



Oregon

Tina Kotek, Governor

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July 25, 2025

Biomass One, L.P.
2350 Ave G
White City, OR 97503
Sent via email only

Kurt Lumpkin,

DEQ received the submittal of the Cleaner Air Oregon (CAO) Emission Inventory (Inventory) for the Biomass One in White City, OR on December 20, 2024, and has completed an initial review.

In accordance with [Oregon Administrative Rule \(OAR\) 340-245-0030\(2\)](#), DEQ has determined that the following additional information, corrections, and updates are required by **45 days** after the issuance date of this letter, or **September 8, 2025**:

1. **Process Flow Diagram:** Revise the process flow diagram (PFD) to include the following updates:
 - a. Ensure naming of emissions units is consistent with the nomenclature used in the Inventory. For example, the PFD has “0111 North boiler,” whereas this emissions unit is numbered “011” in other permitting documents.
 - b. Include all TEUs from the Inventory in the PFD – missing TEUs include: SMAW Welding (TEU-054), Hardfacing (TEU-055), Greenwood Chipper (TEU-064), and Maintenance Shop TEUs (TEU-061, TEU-062, and TEU-063). If these TEUs are not directly part of the process flow include in a manner similar to “013 Oil Fired Space Heater.”
2. **Revised Inventory:** Submit to DEQ a revised AQ520 Inventory Form, along with all supporting calculations in Excel format, as well as all information required under [OAR 340-245-0040\(4\)](#). Note, Biomass One should use the most recent version of the AQ520 form.¹ Include the following updates to the AQ520:
 - a. Reformat Worksheet 2 of the AQ520 to include only a single row for each toxics emissions unit (TEU) or toxics emissions sub-unit (TESU).
 - b. Revise all source test derived emission factors which are on a lb/Mlb steam (pound per thousand pounds steam) basis to a lb/MMBtu (pound per million British thermal unit) basis using specifications for the boilers. Both the North Boiler (TEU-011) and South Boiler (TEU-012) have a rated steam production of 175 Mlb/hr and a heat input capacity of 249 MMBtu/hr. Therefore, use a conversion factor of 0.7028 Mlb steam/MMBtu to convert the source test emission factors to a MMBtu basis. DEQ has prepared a table which includes both the DEQ wood-fired boiler emission factors and Biomass One’s source test emission factors converted to a MMBtu basis. This is provided as Attachment A to this letter.

¹ DEQ. Cleaner Air Oregon Emissions Inventory Form AQ520. Revised June 5, 2025.
(<https://www.oregon.gov/deq/aq/cao/Documents/AQ520Form.xlsx>)

- c. North Boiler (TEU-011):
- i. Rename TEU to “EU011” or “EU-011” to be consistent with naming convention for emissions units used in Biomass One’s Title V Operating Permit (permit). Include the North Boiler operation as a TESU of the North Boiler TEU.
 - ii. The units for the Dibenz[a,h]anthracene (CASRN 53-70-3) emission factor are listed incorrectly. This emission factor is developed from source testing has units of lb/Mlb steam. Convert to a MMBtu basis per Comment 2b.
 - iii. Confirm the source of the emission factors for the following TACs. Update the “References/Notes” column of Worksheet 3 to specify the date of the source test(s) used as the emission factor basis for these TACs.
 1. Chlorine (CASRN 7782-50-5)
 2. Hydrochloric acid (CASRN 7647-01-0)
 - iv. Update the emission factor for Cobalt (CASRN 7440-48-4) to match those in DEQ’s December 4, 2024, Source Test Review Report for Biomass One’s August 2024 Testing.² Convert to a MMBtu basis per Comment 2b.
 - v. Biomass One is not required to report emissions of individual PCBs (dichlorobiphenyl, hexachlorobiphenyl, pentachlorobiphenyl, tetrachlorobiphenyl, trichlorobiphenyl, decachlorobiphenyl) as the emission factors for these individual compounds are combined as PCBs (CASRN 1336-36-3) in DEQ’s Wood-Fired Boilers emission factor sheet. Biomass One may remove these TACs from the AQ520 if they choose.
- d. North Boiler (TEU-011B): Rename TEU to “EU011” or “EU-011” to be consistent with naming convention for emissions units used in Biomass One’s permit. Include the North Boiler Startup operation as a TESU of the North Boiler TEU.
- e. South Boiler (TEU-012):
- i. Rename TEU to “EU012” or “EU-012” to be consistent with naming convention for emissions units used in Biomass One’s permit. Include the South Boiler operation as a TESU of the South Boiler TEU.
 - ii. On Worksheet 2, revise the Stack or Fugitive ID. Currently lists Stack ID as “North Stack” which is the same stack ID as for the North Boiler.
 - iii. Update the maximum daily emission factor for molybdenum trioxide (CASRN 1313-27-5) to match the other instances of this emission factor in the Inventory. Use an emission factor of $3.11 \cdot 10^{-6}$ lb/MMBtu.
 - iv. Update the emission factor for Cobalt (CASRN 7440-48-4) to match those in DEQ’s December 4, 2024, Source Test Review Report for Biomass One’s August 2024 Testing.²
 - v. Confirm the source of the emission factors for the following TACs. Update the “References/Notes” column of Worksheet 3 to specify the date of the source test(s) used as the emission factor basis for these TACs.
 1. Chlorine (CASRN 7782-50-5)
 2. Hydrochloric acid (CASRN 7647-01-0)
 - vi. Emission factors for PAH compounds were derived from source testing conducted in December 2023. DEQ provided Biomass One a summary of the

² Rhodes, Thomas. DEQ Memorandum. December 4, 2024. Subject: Source Test Review Report. Test Dates: August 13-16, 2024.

results of the source testing in a memo dated June 25, 2024.³ Update PAH compound emission factors to reflect the average source test results for the South Boiler. DEQ will accept a more conservative (higher) emission factor for compounds if elected by Biomass One, but the average of the source test results is the minimum acceptable emission factor.

- vii. Biomass One is not required to report emissions of individual PCBs (dichlorobiphenyl, hexachlorobiphenyl, pentachlorobiphenyl, tetrachlorobiphenyl, trichlorobiphenyl, decachlorobiphenyl) as the emission factors for these individual compounds are combined as PCBs (CASRN 1336-36-3) in DEQ's Wood-Fired Boilers emission factor sheet. Biomass One may remove these TACs from the AQ520 if they choose.
- f. South Boiler (TEU-012B):
 - i. Rename TEU to "EU012" or "EU-012" to be consistent with naming convention for emissions units used in Biomass One's permit. Include the South Boiler Startup operation as a TESU of the South Boiler TEU.
 - ii. On Worksheet 2, revise the Stack or Fugitive ID. Currently lists Stack ID as "North Stack" which is the same stack ID as for the North Boiler.
 - iii. Actual Annual natural gas usage for calendar year 2023 is greater than the Annual Requested PTE natural gas usage. Review and revise activity information as appropriate.
- g. Space Heaters (TEU-013):
 - i. Rename TEU to "EU013" or "EU-013" to be consistent with naming convention for emissions units used in Biomass One's permit.
 - ii. Revise the TAC emission factors for the Space Heaters to those in AP-42 Chapter 1.11 "Waste Oil Combustion" Tables 1.11-4 and 1.11-5.⁴ Based on information provided by Biomass One, the Space Heaters burn predominantly used oils collected on site. Therefore, these emission factors are more representative for this emissions unit. DEQ has prepared a summary of the AP-42 emission factors and provided as Attachment B to this letter. Biomass One should select the appropriate emission factors for their space heaters.
- h. Storage Piles (TEU-028): Rename TEU to "EU028" or "EU-028" to be consistent with naming convention for emissions units used in Biomass One's permit.
- i. Welding Activities:
 - i. Biomass One conducted an Exempt TEU analysis to compare welding usage against DEQ's reporting thresholds presented in Appendix B of the DEQ's "Cleaner Air Oregon Exempt TEU Reporting" document.⁵ Welding rods used at rates below these reporting thresholds are considered Exempt TEUs, but must still be listed in Worksheet 2. However, there is no requirement to include usage and/or waste rates for these welding materials and they can be excluded from Worksheet 3 as you do not need to estimate emissions for Exempt TEUs. Include the below welding on Worksheet 2 but note as exempt. DEQ has included all

³ Rhodes, Thomas. DEQ Memorandum. June 25, 2024. Subject: Source Test Review Report. Test Dates: December 19-22, 2023.

⁴ EPA. October 1996. AP-42 Chapter 1.11 "Waste Oil Combustion." (https://www.epa.gov/sites/default/files/2020-09/documents/1.11_waste_oil_combustion.pdf)

⁵ Oregon DEQ. March 21, 2022. "Cleaner Air Oregon Exempt TEU Reporting." (<https://www.oregon.gov/deq/aq/cao/Documents/ExemptTEUReporting-Appendices.pdf>)

welding materials used in both 2022 and 2023, if use of any of these rods has discontinued, they do not need to be included in on Worksheet 2.

1. SMAW E6010
2. SMAW 6011
3. GMAW E70S
- ii. Include emission estimates for the following welding activities which exceeded reporting thresholds for welding activities in 2022. Alternatively, Biomass One could provide justification for excluding these welding activities from the Inventory, if PTE usage rates of these materials will be below Exempt TEU levels; these activities will still need to be included on Worksheet 2 of the AQ520, but noted as Exempt per the instructions above.
 1. FCAW E71T
 2. SMAW Hardfacing (multiple rods)
- j. Maintenance Shop TEUs (TEU-061, TEU-062, TEU-063):
 - i. Rename TEUs to be consistent with naming of the other emissions units in Biomass One's permit.
 - ii. Biomass One conducted an Exempt TEU analysis to compare maintenance shop material usage against DEQ's reporting thresholds presented in Appendices A-1 through A-3 of the DEQ's "Cleaner Air Oregon Exempt TEU Reporting" document.⁵ Materials which contain TACs but are used at rates below these reporting thresholds are considered Exempt TEUs, but must still be listed in Worksheet 4. However, there is no requirement to include usage and/or waste rates for these materials and they can be excluded from Worksheet 5 as you do not need to estimate emissions for Exempt TEUs. To satisfy this requirement, include a new TEU on Worksheet 4 called "Exempt Shop Material Usage" or similar.
 - iii. Include emission estimates for use of the following materials and TACs or provide justification for excluding from the AQ520 (such as an Exempt TEU analysis). According to information presented in the "CAO Shop Chemicals Calculated Totals.xlsx" file the projected use of these materials exceeds thresholds for TACs presented in Appendices A-1 through A-3 of the DEQ's "Cleaner Air Oregon Exempt TEU Reporting" document.⁵ Both the product and TAC(s) are identified.
 1. Kimball Midwest Battery Cleaner 80-473
 - a. Diethanolamine (CASRN 111-42-2)
 - b. Ethylene oxide (CASRN 75-21-8)
 2. Clean Rite Purple Power
 - a. Diethylene glycol monobutyl ether (CASRN 112-34-5)
 3. Slip Plate Greaseless Lubrication
 - a. Benzene (CASRN 71-43-2)
 - b. Naphthalene (CASRN 91-20-3)
 4. Schoeffler's Penetro 90
 - a. Antimony (7440-36-0)
 5. SIMONIZ Alum Brite Cleaner
 - a. Hydrogen fluoride (CASRN 7664-39-3)
 6. ITW Global Brands Gumout
 - a. Naphthalene (CASRN 91-20-3)
 7. OTR Non-Flammable Brake Parts Cleaner

- a. Tetrachloroethene (CASRN 127-18-4)
- 3. **Storage Piles (TEU-028):** Total throughput of hogged fuel (green tons handled) in the Inventory exceeds the amount of fuel used by the two boilers at both the actual and PTE rates presented in the Inventory estimated using Biomass One's fuel consumption rate of 11.35 thousand pounds steam per ton fuel. Please provide a description of the chip handling activities.
- 4. **Ash Handling (EU-029):** Provide a description of the ash handling operations at Biomass One. This should include:
 - a. A description of how ash is collected and conveyed from the boilers.
 - b. A description of how ash is stored and/or disposed of.
 - c. Description of any controls used for management of fugitive dust from ash handling.
- 5. **Safety Data Sheets:** Provide SDSs for the following materials:
 - a. Krylon Industrial Rust Tough Rust preventative enamel (industrial yellow);
 - b. Welding rods; and
 - c. Cooling tower chemicals.

DEQ is requesting that you submit additional information to complete your Inventory. If you think that any of that information is confidential, trade secret or otherwise exempt from disclosure, in whole or in part, you must comply with the requirements in [OAR 340-214-0130](#) to identify this information. This includes clearly marking each page of the writing with a request for exemption from disclosure and stating the specific statutory provision under which you claim exemption. Emissions data is not exempt from disclosure.

DEQ remains available to discuss this information request with you and answer any questions you may have. Failure to provide additional information, corrections, or updates to DEQ by the deadlines above may result in a violation of [OAR 340-245-0030\(1\)](#).

If you have any questions regarding this letter please contact me directly at (971) 300-3653 or amy.devita-mcbride@deq.oregon.gov. I look forward to your continued assistance with this process.

Sincerely,

Amy DeVita-McBride

Amy DeVita-McBride
CAO Project Engineer

Cc: Mark Labart, Biomass One, L.P.
Beth Ryder, Trinity Consultants
Jonathan Wright, DEQ
Zach Loboy, DEQ
Katie Eagleson, DEQ
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File

Attachment A
Biomass One, L.P.
Biomass Boiler TAC Emission Factors

TAC	CASRN or DEQ ID	Emission Factors [lb/MMBtu]			
		North Boiler		South Boiler	
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	5.78E-05	a	5.78E-05	a
1,2-Dichloropropane (Propylene dichloride)	78-87-5	1.68E-05	a	1.68E-05	a
2,4,6-Trichlorophenol	88-06-2	2.00E-07	a	2.00E-07	a
2,4-Dinitrophenol	51-28-5	1.80E-07	a	1.80E-07	a
2,4-Dinitrotoluene	121-14-2	9.42E-07	a	9.42E-07	a
2-Butanone (Methyl ethyl ketone)	78-93-3	6.97E-06	a	6.97E-06	a
2-Chlorophenol	95-57-8	2.35E-08	a	2.35E-08	a
4,6-Dinitro-o-cresol (and salts)	534-52-1	2.10E-06	a	2.10E-06	a
4-nitrophenol	100-02-7	1.14E-07	a	1.14E-07	a
Acetaldehyde	75-07-0	2.83E-04	a	2.83E-04	a
Acetone	67-64-1	5.29E-04	a	5.29E-04	a
Acetophenone	98-86-2	1.84E-06	a	1.84E-06	a
Acrolein	107-02-8	5.34E-04	b	5.34E-04	b
Benzene	71-43-2	2.74E-05	b	2.74E-05	b
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	4.65E-08	a	4.65E-08	a
Bromomethane (Methyl bromide)	74-83-9	1.13E-05	a	1.13E-05	a
Butyl benzyl phthalate	85-68-7	2.68E-05	a	2.68E-05	a
Carbon tetrachloride	56-23-5	9.87E-06	a	9.87E-06	a
Chlorine	7782-50-5	7.90E-04	a	7.90E-04	a
Chlorobenzene	108-90-7	1.66E-05	a	1.66E-05	a
Chloroform	67-66-3	2.01E-05	a	2.01E-05	a
Chloromethane (Methyl chloride)	74-87-3	4.35E-05	a	4.35E-05	a
Crotonaldehyde	4170-30-3	4.48E-05	a	4.48E-05	a
Cyanide, hydrogen	74-90-8	2.05E-05	a	2.05E-05	a
Dibutyl phthalate	84-74-2	3.33E-05	a	3.33E-05	a
Dichloromethane (Methylene chloride)	75-09-2	3.98E-04	a	3.98E-04	a
Diethylphthalate	84-66-2	4.36E-05	a	4.36E-05	a
di-n-octylphthalate	518	1.10E-07	a	1.10E-07	a
Ethylbenzene	100-41-4	1.22E-05	a	1.22E-05	a
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	2.92E-05	a	2.92E-05	a
Formaldehyde	50-00-0	2.04E-04	b	2.04E-04	b
Hexane	110-54-3	2.88E-04	a	2.88E-04	a
Hydrochloric Acid	7647-01-0	4.11E-03	b	4.11E-03	b
Hydrogen Fluoride	7664-39-3	9.05E-05	a	9.05E-05	a
Isopropyl alcohol	67-63-0	4.52E-03	a	4.52E-03	a
Isopropylbenzene (Cumene)	98-82-8	1.77E-05	a	1.77E-05	a
Methanol	67-56-1	7.32E-04	a	7.32E-04	a
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	4.45E-04	a	4.45E-04	a
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	2.79E-04	a	2.79E-04	a
Pentachlorophenol	87-86-5	2.14E-07	a	2.14E-07	a
Phenol	108-95-2	1.60E-04	a	1.60E-04	a

Attachment A
Biomass One, L.P.
Biomass Boiler TAC Emission Factors

TAC	CASRN or DEQ ID	Emission Factors [lb/MMBtu]			
		North Boiler		South Boiler	
Propionaldehyde	123-38-6	3.11E-04	a	3.11E-04	a
Styrene	100-42-5	4.43E-06	b	4.43E-06	b
Tetrachloroethene (perchloroethylene)	127-18-4	2.46E-05	a	2.46E-05	a
Toluene	108-88-3	1.14E-05	a	1.14E-05	a
Trichloroethene (TCE, Trichloroethylene)	79-01-6	1.99E-05	a	1.99E-05	a
Trichlorofluoromethane (Freon 11)	75-69-4	1.39E-05	a	1.39E-05	a
Vinyl Chloride	75-01-4	1.84E-05	a	1.84E-05	a
Xylene (mixture), including m-xylene, o-xylene, p-xylene	1330-20-7	5.22E-06	a	5.22E-06	a
Antimony and compounds	7440-36-0	8.43E-06	c	8.43E-06	c
Arsenic and compounds	7440-38-2	1.68E-06	d	1.68E-06	d
Barium and compounds	7440-39-3	2.09E-04	a	2.09E-04	a
Beryllium and compounds	7440-41-7	0	e	0	e
Cadmium and compounds	7440-43-9	2.07E-08	e	2.07E-08	e
Chromium VI, chromate, and dichromate particulate	18540-29-9	2.72E-07	a	2.72E-07	a
Cobalt and compounds	7440-48-4	7.03E-06	c	7.03E-06	c
Copper and compounds	7440-50-8	3.79E-06	a	3.79E-06	a
Lead and compounds	7439-92-1	0	e	0	e
Manganese and compounds	7439-96-5	1.12E-06	e	1.12E-06	e
Mercury and compounds	7439-97-6	7.59E-07	e	7.59E-07	e
Molybdenum trioxide	1313-27-5	3.11E-06	a	3.11E-06	a
Nickel and compounds	7440-02-0	5.57E-07	e	5.57E-07	e
Phosphorus and compounds	504	3.10E-04	a	3.10E-04	a
Selenium and compounds	7782-49-2	0	e	0	e
Silver and compounds	7440-22-4	9.85E-07	a	9.85E-07	a
Thallium and compounds	7440-28-0	1.85E-06	a	1.85E-06	a
Vanadium (fume or dust)	7440-62-2	5.94E-07	a	5.94E-07	a
Zinc and compounds	7440-66-6	5.76E-05	a	5.76E-05	a
1-Methylphenanthrene	832-69-9	2.59E-07	a	2.59E-07	a
2-Methyl naphthalene	91-57-6	3.73E-07	f	3.16E-08	f
3-Methylcholanthrene	56-49-5	8.68E-09	a	8.68E-09	a
7,12-Dimethylbenz[a]anthracene	57-97-6	4.57E-09	a	4.57E-09	a
Acenaphthene	83-32-9	6.48E-08	f	4.69E-09	f
Acenaphthylene	208-96-8	3.54E-06	f	1.72E-07	f
Anthracene	120-12-7	6.06E-08	f	7.50E-09	f
Benz[a]anthracene	56-55-3	5.66E-09	f	5.35E-09	f
Benzo[a]pyrene	50-32-8	1.04E-08	f	8.16E-09	f
Benzo[b]fluoranthene	205-99-2	5.85E-09	f	1.17E-08	f
Benzo[e]pyrene	192-97-2	1.38E-08	f	1.38E-08	f
Benzo[g,h,i]perylene	191-24-2	3.56E-08	f	3.28E-08	f
Benzo[j]fluoranthene	205-82-3	1.56E-07	a	1.56E-07	a
Benzo[k]fluoranthene	207-08-9	1.54E-09	f	3.33E-09	f

Attachment A
Biomass One, L.P.
Biomass Boiler TAC Emission Factors

TAC	CASRN or DEQ ID	Emission Factors [lb/MMBtu]	
		North Boiler	South Boiler
Chrysene	218-01-9	4.40E-09 f	5.82E-09 f
Dibenz[a,h]anthracene	53-70-3	1.62E-10 f	3.72E-10 f
Fluoranthene	206-44-0	2.29E-06 f	1.47E-07 f
Fluorene	86-73-7	1.15E-07 f	7.11E-09 f
Indeno[1,2,3-cd]pyrene	193-39-5	8.11E-09 f	8.02E-09 f
Naphthalene	91-20-3	1.64E-06 f	1.77E-06 f
Perylene	198-55-0	3.82E-09 f	5.48E-09 f
Phenanthrene	85-01-8	2.75E-06 f	2.02E-07 f
Pyrene	129-00-0	4.75E-06 f	3.62E-07 f
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	9.53E-13 a	9.53E-13 a
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	1.33E-12 a	1.33E-12 a
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	8.7E-13 a	8.7E-13 a
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	2.09E-12 a	2.09E-12 a
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	2.21E-12 a	2.21E-12 a
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	9.76E-12 a	9.76E-12 a
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	2.46E-11 a	2.46E-11 a
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	8.04E-12 a	8.04E-12 a
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	3.99E-12 a	3.99E-12 a
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	6.09E-12 a	6.09E-12 a
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	3.56E-12 a	3.56E-12 a
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	3.16E-12 a	3.16E-12 a
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	6.67E-13 a	6.67E-13 a
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	2.66E-12 a	2.66E-12 a
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	5.71E-12 a	5.71E-12 a
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	7.98E-13 a	7.98E-13 a
Octachlorodibenzofuran (OCDF)	39001-02-0	5E-12 a	5E-12 a
Polychlorinated biphenyls (PCBs)	1336-36-3	7.855E-09 a	7.855E-09 a

- a DEQ approved emission factor
- b Source Test Emission Factors From Title V Permit Review. Converted to MMBtu basis using capacity of boiler (175 Mlb steam/249 MMBtu).
- c Average of three test runs from August 2024 Source Test. Converted to MMBtu basis using capacity of boiler (175 Mlb steam/249 MMBtu).
- d Average of results from July 2021 and August 2024 Source Tests (3 test runs each). Converted to MMBtu basis using capacity of boiler (175 Mlb steam/249 MMBtu).
- e Average of three test runs from July 2021 Source Test. Converted to MMBtu basis using capacity of boiler (175 Mlb steam/249 MMBtu).
- f Average of three test runs from December 2023 Source Test. Converted to MMBtu basis using capacity of boiler (175 Mlb steam/249 MMBtu).

Attachment B

Waste Oil Combustion Emission Factors

AP-42 Chapter 1.11 "Waste Oil Combustion" (October 1996)

TAC	CASRN or DEQ ID	Emission Factor [lb/Mgal]			
		Space heaters vaporizing burner		Space heaters atomizing burner	
Anthracene	120-12-7	1.1E-02	a,b	1.0E-04	a,b
Antimony and compounds	7440-36-0	3.4E-04	c	4.5E-03	c
Arsenic and compounds	7440-38-2	2.5E-03	c	6.0E-02	c
Benz[a]anthracene	56-55-3	4.0E-03	a,d	--	a,d
Benzo[a]pyrene	50-32-8	4.0E-03	a	--	a
Beryllium and compounds	7440-41-7	BDL	c	1.8E-03	c
Bis(2-ethylhexyl)phthalate	117-81-7	2.2E-03	a	--	a
Butyl Benzyl Phthalate	85-68-7	5.1E-04	a	--	a
Cadmium and compounds	7440-43-9	1.5E-04	c	1.2E-02	c
Chromium		1.9E-01	c	1.8E-01	c
Chromium VI, chromate and dichromate particulate	18540-29-9	3.4E-02	d	3.2E-02	d
Chrysene	218-01-9	4.0E-03	a,d	--	a,d
Cobalt and compounds	7440-48-4	5.7E-03	c	5.2E-03	c
Dibutyl phthalate	84-74-2	--	a	3.4E-05	a
Lead and compounds	7439-92-1	0.41*L	f	50*L	f
Manganese and compounds	7439-96-5	2.2E-03	c	5.0E-02	c
Naphthalene	91-20-3	1.3E-02	a	9.2E-05	a
Nickel and compounds	7440-02-0	5.0E-02	c	1.6E-01	c
p-Dichlorobenzene (1,4-dichlorobenzene)	106-46-7	8.0E-07	a,h	--	a,h
Phenanthrene	85-01-8	1.1E-02	a,b	1.0E-04	a,b
Phenol	108-95-2	2.4E-03	a	2.8E-05	a
Phosphorus and compounds	504	3.6E-02	c	--	c
Pyrene	129-00-0	7.1E-03	a	8.3E-06	a
Selenium and compounds	7782-49-2	BDL	c	BDL	c

BDL = Below detection limit. The emission factor can be considered zero.

- a AP-42 Table 1.11-5.
- b Emission factor is for total anthracene and phenanthrene. Conservatively use full emission factor for both compounds individually.
- c AP-42 Table 1.11-4
- d Assume Cr(VI) is 18% of total Chromium based on Exhibit D-1 of the EPA's "An Overview of Methods for EPA's National-Scale Air Toxics Assessment " (January 31, 2011) for SCCs 1-01-004-01/04.
- e Emission factor is for total benz(a)anthracene and chrysene. Conservatively use full emission factor for both compounds individually.
- f AP-42 Table 1.11-1. "L" is the weight percentage of lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L = 5.
- g Molybdenum converted to Molybdenum Trioxide using ratio of molecular weights.
- h Reported as Dichlorobenzene. Assume 100% is p-Dichlorobenzene.