)

(b) Annual emissions estimate (lb/yr) = (daily emissions estimate [lb/day]) x (annual days of operation [days/yr])

Annual days of operation (days/yr) = 365 (1)

(c) Daily emissions estimate (lb/day) = (daily PM emissions estimate [lb/day]) x (concentration [ppm] / 1,000,000); see Reference (3).

(d) Annual emissions estimate (lb/yr) = (annual PM emissions estimate [lb/yr]) x (concentration [ppm] / 1,000,000); see Reference (3).

REFERENCES:

(1) See Table 2, Input Assumptions and Parameters - Cooling Towers.

(2) See Table 1, Input Assumptions and Parameters.

(3) Assumes the composition of the drift loss is same as the cooling tower makeup water.

Table 25
Cooling Tower - Material Balance - TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS	Regulatory Category (Yes/No)			Weight Percent ⁽¹⁾ (%)	Emissions Estimates	
		TAC	HAP	RBC		Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)
Glutaraldehyde	111-30-8	Yes	No	Yes	45.0	7.65	140
Methanol	67-56-1	Yes	Yes	Yes	0.50	0.085	1.55

NOTES:

HAP = hazardous air pollutant.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (daily product usage [lb/day]) x (weight percent [%] / 100)

Daily product usage (lb/day) = 17.0 (2)

(b) Annual emissions estimate (lb/yr) = (annual product usage [lb/yr]) x (weight percent [%] / 100)

Annual product usage (lb/yr) = 310 (2)

REFERENCES:

(1) Composition information from vendor SDS.

(2) See Table 2, Input Assumptions and Parameters - Cooling Towers.

Table 26
Emergency Generator TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Emergency Generator 1	Emergency Generator 1
Daily Fuel Consumption (gal/day) ⁽¹⁾	46.8	33.0
Annual Fuel Consumption (gal/yr) ⁽¹⁾	164	132

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/Mgal)	Emissions Estimates				Total Facility Emissions Estimates	
		TAC	HAP	RBC		Emergency Generator 1		Emergency Generator 1		Daily (lb/day)	Annual (lb/yr)
						Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)	Daily ^(a) (lb/day)	Annual ^(b) (lb/yr)		
Metals											
Arsenic	7440-38-2	Yes	Yes	Yes	1.6E-03 ⁽³⁾	5.5E-05	1.9E-04	3.9E-05	1.6E-04	9.4E-05	3.5E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.5E-03 ⁽³⁾	5.2E-05	1.8E-04	3.7E-05	1.5E-04	8.9E-05	3.3E-04
Chromium VI	18540-29-9	Yes	Yes	Yes	1.0E-04 ⁽³⁾	3.5E-06	1.2E-05	2.4E-06	9.8E-06	5.9E-06	2.2E-05
Copper	7440-50-8	Yes	No	Yes	4.1E-03 ⁽³⁾	1.4E-04	5.0E-04	1.0E-04	4.0E-04	2.4E-04	9.0E-04
Lead	7439-92-1	Yes	Yes	Yes	8.3E-03 ⁽³⁾	2.9E-04	1.0E-03	2.0E-04	8.1E-04	4.9E-04	1.8E-03
Manganese	7439-96-5	Yes	Yes	Yes	3.1E-03 ⁽³⁾	1.1E-04	3.8E-04	7.6E-05	3.0E-04	1.8E-04	6.8E-04
Mercury	7439-97-6	Yes	Yes	Yes	2.0E-03 ⁽³⁾	6.9E-05	2.4E-04	4.9E-05	2.0E-04	1.2E-04	4.4E-04
Nickel	7440-02-0	Yes	Yes	Yes	3.9E-03 ⁽³⁾	1.4E-04	4.7E-04	9.5E-05	3.8E-04	2.3E-04	8.5E-04
Selenium	7782-49-2	Yes	Yes	Yes	2.2E-03 ⁽³⁾	7.6E-05	2.7E-04	5.4E-05	2.1E-04	1.3E-04	4.8E-04
Organic Compounds											
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.78 ⁽³⁾	0.027	0.095	0.019	0.077	0.046	0.17
Acrolein	107-02-8	Yes	Yes	Yes	0.034 ⁽³⁾	1.2E-03	4.1E-03	8.3E-04	3.3E-03	2.0E-03	7.4E-03
Benzene	71-43-2	Yes	Yes	Yes	0.19 ⁽³⁾	6.5E-03	0.023	4.5E-03	0.018	0.011	0.041
1,3-Butadiene	106-99-0	Yes	Yes	Yes	0.22 ⁽³⁾	7.5E-03	0.026	5.3E-03	0.021	0.013	0.048
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.011 ⁽³⁾	3.8E-04	1.3E-03	2.7E-04	1.1E-03	6.4E-04	2.4E-03
Formaldehyde	50-00-0	Yes	Yes	Yes	1.73 ⁽³⁾	0.060	0.21	0.042	0.17	0.10	0.38
Hexane	110-54-3	Yes	Yes	Yes	0.027 ⁽³⁾	9.3E-04	3.3E-03	6.6E-04	2.6E-03	1.6E-03	5.9E-03
Toluene	108-88-3	Yes	Yes	Yes	0.11 ⁽³⁾	3.7E-03	0.013	2.6E-03	0.010	6.2E-03	0.023
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	0.042 ⁽³⁾	1.5E-03	5.1E-03	1.0E-03	4.1E-03	2.5E-03	9.3E-03
Inorganic Compounds											
Ammonia	7664-41-7	Yes	No	Yes	0.80 ⁽⁴⁾	0.028	0.097	0.020	0.078	0.047	0.18
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.19 ⁽³⁾	6.5E-03	0.023	4.5E-03	0.018	0.011	0.041
Polycyclic Aromatic Hydrocarbons (PAH)											
PAHs	401	Yes	Yes	Yes	0.036 ⁽³⁾	1.3E-03	4.4E-03	8.8E-04	3.5E-03	2.1E-03	7.9E-03
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	3.6E-05 ⁽³⁾	1.2E-06	4.3E-06	8.7E-07	3.5E-06	2.1E-06	7.8E-06
Naphthalene	91-20-3	Yes	Yes	Yes	0.020 ⁽³⁾	6.8E-04	2.4E-03	4.8E-04	1.9E-03	1.2E-03	4.3E-03
DIESEL PARTICULATE MATTER (DPM)											
DPM	200	Yes	No	Yes	33.5 ⁽³⁾	1.16	4.06	0.82	3.27	1.98	7.33

NOTES:

HAP = hazardous air pollutant

Mgal = thousand gallons.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emissions estimate (lb/day) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (daily fuel consumption [gal/day]) x (load factor)

Load factor = 0.74 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/Mgal]) x (Mgal/1,000 gal) x (annual fuel consumption [gal/yr]) x (load factor)

Load factor = 0.74 (2)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Default load factor for generators in URBEMIS emissions model.

(3) DEQ approved diesel combustion emission factors for stationary and portable internal combustion engines.

(4) Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory published by the South Coast Air Quality Management District (SCAQMD) in December 2016. See Appendix B, Table B-2 "Default EF for Diesel/Distillate Oil Fuel Combustion (lb/1000 gal)" for stationary and portable internal combustion engines (ICE). Assumes no control.

Table 27
Facility Natural Gas Usage TAC Emission Estimates - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Parameter	Glass Plant	Non-Production
Daily Fuel Usage (MMscf/day)	2.48 ⁽¹⁾	0.062 ⁽¹⁾
Annual Fuel Usage (MMscf/yr)	391 ⁽¹⁾	9.77 ⁽¹⁾

TAC	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emission Factor (lb/MMscf)	Emissions Estimates				Total Facility Emissions Estimates	
		Glass Plant		Non-Production							
		TAC	HAP	RBC		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals											
Arsenic	7440-38-2	Yes	Yes	Yes	2.0E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.2E-05 ^(a)	2.0E-03 ^(b)	1.2E-05	2.0E-03
Barium	7440-39-3	Yes	No	No	4.4E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.7E-04 ^(a)	0.043 ^(b)	2.7E-04	0.043
Beryllium	7440-41-7	Yes	Yes	Yes	1.2E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	7.4E-07 ^(a)	1.2E-04 ^(b)	7.4E-07	1.2E-04
Cadmium	7440-43-9	Yes	Yes	Yes	1.1E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	6.8E-05 ^(a)	0.011 ^(b)	6.8E-05	0.011
Chromium (total)	7440-47-3	No	Yes	No	1.4E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	8.7E-05 ^(a)	0.014 ^(b)	8.7E-05	0.014
Chromium VI	18540-29-9	Yes	Yes	Yes	5.6E-05 ^(c)	1.4E-04 ^(a)	0.022 ^(b)	3.5E-06 ^(a)	5.5E-04 ^(b)	1.4E-04	0.022
Cobalt	7440-48-4	Yes	Yes	Yes	8.4E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.2E-06 ^(a)	8.2E-04 ^(b)	5.2E-06	8.2E-04
Copper	7440-50-8	Yes	No	Yes	8.5E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.3E-05 ^(a)	8.3E-03 ^(b)	5.3E-05	8.3E-03
Lead	7439-92-1	Yes	Yes	Yes	5.0E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	3.1E-05 ^(a)	4.9E-03 ^(b)	3.1E-05	4.9E-03
Manganese	7439-96-5	Yes	Yes	Yes	3.8E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.4E-05 ^(a)	3.7E-03 ^(b)	2.4E-05	3.7E-03
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-04 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.6E-05 ^(a)	2.5E-03 ^(b)	1.6E-05	2.5E-03
Molybdenum trioxide	1313-27-5	Yes	No	No	1.7E-03 ⁽³⁾	4.1E-03 ^(a)	0.65 ^(b)	1.0E-04 ^(a)	0.016 ^(b)	4.2E-03	0.66
Nickel	7440-02-0	Yes	Yes	Yes	2.1E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.3E-04 ^(a)	0.021 ^(b)	1.3E-04	0.021
Selenium	7782-49-2	Yes	Yes	Yes	2.4E-05 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.5E-06 ^(a)	2.3E-04 ^(b)	1.5E-06	2.3E-04
Vanadium	7440-62-2	Yes	No	Yes	2.3E-03 ⁽³⁾	5.7E-03 ^(a)	0.90 ^(b)	1.4E-04 ^(a)	0.022 ^(b)	5.8E-03	0.92
Zinc	7440-66-6	Yes	No	No	0.029 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.8E-03 ^(a)	0.28 ^(b)	1.8E-03	0.28
Inorganic Compounds											
Ammonia	7664-41-7	Yes	No	Yes	3.20 ⁽⁵⁾	7.94 ^(a)	1,251 ^(b)	0.20 ^(a)	31.3 ^(b)	8.13	1,282
Organic Compounds											
Acetaldehyde	75-07-0	Yes	Yes	Yes	4.3E-03 ⁽³⁾	0.011 ^(a)	1.68 ^(b)	2.7E-04 ^(a)	0.042 ^(b)	0.011	1.72
Acrolein	107-02-8	Yes	Yes	Yes	2.7E-03 ⁽³⁾	6.7E-03 ^(a)	1.06 ^(b)	1.7E-04 ^(a)	0.026 ^(b)	6.9E-03	1.08
Benzene	71-43-2	Yes	Yes	Yes	8.0E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	5.0E-04 ^(a)	0.078 ^(b)	5.0E-04	0.078
Ethylbenzene	100-41-4	Yes	Yes	Yes	9.5E-03 ⁽³⁾	0.024 ^(a)	3.71 ^(b)	5.9E-04 ^(a)	0.093 ^(b)	0.024	3.81
Formaldehyde	50-00-0	Yes	Yes	Yes	0.017 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	1.1E-03 ^(a)	0.17 ^(b)	1.1E-03	0.17
Hexane	110-54-3	Yes	Yes	Yes	6.3E-03 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	3.9E-04 ^(a)	0.062 ^(b)	3.9E-04	0.062
Toluene	108-88-3	Yes	Yes	Yes	0.037 ⁽³⁾	-- ⁽²⁾	-- ⁽²⁾	2.3E-03 ^(a)	0.36 ^(b)	2.3E-03	0.36
Xylenes	1330-20-7	Yes	Yes	Yes	0.027 ⁽³⁾	0.067 ^(a)	10.6 ^(b)	1.7E-03 ^(a)	0.27 ^(b)	0.069	10.9
Polycyclic Aromatic Hydrocarbons (PAHs)											
PAHs	401	Yes	Yes	Yes	1.0E-04 ⁽³⁾	2.5E-04 ^(a)	0.039 ^(b)	6.2E-06 ^(a)	9.8E-04 ^(b)	2.5E-04	0.040
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.2E-06 ⁽³⁾	3.0E-06 ^(a)	4.7E-04 ^(b)	7.4E-08 ^(a)	1.2E-05 ^(b)	3.1E-06	4.8E-04
Naphthalene	91-20-3	Yes	Yes	Yes	3.0E-04 ⁽³⁾	7.4E-04 ^(a)	0.12 ^(b)	1.9E-05 ^(a)	2.9E-03 ^(b)	7.6E-04	0.12

NOTES:

HAP = hazardous air pollutant

MMscf = million standard cubic feet.

RBC = risk based concentration.

TAC = toxic air contaminant.

(a) Daily emission estimates (lb/day) = (emission factor [lb/MMscf]) x (daily fuel usage [MMscf/day])

(b) Annual emission estimates (lb/yr) = (emission factor [lb/MMscf]) x (annual fuel usage [MMscf/yr])

(c) Chromium VI emission factor (lb/MMscf) = (chromium emission factor [lb/MMscf]) x (chromium VI percentage of total chromium [%]) /100

Chromium VI percentage of total chromium (%) = 4.00 (4)

REFERENCES:

(1) See Table 1, Input Assumptions and Parameters.

(2) Source-specific emissions calculated in Table 4, Glass Plant TAC Emission Estimates - PTE. Emissions of this pollutant are included with the emission estimates for the production-based TEU emission factors.

(3) Emission factors provided by Oregon Department of Environmental Quality for Natural Gas External Combustion Sources. Emission factors for sources <10 MMBtu/hr were used.

(4) Based on assumptions used by the EPA as outlined in the 2011 National Emissions Inventory. EPA assumes that 4% of chromium emitted during natural gas combustion is in the form of hexavalent chromium.

(5) EPA Webfire Clearinghouse for Inventories and Emission Factors. Assumes uncontrolled natural gas combustion.

Table 28
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate												TCE Remediation System	
					Rotary Fine		Rotary Coarse/Ultra Rotary Coarse		Flameblown		Glass Melt Operations		Raw Material Handling		Post Treatment			
		Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)													Annual (lb/yr)	Daily (lb/day)
		Metals																
Antimony	7440-36-0	Yes	Yes	Yes	--	--	2.6E-03	0.32	7.0E-04	0.19	2.3E-04	0.029	--	--	--	--	--	
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Barium	7440-39-3	Yes	No	No	3.0E-04	0.062	1.6E-03	0.20	4.7E-04	0.13	1.6E-04	0.020	0.032	9.72	--	--	--	
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	1.6E-03	0.21	1.3E-04	0.036	1.9E-04	0.024	2.1E-06	6.3E-04	--	--	--	
Chromium (total)	7440-47-3	No	Yes	No	1.0E-04	0.022	1.5E-03	0.19	1.5E-04	0.041	8.2E-05	0.010	--	--	--	--	--	
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	6.7E-05	8.4E-03	--	--	3.5E-05	4.3E-03	--	--	--	--	--	
Copper	7440-50-8	Yes	No	Yes	2.5E-03	0.53	9.1E-03	1.14	2.1E-03	0.59	1.3E-03	0.16	--	--	--	--	--	
Lead	7439-92-1	Yes	Yes	Yes	--	--	0.014	1.82	--	--	1.7E-03	0.21	2.1E-05	6.3E-03	--	--	--	
Manganese	7439-96-5	Yes	Yes	Yes	5.0E-04	0.10	2.3E-03	0.29	4.9E-04	0.13	4.6E-05	5.7E-03	--	--	--	--	--	
Mercury	7439-97-6	Yes	Yes	Yes	2.6E-05	5.4E-03	1.7E-04	0.022	2.4E-05	6.7E-03	0.023	2.90	--	--	--	--	--	
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nickel	7440-02-0	Yes	Yes	Yes	2.2E-04	0.046	3.5E-03	0.44	8.1E-04	0.22	--	--	--	--	--	--	--	
Phosphorus	504	Yes	Yes	No	4.1E-03	0.87	0.041	5.17	4.0E-03	1.10	5.0E-03	0.62	--	--	--	--	--	
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Zinc	7440-66-6	Yes	No	No	6.2E-03	1.29	0.026	3.24	0.013	3.54	2.6E-03	0.33	--	--	--	--	--	
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	0.021	6.32	--	--	--	
Inorganic Compounds																	--	--
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluorides	239	Yes	No	Yes	--	--	0.29	37.1	7.8E-03	2.14	8.9E-03	1.11	--	--	--	--	--	
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.19	39.3	0.034	4.31	0.10	28.7	1.3E-03	0.16	--	--	--	--	--	
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Organic Compounds																	--	--
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	1.8E-03	0.23	--	
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	0.017	0.39	--	
Benzene	71-43-2	Yes	Yes	Yes	4.49	944	0.69	87.1	1.70	467	--	--	--	--	8.1E-03	0.97	--	
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbon Disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	0.025	0.68	--	
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
1,3-Dichlorobenzene	541-73-1	Yes	No	No	--	--	--	--	--	--	--	--	--	--	5.0E-04	0.036	--	
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	1.4E-04	0.011	--	
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	1.4E-03	0.12	--	
Chloroform	67-66-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	1.3E-04	0.012	--	
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	0.023	2.62	--	
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	5.0E-05	6.7E-03	--	
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	7.2E-04	0.065	--	
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	6.8E-05	5.9E-03	--	
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	--	--	--	--	--	--	--	--	--	--	1.0E-04	0.013	--	
Dichlorodifluoromethane	75-71-8	Yes	No	No	--	--	--	--	--	--	--	--	--	--	2.6E-04	0.047	--	
Trichlorofluoromethane	75-69-4	Yes	No	No	--	--	--	--	--	--	--	--	--	--	1.1E-04	0.017	--	
Formaldehyde	50-00-0	Yes	Yes	Yes	4.45	935	3.10	390	0.10	27.6	0.19	23.4	--	--	--	--	--	
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Hexane	110-54-3	Yes	Yes	Yes	0.091	19.2	0.37	46.7	0.035	9.50	--	--	--	--	0.016	2.23	--	
2-Propanol	67-63-0	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	7.6E-04	0.070	--	
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	2.7E-04	0.027	--	
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Methylene Chloride	75-09-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	3.5E-04	0.020	--	
2-Butanone (MEK)	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	3.6E-04	0.039	--	
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	1.1E-03	0.077	--	
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	1.9E-03	0.083	--	
Propene	115-07-1	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Styrene	100-42-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	6.0E-05	7.3E-03	--	
Toluene	108-88-3	Yes	Yes	Yes	4.92	1,035	0.48	60.1	1.86	513	--	--	--	--	0.011	1.11	--	
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Trichloroethylene	79-01-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	0.014	0.80	--	
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	2.6E-04	0.029	--	
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	6.6E-05	9.6E-03	--	
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	--	--	--	--	--	--	--	--	--	--	2.2E-03	0.074	--	
Vinyl Acetate	108-05-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vinyl Chloride	75-01-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	9.1E-04	0.14	--	
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	1.0E-03	0.11	--	
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	2.8E-03	0.24	--	
o-xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	9.3E-04	0.074	--	
Polycyclic Aromatic Hydrocarbons (PAH)																	--	--
PAHs	401	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Diesel Particulate Matter (DPM)																	--	--
DPM	200	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	
Total TACs					14.1	2,975	5.07	639	3.83	1,054	0.23	29.0	0.053	16.0	0.13	10.4		
Total HAPs					14.13385	2972.756	4.741722	597.0394	3.80984	1047.706	0.219764	27.39589						

Table 28
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate											
					TCE Remediation System								Cooling Towers			
		TAC	HAP	RBC	Leaks								Circulation Drift		Material Balance	
					SVE		Combined SVE and Stripper Exhaust		Post Carbon Vessel 1		Post Carbon Vessel 2					
					Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals																
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Barium	7440-39-3	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Copper	7440-50-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Lead	7439-92-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	7439-96-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	7439-97-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	7440-02-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	--	--	--	--
Inorganic Compounds					--	--	--	--	--	--	--	--	--	--	--	--
Ammonia	7664-41-7	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Phosphoric Acid	7664-38-2	Yes	No	Yes	--	--	--	--	--	--	--	--	0.012	4.26	--	--
Sulfuric Acid	7664-93-9	Yes	No	Yes	--	--	--	--	--	--	--	--	0.012	4.26	--	--
Organic Compounds					--	--	--	--	--	--	--	--	--	--	--	--
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	67-64-1	Yes	No	Yes	2.4E-06	6.5E-04	1.5E-05	4.5E-03	1.8E-06	9.2E-04	2.0E-06	1.2E-03	--	--	--	--
Acrolein	107-02-8	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	1.9E-05	2.1E-03	--	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	2.2E-07	8.5E-05	7.6E-07	3.2E-04	1.0E-05	7.7E-03	9.1E-06	5.2E-03	--	--	--	--
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	75-15-0	Yes	Yes	Yes	2.1E-07	6.8E-05	7.4E-07	2.8E-04	1.7E-07	8.0E-05	2.8E-05	3.6E-03	--	--	--	--
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	4.2E-07	1.5E-04	1.5E-06	6.2E-04	3.4E-07	9.1E-05	--	--	--	--	--	--
1,3-Dichlorobenzene	541-73-1	Yes	No	No	4.0E-07	1.4E-04	1.4E-06	5.7E-04	3.2E-07	1.1E-04	5.6E-07	1.9E-04	--	--	--	--
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	2.8E-06	8.8E-04	--	--	1.5E-07	6.1E-05	--	--	--	--
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	6.5E-07	2.8E-04	9.4E-07	1.2E-03	1.2E-06	7.0E-04	1.6E-06	6.3E-04	--	--	--	--
Chloroform	67-66-3	Yes	Yes	Yes	3.2E-07	1.2E-04	1.2E-06	4.9E-04	2.6E-07	6.3E-05	1.5E-07	6.1E-05	--	--	--	--
Cyclohexane	110-82-7	Yes	No	Yes	2.3E-07	7.3E-05	8.2E-07	3.6E-04	9.7E-06	9.0E-03	2.6E-05	0.014	--	--	--	--
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	--	--	2.2E-07	4.9E-05	5.7E-08	3.6E-05	--	--	--	--
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	3.1E-07	7.5E-05	1.1E-06	4.2E-04	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	1.4E-06	2.5E-04	1.0E-06	5.5E-04	5.8E-07	3.0E-04	8.1E-07	3.4E-04	--	--	--	--
Chloroethane	75-00-3	Yes	Yes	Yes	1.8E-07	4.4E-05	--	--	1.4E-07	3.5E-05	7.7E-08	3.1E-05	--	--	--	--
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	5.1E-07	2.0E-04	--	--	4.1E-07	1.1E-04	1.2E-07	6.9E-05	--	--	--	--
Dichlorodifluoromethane	75-71-8	Yes	No	No	3.3E-07	1.4E-04	1.2E-06	5.6E-04	2.7E-07	1.6E-04	2.9E-07	2.5E-04	--	--	--	--
Trichlorofluoromethane	75-69-4	Yes	No	No	3.7E-07	1.3E-04	1.3E-06	5.5E-04	3.0E-07	1.0E-04	1.3E-07	9.2E-05	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	--	--
Glutaraldehyde	111-30-8	Yes	No	Yes	--	--	--	--	--	--	--	--	--	--	7.65	140
Hexane	110-54-3	Yes	Yes	Yes	7.4E-07	1.9E-04	5.4E-06	1.7E-03	4.9E-05	0.020	1.8E-05	0.012	--	--	--	--
2-Propanol	67-63-0	Yes	No	Yes	1.0E-06	4.1E-04	2.3E-05	6.4E-03	8.3E-07	3.8E-04	8.6E-07	3.7E-04	--	--	--	--
Methanol	67-56-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	--	--	0.085	1.55
Chloromethane	74-87-3	Yes	Yes	Yes	1.7E-07	6.7E-05	4.9E-07	2.5E-04	1.1E-07	8.5E-05	3.0E-07	1.4E-04	--	--	--	--
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	3.6E-07	1.6E-04	1.3E-06	5.9E-04	2.9E-07	1.2E-04	--	--	--	--	--	--
Methylene Chloride	75-09-2	Yes	Yes	Yes	6.3E-07	1.3E-04	2.6E-06	7.9E-04	1.9E-07	7.3E-05	3.9E-07	1.1E-04	--	--	--	--
2-Butanone (MEK)	78-93-3	Yes	No	Yes	1.2E-06	4.4E-04	4.4E-06	2.1E-03	9.9E-07	3.8E-04	4.1E-07	2.1E-04	--	--	--	--
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	1.7E-06	5.9E-04	6.1E-06	2.4E-03	1.4E-06	3.9E-04	1.3E-06	4.1E-04	--	--	--	--
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	--	--	--	--	2.2E-07	5.5E-05	--	--	--	--	--	--
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	2.4E-07	8.5E-05	8.5E-07	3.8E-04	--	--	--	--	--	--	--	--
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	1.1E-06	4.4E-04	1.6E-06	1.4E-03	--	--	2.1E-06	4.4E-04	--	--	--	--
Propene	115-07-1	Yes	No	Yes	2.3E-06	3.4E-04	--	--	--	--	--	--	--	--	--	--
Styrene	100-42-5	Yes	Yes	Yes	2.8E-07	1.1E-04	1.0E-06	3.9E-04	2.3E-07	5.3E-05	6.9E-08	3.9E-05	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	6.3E-07	3.0E-04	2.2E-06	1.2E-03	1.0E-05	5.8E-03	1.2E-05	5.9E-03	--	--	--	--
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	8.3E-07	3.1E-04	1.3E-06	9.0E-04	--	--	--	--	--	--	--	--
Trichloroethylene	79-01-6	Yes	Yes	Yes	3.8E-03	1.40	0.025	9.00	2.2E-03	0.75	1.5E-05	4.3E-03	--	--	--	--
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	1.9E-06	2.4E-04	1.2E-06	5.3E-04	2.6E-07	1.0E-04	3.0E-07	1.5E-04	--	--	--	--
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	6.0E-07	1.3E-04	1.2E-06	4.5E-04	2.6E-07	6.0E-05	7.5E-08	5.1E-05	--	--	--	--
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	7.2E-07	1.3E-04	--	--	7.4E-07	2.1E-04	2.5E-06	3.9E-04	--	--	--	--
Vinyl Acetate	108-05-4	Yes	Yes	Yes	2.3E-07	9.4E-05	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	75-01-4	Yes	Yes	Yes	2.7E-07	1.3E-04	6.1E-07	6.8E-04	4.8E-07	4.6E-04	1.0E-06	7.7E-04	--	--	--	--
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	2.6E-07	1.4E-04	9.4E-07	7.9E-04	6.6E-07	4.5E-04	1.1E-06	6.0E-04	--	--	--	--
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	3.9E-06	7.0E-04	2.1E-06	1.5E-03	2.4E-06	1.0E-03	3.1E-06	1.3E-03	--	--	--	--
o-xylene	95-47-6	Yes	Yes	Yes	9.3E-07	2.2E-04										

Table 28
TAC Emissions Estimate Summary - 2021
Hollingsworth & Vose Fiber Company—Corvallis, OR

Pollutant	CAS/ODEQ Sequence Number	Regulatory Category (Yes/No)			Emissions Estimate								Total Facility Emissions Estimate	
					Cooling Towers		Emergency Generators				Natural Gas Combustion			
		TAC	HAP	RBC	Total		Line 1		Line 2					
					Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)		
Metals														
Antimony	7440-36-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	3.5E-03	0.54
Arsenic	7440-38-2	Yes	Yes	Yes	--	--	5.5E-05	1.9E-04	3.9E-05	1.6E-04	1.2E-05	2.0E-03	1.1E-04	2.3E-03
Barium	7440-39-3	Yes	No	No	--	--	--	--	--	--	2.7E-04	0.043	0.035	10.2
Beryllium	7440-41-7	Yes	Yes	Yes	--	--	--	--	--	--	7.4E-07	1.2E-04	7.4E-07	1.2E-04
Cadmium	7440-43-9	Yes	Yes	Yes	--	--	5.2E-05	1.8E-04	3.7E-05	1.5E-04	6.8E-05	0.011	2.1E-03	0.28
Chromium (total)	7440-47-3	No	Yes	No	--	--	--	--	--	--	8.7E-05	0.014	1.9E-03	0.28
Chromium VI	18540-29-9	Yes	Yes	Yes	--	--	3.5E-06	1.2E-05	2.4E-06	9.8E-06	1.4E-04	0.022	1.5E-04	0.022
Cobalt	7440-48-4	Yes	Yes	Yes	--	--	--	--	--	--	5.2E-06	8.2E-04	1.1E-04	0.014
Copper	7440-50-8	Yes	No	Yes	--	--	1.4E-04	5.0E-04	1.0E-04	4.0E-04	5.3E-05	8.3E-03	0.015	2.42
Lead	7439-92-1	Yes	Yes	Yes	--	--	2.9E-04	1.0E-03	2.0E-04	8.1E-04	3.1E-05	4.9E-03	0.017	2.05
Manganese	7439-96-5	Yes	Yes	Yes	--	--	1.1E-04	3.8E-04	7.6E-05	3.0E-04	2.4E-05	3.7E-03	3.5E-03	0.54
Mercury	7439-97-6	Yes	Yes	Yes	--	--	6.9E-05	2.4E-04	4.9E-05	2.0E-04	1.6E-05	2.5E-03	0.024	2.94
Molybdenum trioxide	1313-27-5	Yes	No	No	--	--	--	--	--	--	4.2E-03	0.66	4.2E-03	0.66
Nickel	7440-02-0	Yes	Yes	Yes	--	--	1.4E-04	4.7E-04	9.5E-05	3.8E-04	1.3E-04	0.021	4.9E-03	0.73
Phosphorus	504	Yes	Yes	No	--	--	--	--	--	--	--	--	0.054	7.76
Selenium	7782-49-2	Yes	Yes	Yes	--	--	7.6E-05	2.7E-04	5.4E-05	2.1E-04	1.5E-06	2.3E-04	1.3E-04	7.2E-04
Vanadium	7440-62-2	Yes	No	Yes	--	--	--	--	--	--	5.8E-03	0.92	5.8E-03	0.92
Zinc	7440-66-6	Yes	No	No	--	--	--	--	--	--	1.8E-03	0.28	0.049	8.68
Zinc Oxide	1314-13-2	Yes	No	No	--	--	--	--	--	--	--	--	0.021	6.32
Inorganic Compounds														
Ammonia	7664-41-7	Yes	No	Yes	--	--	0.028	0.097	0.020	0.078	8.13	1,282	8.18	1,283
Fluorides	239	Yes	No	Yes	--	--	--	--	--	--	--	--	0.31	40.4
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.33	72.5
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	--	6.5E-03	0.023	4.5E-03	0.018	--	--	0.011	0.041
Phosphoric Acid	7664-38-2	Yes	No	Yes	0.012	4.26	--	--	--	--	--	--	0.012	4.26
Sulfuric Acid	7664-93-9	Yes	No	Yes	0.012	4.26	--	--	--	--	--	--	0.012	4.26
Organic Compounds														
Acetaldehyde	75-07-0	Yes	Yes	Yes	--	--	0.027	0.095	0.019	0.077	0.011	1.72	0.057	1.89
Acetone	67-64-1	Yes	No	Yes	--	--	--	--	--	--	--	--	1.8E-03	0.24
Acrolein	107-02-8	Yes	Yes	Yes	--	--	1.2E-03	4.1E-03	8.3E-04	3.3E-03	6.9E-03	1.08	8.9E-03	1.09
Allyl Chloride	107-05-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.017	0.40
Benzene	71-43-2	Yes	Yes	Yes	--	--	6.5E-03	0.023	4.5E-03	0.018	5.0E-04	0.078	6.90	1,499
1,3-Butadiene	106-99-0	Yes	Yes	Yes	--	--	7.5E-03	0.026	5.3E-03	0.021	--	--	0.013	0.048
Carbon Disulfide	75-15-0	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.025	0.68
Carbon Tetrachloride	56-23-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.3E-06	8.6E-04
1,3-Dichlorobenzene	541-73-1	Yes	No	No	--	--	--	--	--	--	--	--	5.0E-04	0.037
1,4-Dichlorobenzene	106-46-7	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.4E-04	0.012
trans-1,2-dichloroethene	156-60-5	Yes	No	Yes	--	--	--	--	--	--	--	--	1.4E-03	0.12
Chloroform	67-66-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.3E-04	0.012
Cyclohexane	110-82-7	Yes	No	Yes	--	--	--	--	--	--	--	--	0.023	2.64
1,1-Dichloroethane	75-34-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	5.0E-05	6.8E-03
1,2-Dichloropropane	78-87-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.4E-06	5.0E-04
Ethylbenzene	100-41-4	Yes	Yes	Yes	--	--	3.8E-04	1.3E-03	2.7E-04	1.1E-03	0.024	3.81	0.026	3.88
Chloroethane	75-00-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	6.9E-05	6.0E-03
1,1,2-Trichlorotrifluoroethane	76-13-1	Yes	No	No	--	--	--	--	--	--	--	--	1.0E-04	0.013
Dichlorodifluoromethane	75-71-8	Yes	No	No	--	--	--	--	--	--	--	--	2.6E-04	0.048
Trichlorofluoromethane	75-69-4	Yes	No	No	--	--	--	--	--	--	--	--	1.1E-04	0.018
Formaldehyde	50-00-0	Yes	Yes	Yes	--	--	0.060	0.21	0.042	0.17	1.1E-03	0.17	7.94	1,377
Glutaraldehyde	111-30-8	Yes	No	Yes	7.65	140	--	--	--	--	--	--	7.65	140
Hexane	110-54-3	Yes	Yes	Yes	--	--	9.3E-04	3.3E-03	6.6E-04	2.6E-03	3.9E-04	0.062	0.51	77.7
2-Propanol	67-63-0	Yes	No	Yes	--	--	--	--	--	--	--	--	7.8E-04	0.077
Methanol	67-56-1	Yes	Yes	Yes	0.085	1.55	--	--	--	--	--	--	0.085	1.55
Chloromethane	74-87-3	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.7E-04	0.028
1,1,1-Trichloroethane	71-55-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.9E-06	8.6E-04
Methylene Chloride	75-09-2	Yes	Yes	Yes	--	--	--	--	--	--	--	--	3.5E-04	0.021
2-Butanone (MEK)	78-93-3	Yes	No	Yes	--	--	--	--	--	--	--	--	3.7E-04	0.042
4-Methyl-2-Pentanone (MIBK)	108-10-1	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.1E-03	0.080
Methyl Methacrylate	80-62-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.2E-07	5.5E-05
Methyl Tert-Butyl Ether	1634-04-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.1E-06	4.6E-04
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.9E-03	0.085
Propene	115-07-1	Yes	No	Yes	--	--	--	--	--	--	--	--	2.3E-06	3.4E-04
Styrene	100-42-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	6.2E-05	7.9E-03
Toluene	108-88-3	Yes	Yes	Yes	--	--	3.7E-03	0.013	2.6E-03	0.010	2.3E-03	0.36	7.28	1,609
1,1,2-Trichloroethane	79-00-5	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.1E-06	1.2E-03
Trichloroethylene	79-01-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	0.045	12.0
1,2,4-Trimethylbenzene	95-63-6	Yes	No	Yes	--	--	--	--	--	--	--	--	2.7E-04	0.030
1,3,5-Trimethylbenzene	108-67-8	Yes	No	Yes	--	--	--	--	--	--	--	--	6.8E-05	0.010
2,2,4-Trimethylpentane	540-84-1	Yes	Yes	No	--	--	--	--	--	--	--	--	2.2E-03	0.075
Vinyl Acetate	108-05-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	2.3E-07	9.4E-05
Vinyl Chloride	75-01-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	9.1E-04	0.15
1,1-Dichloroethene	75-35-4	Yes	Yes	Yes	--	--	--	--	--	--	--	--	1.0E-03	0.11
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	--	1.5E-03	5.1E-03	1.0E-03	4.1E-03	0.069	10.9	0.074	11.2
o-xylene	95-47-6	Yes	Yes	Yes	--	--	--	--	--	--	--	--	9.3E-04	0.075
Polycyclic Aromatic Hydrocarbons (PAH)														
PAHs	401	Yes	Yes	Yes	--	--	1.3E-03	4.4E-03	8.8E-04	3.5E-03	2.5E-04	0.040	2.4E-03	0.048
Benzo(a)pyrene	50-32-8	Yes	Yes	Yes	--	--	1.2E-06	4.3E-06	8.7E-07	3.5E-06	3.1E-06	4.8E-04	5.2E-06	4.9E-04
Naphthalene	91-20-3	Yes	Yes	Yes	--	--	6.8E-04	2.4E-03	4.8E-04	1.9E-03	7.6E-04	0.12	1.9E-03	0.12
Diesel Particulate Matter (DPM)														
DPM	200	Yes	No	Yes	--	--	1.16	4.06	0.82	3.27	--	--	1.98	7.33
Total TACs					7.76	150	1.31	4.57	0.92	3.68	8.26	1,303	41.7	6,195
Total HAPs					0.085	1.55	0.117663	0.411822	0.082968	0.331871	0.116829	18.41947	23.44	4684.001