

From: [Air.Pollution Control](#)
To: [APC Inventory](#)
Cc: [APC Permitting](#)
Subject: FW: 03262024 Revised Major Source (Title V) Annual Emissions Fee Analysis for Permitted Air Emission Sources under State Permit 571832 for Calendar Year 2023 at the Oak Ridge Y-12 National Security Complex
Date: Tuesday, March 26, 2024 7:44:42 PM
Attachments: [2024-ANNUAL-FEE-COV-LTR.pdf](#)
[REVISED ENCLOSURE 1-TITLE V ANNUAL FEE-MARCH-2024 - eDCRO_753521.pdf](#)

From: Hall, Eleanor Lynn [CONTR] <eleanor.hall1@pxy12.doe.gov>
Sent: Tuesday, March 26, 2024 3:52 PM
To: Michelle B. Walker <Michelle.B.Walker@tn.gov>
Cc: Hernan Flores <Hernan.Flores@tn.gov>; Colby Morgan <Colby.Morgan@tn.gov>; Randy Powers <Randy.Powers@tn.gov>; Jarrett L. Rudd <Jarrett.L.Rudd@tn.gov>; Air.Pollution Control <Air.Pollution.Control@tn.gov>; APC Inventory <APC.Inventory@tn.gov>; APC Knoxville <APC.KnoxEFO@tn.gov>; EC_DMC <EC_DMC@pxy12.doe.gov>
Subject: [EXTERNAL] 03262024 Revised Major Source (Title V) Annual Emissions Fee Analysis for Permitted Air Emission Sources under State Permit 571832 for Calendar Year 2023 at the Oak Ridge Y-12 National Security Complex

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Attached is a letter from Diane R. McDaniel to Michelle W. Owenby dated March 26, 2024, "Revised Major Source (Title V) Annual Emissions Fee Analysis for Permitted Air Emission Sources under State Permit 571832 for Calendar Year 2023 at the Oak Ridge Y-12 National Security Complex." The attached pdf file is an executed original.

Thank you,
Eleanor

March 26, 2024

Ms. Michelle W. Owenby, Technical Secretary
Division of Air Pollution Control
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue
Nashville, Tennessee 37243

Dear Ms. Owenby:

Revised Major Source (Title V) Annual Emissions Fee Analysis for Permitted Air Emission Sources under State Permit 571832 for Calendar Year 2023 at the Oak Ridge Y-12 National Security Complex

Reference: Letter from Michelle Walker Owenby to Diana (sic) McDaniel, "Title V Major Source Fee Information for Sources Qualified to Pay Mixed or Actual Emission Based Fees on a Calendar Year," dated January 31, 2024

Based on the revised enclosed emissions fee analysis, Y-12 National Security Complex annual emissions were 676.54 tons (24.75 tons of actual emissions and 652.79 tons of allowable emissions that were not measured as actual emissions). Based on the fee rates for calendar year 2023 of \$70.50 per ton for actual emissions and \$48.50 per ton for allowable emissions, a check for \$39,351.61 was submitted on March 14, 2024, for Y-12 annual fees. A revised fee in the amount of \$53.58 will be paid by credit card in accordance with the enclosed revised fee analysis.

I certify that this document was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

If you have any questions or require additional information, please contact Stacey E. Loveless at 865.576.9657.

Sincerely yours,

Diane
McDaniel

Digitally signed by Diane
McDaniel
Date: 2024.03.26
15:33:02 -04'00'

Diane R. McDaniel, Senior Director
Y-12 Environment, Safety and Health

DRM:jms

Enclosures: As stated

Michelle W. Owenby, Technical Secretary
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March 26, 2024

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**Revised Actual Emissions Fee Analysis for Calendar Year 2023
Oak Ridge Y-12 National Security Complex**

Emission Source References: 01-0020 and 01-1020
Permit Number: 571832
Fees Basis: Mixed Basis (Mixture of Actual and Allowable Emissions)
Annual Accounting Period: January 1, 2023, through December 31, 2023
Actual Fee Rate: \$70.50/ton
Allowable Fee Rate: \$48.50/ton
Base Fee: \$6,000

Actual Based Emissions (tpy)

Emission Source Reference Number (ESRN)	PM (See Note 1)	SO ₂	VOC	NO _x	VOC HAPS	PM HAPS	Non-VOC HAPS	Gas Usage (ft ³ /yr)	Oil Usage (gal)
Y-9401-7-A,B,C,D; 01-0020-09	2.74	0.22	1.98	11.54	0.68	2.19E-03		721,301,000	0
Y-9767-4-B; 01-0020-38					0				
Y-9767-13-A; 01-0020-35					2.54				
Site-Wide Solvent 140/142; Condition E3-15			2.25						
Emergency Engines; 01-0020-50 [Generators (See Note 2)]	0.04	9.78E-04	0.06	1.94	1.08E-03				
Revised Emergency Engines	0.04	1.35E-03	0.08	2.68	1.08E-03				
Total Actual Emissions	2.78	0.22	4.29	13.48	3.22	0.00219	0		
Revised Actual Emissions	2.78	0.22	4.31	14.22	3.22	0.00219	0		
Grand Total Actual Emissions	23.99								
Revised Grand Total Actual Emission	24.75								

Note 1: PM₁₀ emissions are included with the PM emissions.

Note 2: Fees are based on the total hours operated (include emergency and non-emergency hours) for permitted engines added together.

ESRN = Emission Source Reference Number

PM = Particulate Matter

SO₂ = Sulfur Dioxide

VOC = Volatile Organic Compound

NOx = Nitrogen Oxide

HAP = Hazardous Air Pollutant

ft³/yr = Cubic Feet Per Year

tpy = tons per year

gal = gallon

Rad = Radionuclides

Be = Beryllium

Allowable Based Emissions (tpy)

ESRN	PM (See Note 1)	SO ₂	VOC	NOx	VOC HAPS	PM HAPS	Non-VOC HAPS	Comments
Y-9201-1-A; 01-0020-15	2.19							
Y-9201-1-B; 01-0020-59	3.42							
Y-9201-1-C; 01-0020-17	43.41							
Y-9404-9-C; Y-9204-2-A; 01-1020-19			2.40					
Y-9401-5-A; 01-0020-32	Rad Grouped Source							
Y-9201-5N-A; 01-1020-18	97.67							
Y-9201-5W-I; 01-0020-21	0.00							
Y-9202-A; 01-0020-06	Be Grouped Source							
Y-9226/9226-01/9424-04, Generators; 01-0020-100	Rad Grouped Source	0.03	1.80	218.50		0.03	0.79	This emission source (UPF) is still under construction.
Y-9998-H2-H; 01-0020-102	Rad Grouped Source							This emission source (ER project) is still under construction.
Y-9998-A; 01-0020-13	Rad Grouped Source			6.13				
Y-9998-F; 01-1020-12	Rad Grouped Source		1.10					
Y-9204-2-B; 01-0020-71	3.94						3.00	

ESRN	PM (See Note 1)	SO ₂	VOC	NOx	VOC HAPS	PM HAPS	Non-VOC HAPS	Comments
Y-9204-2-D; 01-1020-57	4.38						4.00	
Y-9204-2-E; 01-1020-55	1.62							
Y-9204-2-E1; 01-1020-55	0.35							
Y-9204-2-G; 01-1020-79	3.11							
Y-9204-2E-A; 01-0020-68	Be and Rad Grouped Source							
Y-9206-B; 01-0020-03	Rad Grouped Source			1.63				
Y-9212-A; 01-1020-72	Rad Grouped Source		9.10	58.50			30.00	
Y-9212-B; 01-0020-02	Rad Grouped Source		14.52	0.22				
Y-9212-C; 01-0020-05	Rad Grouped Source			99.00			1.00	
Y-9215-A; 01-0020-37	Rad Grouped Source		5.41					
Y-9215-B; 01-1020-51	Rad Grouped Source							
Y-9215-C; 01-1020-52	Rad Grouped Source		1.10					
Y-9215-D; 01-1020-53	Rad Grouped Source							
Radiological Grouped Source; Condition E3-11						1.00		
Beryllium Grouped Source; Condition E3-14						1.00		

ESRN	PM (See Note 1)	SO ₂	VOC	NOx	VOC HAPS	PM HAPS	Non-VOC HAPS	Non-VOC NSPS HAPS	
NSPS pollutant not list above								32.44	NMHC + NOx
Subtotal Allowable Emissions (tons)	160.09	0.03	35.43	383.98	0.00	2.03	38.79	32.44	
Grand Total Allowable Emissions (tons)	652.79								

CY 2023 Annual Emissions Fee Payment Summary		
Emissions	Actual Emissions	Allowable Emissions
Total Tons	23.99	652.79
Revised Total Tons	24.75	652.79
Cost per Ton	\$70.50	\$48.50
Subtotal	\$1,691.30	\$31,660.32
Revised Subtotal	\$1,744.88	\$31,660.32
Base Fee	\$6,000.00	
Grand Fees Payment (See Note 3)	\$39,351.61	
Revised Grand Fees Payment	\$39,405.19	
Revised Payment Due (See Note 3)	\$53.58	

Note 3: A total of \$39,351.61 was paid to the TDEC on March 14, 2024. A revised total of \$53.58 is due to the TDEC.

Note: The spreadsheet used to calculate the total fees retains significant figures beyond what is shown, causing minor differences when rounding.

Supporting Annual Emissions Fees Calculations for the Y-12 Steam Plant

Y-12 Steam Plant Fuel Usage Data for CY 2023

Fuel Usage Data		
Month	Fuel Oil Usage (gal)	Natural Gas Usage (ft³)
Jan-23	0	99,475,000
Feb-23	0	74,370,000
Mar-23	0	81,368,000
Apr-23	0	53,722,000
May-23	0	49,631,000
Jun-23	0	41,014,000
Jul-23	0	39,203,000
Aug-23	0	37,580,000
Sep-23	0	35,637,000
Oct-23	0	41,460,000
Nov-23	0	76,987,000
Dec-23	0	90,854,000
Total	0	721,301,000

Steam Plant Regulated Air Pollutants Emissions for CY 2023

Source Data Given:					
#2 Fuel Oil Usage (gal)	Natural Usage (ft ³)				
0	721,301,000				
Regulated Air Pollutants Emissions from #2 Fuel Oil Usage					
Air Pollutants	Ash Content (%)	Sulfur Content (%)	AP-42 EF (lb/10 ³ gal)	Actual Emissions	
				lb/yr	ton/yr
PM-FIL	N/A		2	0.00	0.00E+00
PM-CON	N/A		1.30	0.00	0.00E+00
PM-TOTAL	N/A			0.00	0.00E+00
PM-10	N/A		1.0	0.00	0.00E+00
PM-2.5	N/A		0.25	0.00	0.00E+00
SO ₂	N/A	0.0015	0.213	0.00	0.00E+00
NO _x	N/A		10	0.00	0.00E+00
CO	N/A		5	0.00	0.00E+00
VOC	N/A		0.20	0.00	0.00E+00

SO₂ = 142S = 142 x 0.0015 = 0.213 lb/1000 gal

PM-TOTAL = PM-FIL + PM-CON

Regulated Air Pollutants Emissions from Natural Gas Usage			
Air Pollutants	AP-42 EF (lb/10 ⁶ ft ³)	Actual Emissions	
		lb/yr	ton/yr
PM-FIL	1.9	1,370.47	0.69
PM-CON	5.7	4,111.42	2.06
PM-TOTAL		5,481.89	2.74
PM-10	7.6	5,481.89	2.74
PM-2.5	7.6	5,481.89	2.74
SO ₂	0.6	432.78	0.22
NO _x	32	23,081.63	11.54
CO	84	60,589.28	30.29
VOC	5.5	3,967.16	1.98

NOTE: PM from natural gas usage (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factor for natural gas may be used to estimate PM-10 and PM-2.5. Total PM is the sum of the filterable PM and condensible PM.

**Steam Plant Hazardous Air Pollutant Emissions
for CY 2023**

Fuel Usage			
Fuel Oil (gal/yr)	Natural Gas (ft ³ /yr)		
0	721,301,000		

**Particulate Matter (PM) Hazardous Air Pollutants (HAP) for
Trace Metals from Fuel Oil Combustion**

Air Pollutants	AP-42 EF (lb/10 ¹² Btu)	Actual Emissions	
		lb/yr	ton/yr
Arsenic (As)	4	0.00	0.00E+00
Beryllium (Be)	3	0.00	0.00E+00
Cadmium (Cd)	3	0.00	0.00E+00
Chromium (Cr)	3	0.00	0.00E+00
Lead (Pb)	9	0.00	0.00E+00
Manganese (Mn)	6	0.00	0.00E+00
Mercury (Hg)	3	0.00	0.00E+00
Nickel (Ni)	3	0.00	0.00E+00
Selenium (Se)	15	0.00	0.00E+00
Total		0.00E+00	0.00E+00

PM HAP for Trace Metals from Natural Gas Combustion

Air Pollutants	AP-42 EF (lb/10 ⁶ ft ³)	Actual Emission	
		lb/yr	ton/yr
Arsenic (As)	2.0E-04	1.44E-01	7.21E-05
Beryllium (Be)	1.2E-05	8.66E-03	4.33E-06
Cadmium (Cd)	1.1E-03	7.93E-01	3.97E-04
Chromium (Cr)	1.4E-03	1.01E+00	5.05E-04
Cobalt (Co)	8.4E-05	6.06E-02	3.03E-05
Lead (Pb)	5.0E-04	3.61E-01	1.80E-04
Manganese (Mn)	3.8E-04	2.74E-01	1.37E-04
Mercury (Hg)	2.6E-04	1.88E-01	9.38E-05
Nickel (Ni)	2.1E-03	1.51E+00	7.57E-04
Selenium (Se)	2.4E-05	1.73E-02	8.66E-06
Total		4.371	2.19E-03
HAPs	Fuel Oil	Gas	Grand Total (ton)
PM	0.00E+00	2.19E-03	2.19E-03

VOC HAP Emissions from Fuel Oil Combustion for CY 2023

Fuel Usage			
#2 Fuel Oil (gal/yr)		Actual Emissions	
0			
Air Pollutants	AP-42 EF (lb/10 ³ gal)	lb/yr	ton/yr
Benzene	2.14E-04	0.00E+00	0.00E+00
Ethyl benzene	6.36E-05	0.00E+00	0.00E+00
Formaldehyde	3.30E-02	0.00E+00	0.00E+00
Naphthalene	1.13E-03	0.00E+00	0.00E+00
1,1,1-Trichloroethane	2.36E-04	0.00E+00	0.00E+00
Toluene	6.20E-03	0.00E+00	0.00E+00
o-Xylene	1.09E-04	0.00E+00	0.00E+00
Acenaphthene	2.11E-05	0.00E+00	0.00E+00
Acenaphthylene	2.53E-07	0.00E+00	0.00E+00
Anthracene	1.22E-06	0.00E+00	0.00E+00
Benz(a)anthracene	4.01E-06	0.00E+00	0.00E+00
Benzo(b,k)fluoranthene	1.48E-06	0.00E+00	0.00E+00
Benzo(g,h,i)perylene	2.26E-06	0.00E+00	0.00E+00
Chrysene	2.38E-06	0.00E+00	0.00E+00
Dibenzo(a,h)anthracene	1.67E-06	0.00E+00	0.00E+00
Fluoranthene	4.84E-06	0.00E+00	0.00E+00
Fluorene	4.47E-06	0.00E+00	0.00E+00
Indo(1,2,3-cd)pyrene	2.14E-06	0.00E+00	0.00E+00
Phenanthrene	1.05E-05	0.00E+00	0.00E+00
Pyrene	4.25E-06	0.00E+00	0.00E+00
OCDD	3.1E-09	0.00E+00	0.00E+00
Total		0	0

VOC HAP Emissions from Natural Gas Combustion

Fuel Type	Fuel Usage (ft ³ /yr)		
Natural Gas	721,301,000		
		Actual Emissions	
Air Pollutants	AP-42 EF (lb/10 ⁶ ft ³)	lb/yr	ton/yr
2-Methylnaphthalene ^{a,b}	2.40E-05	1.73E-02	8.66E-06
3-Methylchloranthrene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
7,12-Dimethylbenz(a)-anthracene ^{a,b}	1.60E-05	1.15E-02	5.77E-06
Acenaphthene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Acenaphthylene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Anthracene ^{a,b}	2.40E-06	1.73E-03	8.66E-07
Benz(a)anthracene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Benzene ^a	2.10E-03	1.51E+00	7.57E-04
Benzo(a)pyrene ^{a,b}	1.20E-06	8.66E-04	4.33E-07
Benzo(b)fluoranthene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Benzo(g,h,i)perylene ^{a,b}	1.20E-06	8.66E-04	4.33E-07
Benzo(k)fluoranthene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Chrysene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Dibenzo(a,h)anthracene ^{a,b}	1.20E-06	8.66E-04	4.33E-07
Dichlorobenzene ^a	1.20E-03	8.66E-01	4.33E-04
Fluoranthene ^{a,b}	3.00E-06	2.16E-03	1.08E-06
Fluorene ^{a,b}	2.80E-06	2.02E-03	1.01E-06
Formaldehyde ^a	7.50E-02	5.41E+01	2.70E-02
Hexane ^a	1.80E+00	1.30E+03	6.49E-01
Indeno(1,2,3-cd)pyrene ^{a,b}	1.80E-06	1.30E-03	6.49E-07
Naphthalene ^a	6.10E-04	4.40E-01	2.20E-04
Phenanthrene ^{a,b}	1.70E-05	1.23E-02	6.13E-06
Pyrene ^{a,b}	5.00E-06	3.61E-03	1.80E-06
Toluene ^a	3.40E-03	2.45E+00	1.23E-03
Total		1,357.78	0.68
VOC HAP Emissions from Fuel Oil and Natural Gas Combustion			
VOCs		lb/yr	ton/yr
Grand Total		1,358	0.68

a = HAP as defined by Section 112(b) of the Clean Air Act (CAA).

b = HAP because it is Polycyclic Organic Matter, as defined by Section 112(b) of the CAA.

Steam Plant Total Regulated Air Pollutants Emission Summary for CY 2023

	Fuel Oil		Natural Gas		Total Emissions	
Air Pollutants	lb/yr	ton	lb/yr	ton	lb/yr	ton
PM	0	0	5,481.89	2.74	5,482	2.74
PM-10	0	0	5,481.89	2.74	5,482	2.74
PM-2.5	0	0	5,481.89	2.74	5,482	2.74
SO ₂	0	0	432.78	0.22	433	0.22
NO _x	0	0	23,081.63	11.54	23,082	11.54
CO	0	0	60,589.28	30.29	60,589	30.29
VOC	0	0	3,967.16	1.98	3,967	1.98
PM HAPs	0	0	4.37	2.19E-03	4.37	2.19E-03
VOC HAPs	0	0	1,357.78	0.68	1,358	0.68

Methanol Emissions Calculations for CY 2023

Methanol Usage Per Facility (gal)

	Facility			
Month	9767-13	9767-4	Spilled (gal)	Methanol Usage (gal)
Jan-23	0	0		0
Feb-23	220	0		220
Mar-23	0	0		0
Apr-23	165	0		165
May-23	0	0		0
Jun-23	220	0		220
Jul-23	165	0		165
Aug-23	0	0		0
Sep-23	0	0		0
Oct-23	0	0		0
Nov-23	0	0		0
Dec-23	0	0		0
Total Usage (gal)	770	0	0	770

Actual Emissions (ton/yr)

		Facility		
		9767-13	9767-4	Spilled
Pollutant	EF (lb VOC/gal)	gal/yr	gal/yr	gal/yr
VOC	6.6	770	0	0
Total Emissions (gal/yr)		770		
Grand Total (ton/yr)		2.54		

Specific gravity of methanol = 0.7924

Specific gravity of water = 8.34 lb/gal

Lb VOC/gal = (0.7924)(8.34 lb/gal) = 6.6 lb VOC/gal

Emissions = (total tons)(EF)/2,000

Solvent 140/142 Emissions Calculations for CY 2023

Month	Solvent 40/142 Usage (lb)
Jan-23	0
Feb-23	0
Mar-23	3,461.463
Apr-23	0
May-23	125.181
Jun-23	0
Jul-23	0
Aug-23	0
Sep-23	458.992
Oct-23	0
Nov-23	0
Dec-23	460.294
Grand Total (lb)	4,505.93

	Emission from Solvent 140/142	
	Actual Emissions (ton/yr)	
Pollutant	Total Usage (lb)	Total Usage (ton)
VOC	4,505.93	2.25

Specific gravity of Solvent 140/142 = 0.77

Density of Water = 8.34 lb/gal

Revised Diesel Internal Combustion Engines Emissions Calculations for CY 2023

Criteria/Other Air Pollutant Emissions Information for Engines ≥ 600 hp

Generator Number	Size (HP)	PM-TOTAL (ton/yr)	NOx (ton/yr)	SO ₂ (ton/yr)	CO (ton/yr)	VOC (ton/yr)	CO ₂ (ton/yr)	Total Hrs Operated	Rated Heat Input (mmBtu/hr)
2130C	1,250	3.03E-03	0.17	8.70E-05	3.95E-02	5.07E-03	8.34	11.5	7.562
SPG-GEN-23500 (74-7509)	2,220	3.35E-02	1.77E+00	8.91E-04	4.05E-01	5.19E-02	85.46	66.37	14.476
GEN-22151	4,680	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	0	28.566
GEN-22161	4,680	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	0	28.566
GEN-SD500-EOC (74-7510)	755	1.39E-03	7.41E-01	3.73E-04	1.70E-01	2.18E-02	35.80	81.75	4.416

Grand Total (ton/yr)	0.04	1.94	9.78E-04	0.44	0.06	93.80		
Revised Grand Total (ton/yr)	0.04	2.68	1.35E-03	0.61	0.08	129.59		

PM - Particulate Matter

NOx - Nitrogen Oxide

SO₂ = Sulfur Dioxide

PAH - Polycyclic aromatic hydrocarbons

CO₂ is not a criteria pollutant. It is calculated for information only.

PM2.5 - Particulate matter less than or equal to 2.5 micrometers aerodynamic diameter

PM10 - Particulate matter less than or equal to 10 micrometers aerodynamic diameter

PMTOTAL is the sum of the total filterable particulate and condensable particulate (includes PM2.5 and PM10).

Total hours operated include both emergency and non-emergency hours.

CO - Carbon Monoxide

VOC - Volatile Organic Compound

EF - Emission Factor

HAP - Hazardous Air Pollutant

hp - horsepower

hr - hour

yr - year

mm Btu - million British thermal units

Example calculation for criteria pollutants = (hp)(EF)(1 ton/2000 lb)(total hr)

EPA AP-42 Emission Factors (Uncontrolled) for Diesel Internal Combustion Engines (Reciprocating Diesel Engines)

Table 3.4-1

Pollutant		Greater Than (≥) 600 HP	Unit	Annual Hours of Operation (hr/yr)
PM-TOTAL		6.97E-02	(lb/MM Btu)	Actual
PM-CON		7.70E-03	(lb/MM Btu)	Actual
PM10-FIL		4.96E-02	(lb/MM Btu)	Actual
PM2.5-FIL		4.79E-02	(lb/MM Btu)	Actual
NOx		2.40E-02	(lb/hp-hr)	Actual
SO ₂		1.21E-05	(lb/hp-hr)	Actual
CO		5.50E-03	(lb/hp-hr)	Actual
VOC		7.05E-04	(lb/hp-hr)	Actual
CO ₂		1.16	(lb/hp-hr)	Actual

Sulfur content of oil = 15 ppm (0.0015%)
SO₂ = (0.00809)(0.0015) = 1.21E-05

Hazardous Air Pollutant Emissions Information for Engines ≥ 600 hp

Generator Number	Size (HP)	Benzene (ton/yr)	Toluene (ton/yr)	Xylenes (ton/yr)	Formaldehyde (ton/yr)	Acetaldehyde (ton/yr)	Acrolein (ton/yr)	Naphthalene (ton/yr)	1,3-Butadiene (ton/yr)	Total PAH (ton/yr)
2130C	1250	3.37E-05	1.22E-05	8.39E-06	3.43E-06	1.10E-06	3.43E-07	5.65E-06	1.70E-06	9.22E-06
SPG-GEN-23500 (74-7509)	2220	3.73E-04	1.35E-04	9.27E-05	3.79E-05	1.21E-05	3.79E-06	6.25E-05	1.88E-05	1.02E-04
GEN-22151	4680	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GEN-22161	4680	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GEN-SD500-EOC (74-7510)	755	1.40E-04	5.07E-05	3.48E-05	1.42E-05	4.55E-06	1.42E-06	2.35E-05	7.06E-06	0.00E+00
Grand Total (ton/yr)		5.47E-04	1.98E-04	1.36E-04	5.56E-05	1.78E-05	5.55E-06	9.16E-05	2.75E-05	1.11E-04
Grand Total HAPs (ton/yr)		1.08E-03								

Example calculation for HAP pollutants = (rated heat input)(EF)(1 ton/2000 lb)(total actual hr)

**Speciated Organic Compound and Hazardous Air Pollutant
Emissions Factors (Uncontrolled)**

Tables 3.4-3, 3.4-4

Pollutant		≥ 600 HP (lb/MM Btu)		Annual Hours of Operation (hr/yr)
Benzene		7.76E-04		Actual
Toluene		2.81E-04		Actual
Xylenes		1.93E-04		Actual
Formaldehyde		7.89E-05		Actual
Acetaldehyde		2.52E-05		Actual
Acrolein		7.88E-06		Actual
Naphthalene		1.30E-04		Actual
1,3-Butadiene		3.91E-05		Actual
Total PAH		2.12E-04		Actual

Note: The spreadsheet used to calculate emissions retains significant figures beyond what is shown, causing minor differences when rounding.