



Oregon

Tina Kotek, Governor

Department of Environmental Quality
Agency Headquarters
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5696
FAX (503) 229-6124
TTY 711

February 13, 2026

Columbia Forest Products, Inc.
South Highway 97
Klamath Falls, OR 97601
Sent electronically only

William Surber,

DEQ called in the Columbia Forest Products, Inc. (CFP) facility in Klamath Falls, OR to the Cleaner Air Oregon (CAO) program on August 29, 2024. CFP requested an extension for the submittal of the CAO Emission Inventory (Inventory) on November 11, 2024, and DEQ approved the extension until February 25, 2025, as long as the Modeling Protocol and Risk Assessment Work Plan were also submitted with the Inventory. DEQ received the submittal of the CAO Inventory, Modeling Protocol, and Risk Assessment Work Plan (YDO Submittal #64110) from SLR International Corporation submitted on behalf of CFP on February 25, 2025, 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 to be submitted by **90 days** after the issuance date of this letter, or **May 14, 2026**.

General Comments

1. An updated AQ520 form (version 2.0) has been released since the time of CFP's submittal. Please submit a revised Inventory using the AQ520 Version 2.0, which is well-suited for clarifying emissions and points from sources like CFP that have multiple emission points per emission unit. The [AQ520 form](#) and [form instructions](#) can be accessed from CAO's website: <https://www.oregon.gov/deq/qa/cao/Pages/CAO-Risk-Assessment-Resources.aspx>.
2. **Categorically exempt Toxic Emissions Unit (AQ523 form):** For the AQ523 form, please review and complete all applicable sections. Currently, only "Yes" is selected for some items, and several other items are left unchecked (neither "Yes" nor "No").
3. Throughout the Modeling Protocol and Risk Assessment Work Plan, several internal references read "Error! Reference not found" instead of a correct cross-reference within the document. Please update these references to improve the readability of the submittals.

Inventory Comments:

4. **Revised Inventory (AQ520 Form Version 2.0):** 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\(4\)](#). Include the following updates to the AQ520 Form Version 2.0 per AQ520 Form Version 2.0 instructions:

18-0014 Columbia Forest Products, Inc.

a. **Worksheet 2:**

- i. Correct Steam Vat (Toxics Emissions Unit (TEU) Steam Vat) Daily (units/day) amounts using the operating schedule reported in “Appendix D: Operating Schedule” of 4 days/week and 202 days/year;
- ii. The Press Vents (TEU PV) Daily (units/day) inputs are calculated using 202 days/year of operation, but “Appendix D: Operating Schedule” does not include this production information. Update “Appendix D: Operating Schedule” to include TEU PV operations.
- iii. Correct “Activity Information” for Annual and Max Daily (Columns I-N):
 1. Annual: Permit limits and conditions may be derived from the activity levels listed in Column J. Ensure Column K reflects 'Yes' only when it accurately represents the true annual capacity based on the facility's design constraints; and
 2. Daily: Permit limits and conditions may be derived from the activity levels listed in Column M. Ensure Column N reflects 'Yes' only when it accurately represents the true daily capacity based on the facility's design constraints.
- iv. Toxics Emissions Units (TEUs) and Toxics Emissions Sub-Units (TESUs):
 1. Veneer Drying:
 - a. For the TEU ID of “V-N”, add “D-1” and “D-2” as Toxic Emission Sub-Units (TESUs) to account for the two dryer units; and
 - b. Update the Stack IDs (Column F) for each Veneer dryer to match Stack IDs indicated on the facility maps and Table 2-3 of the Modeling Protocol and Risk Assessment Workplan.
 2. Steam Vat:
 - a. Update the TEU ID to “VAT” to align with the emission unit ID listed in the permit.
 3. Plywood Presses:
 - a. For the TEU ID of “PV”, add “P-1”, “P-2”, and “P-3” as TESUs to account for the three plywood presses;
- v. There are emission units identified in Title V Operating Permit No. 18-0014 and the review report that are currently not included on the AQ520 form. Add the following additional TEUs and TESUs for processes or equipment at the facility that emit air toxics—emission factors are available for these sources—or provide justification for their exclusion from the AQ520 form:
 1. Natural gas combustion for chip dryers “Keller 1 east” and “Keller 2 west”;
 2. Natural gas space heaters, emission unit IDs “NG2-4”;
 3. Veneer cooling exhaust emissions;
 4. Material Handling (EU ID “MH”);
 - a. Saw;
 - b. Trim chipper; and
 - c. Sander dust.

- vi. Review and correct Column E (Emission Type) for each TEU and TESU to ensure consistency with the 'Point' or 'Fugitive' emission classifications specified in the Modeling Protocol, resolving any discrepancies between the documents
- b. Worksheet 3:**
- i. Wood-fired Boiler (TEU BLR-S):
 - 1. Update the Toxic Air Contaminants (TACs) and emission factors using DEQ-approved sources—such as NCASI Technical Bulletin 1050—commonly approved for facilities operating wood-fired boilers. Alternatively, you may provide recent source test data conducted within the last ten years. Refer to Attachment A for a list of TACs and their corresponding emission factors in lb/MMBtu.
 - a. Clearly document and provide the calculations used to convert emission factors from lb/MMBtu to lb/Mlb steam.
 - ii. Veneer Dryers (TEU V-N):
 - 1. Add the following TACs using emission factors from NCASI Technical Bulletin No. 768 (1999) or provide alternative emission factors with supporting documentation. Use of the NCASI emission factors is recommended where site-specific data is not available:
 - a. Methyl isobutyl ketone (CASRN 108-10-1); and,
 - b. Styrene (CASRN 100-42-5).
 - 2. Update the emission factors for the following TACs using recent source test data (conducted within the past 10 years), or apply emission factors from NCASI Technical Bulletin No. 768 (1999) where appropriate:
 - a. Benzene (CASRN 71-43-2);
 - b. Phenol (CASRN 108-95-2);
 - c. Propionaldehyde (CASRN 123-38-6); and,
 - d. Toluene (CAS RN 108-88-3).
 - iii. Press Vents (TEU PV):
 - 1. Update the emission factor reference for the following TACs to “TV permit – source test data”:
 - a. Acetaldehyde (CASRN 57-07-0);
 - b. Formaldehyde (CASRN 50-00-0); and,
 - c. Methanol (CASRN 67-56-1).
 - 2. Add the following TACs using emission factors from NCASI Technical Bulletin No. 768 (1999) or provide alternative emission factors with supporting documentation:
 - a. Methyl ethyl ketone (CASRN 78-93-3); and
 - b. Acetone (CASRN 67-64-1).
 - 3. Provide a traceable reference, as the emission factors for the following TACs cannot be verified using the cited source: NCASI Handbook, Table 2:
 - a. Acrolein (CASRN 107-02-8);
 - b. Phenol (CASRN 108-95-2); and,
 - c. Propionaldehyde (CASRN 123-38-6).

- iv. Steam Vat:
 - 1. Provide a traceable reference, as the emission factors for the following TACs cannot be verified using the cited source: NCASI Handbook, Table 4:
 - a. Acrolein (CASRN 107-02-8);
 - b. Phenol (CASRN 108-95-2); and,
 - c. Propionaldehyde (CASRN 123-38-6).
 - 2. Add the following TACs using emission factors from NCASI Technical Bulletin No. 768 (1999) or provide alternative emission factors with supporting documentation:
 - a. Acetone (CASRN 67-64-1).
- v. Space heater (TEU NG1):
 - 1. Update the following TACs:
 - a. Add the chemical identifier to blank cell for the following compounds:
 - i. “Polycyclic Aromatic Hydrocarbons (PAHS)” for DEQ ID 401; and,
 - ii. “Nickel compounds, insoluble” to DEQ ID 365.
 - 2. Add the following TAC using the emission factor from AP-42 Chapter 1.4, Table 1.4-3:
 - a. Benzo(a)pyrene (CASRN 50-32-8).
- vi. Add TACs and emission factors for any TEUs added in Comment 4.a.v above.
- vii. TEU WELD:
 - 1. Update the “Pollutant Information” and “Percent Composition” for each TAC from each Welding stick or wire type. Refer to Attachment B for welding emission factors developed from the CAO Welding Emissions Tool.¹

c. Worksheet 4:

- i. For Column H “Fugitive ID”, update the ID to indicate the building where the activity resulting in fugitive emission occurs;
- ii. Add additional TEUs for chemical or material usage identified below from the review report of Title V Operating Permit No. 18-0014, where usage levels exceed the Exempt TEU reporting thresholds.² Note that DEQ will make the final determination regarding whether specific TAC-emitting activities qualify as Exempt TEUs under the Cleaner Air Oregon program (OAR 340-245-0040(4)(a)(A)):
 - 1. Cleaning materials including glycol ethers (CASRN will vary depending on specific glycol ether);
 - 2. UV Coating Line; and
 - 3. Materials containing TACs from Comment 4.a.v.
- iii. Add additional TAC entries for an existing TEU for chemical or material usage identified below from the review report of Title V Operating Permit No. 18-0014,

¹ CAO Welding Emissions Tool: <https://www.oregon.gov/deq/air/Documents/ateiAQ104BweldTool.xlsx>

² CAO Exempt TEU Guidance: <https://www.oregon.gov/deq/air/cao/Documents/ExemptTEUReporting-Appendices.pdf>

where usage levels exceed the Exempt TEU reporting thresholds.² Note that DEQ will make the final determination regarding whether specific TAC-emitting activities qualify as Exempt TEUs under the Cleaner Air Oregon program (OAR 340-245-0040(4)(a)(A)):

1. Isopropyl alcohol (CASRN 67-63-0);
 2. Methanol (CASRN 67-56-1);
 3. Formaldehyde (CASRN 50-00-0);
 4. Flame retardants; and
 5. Materials containing TACs from Comment 4.a.v.
- iv. Material Waste columns are optional and should be left blank unless material is collected and shipped off-site. See [AQ520 Version 2.0](#) for more details.
- d. **Worksheet 5:** For TACs associated with the TEU UV-Line, Transfer Efficiencies may be added to account for the amount of material applied to the product. Note that transfer efficiency is typically 65% for solids (e.g., Silica, crystalline [CASRN 7631-86-9]) and not applicable for volatile TACs (e.g., Propylene glycol monomethyl ether [CASRN 101-98-2]).³
5. Provide the following information with the submittal of the update Inventory:
- a. **Safety Data Sheets (SDS)** for all chemicals that may be used at the facility. If any previously used chemicals are no longer in use at the facility, please clearly identify them and indicate the date of discontinued use, if known:
 - i. RD2905 (6950 gal/yr listed on 2024 semi-annual report);
 - ii. RD2904(6950 gal/yr listed on 2024 semi-annual report);
 - iii. Acetone based Fil-Tite Putty (listed on the 2023 annual report);
 - iv. Fil-tite Putty:
 1. Mahogany Putty (5 gal/yr noted on the 2023 annual report);
 - v. Resin UF LF 551/571 (lists formaldehyde and methanol on 2023 annual report and 0 usage);
 - vi. Resin Kymene CA1100 (listed on the 2023 annual report);
 - vii. UV Resin (27,300 gal/yr listed on the 2023 annual report);
 - viii. PNP Glycol Ether (278 gal/yr listed on the 2023 annual report);
 - ix. CR 5H (lists formaldehyde and methanol on 2023 annual report and 0 usage);
 - x. MO608-B (lists formaldehyde and 0 usage in 2023);
 - xi. Chemvision 1100 (1,518,979 gal/yr listed on the 2023 annual report); and
 - xii. Chemvision 1000 (0 gal/yr listed on the 2023 annual report).
 - b. **Natural Gas** Combustion for chip (V-N) dryers “Keller 1 east” and “Keller 2 west”:
 - i. Manufacturer specifications; and,
 - ii. Rating in Btu/hour.
 - c. **Glue:**
 - i. Describe what materials are referenced as “glue” in the permit and review report;

³ South Coast AQMD Spray Equipment Transfer Efficiency:
<https://www.aqmd.gov/home/permits/spray-equipment-transfer-efficiency>

- ii. Update the Inventory to include any “glue” materials not already accounted for; and
 - iii. Provide SDS for any “glue” materials.
- d. **Process Flow Diagram:** Submit a revised and detailed process flow diagram indicating all TEUs, control device IDs, and any TAC emission release points. The Process Flow Diagram (PFD) currently lacks sufficient detail to convey the flow of materials through the facility and does not clearly identify TEUs or emissions release points. Please update the PFD to include:
- i. Emission locations for “Point” emission types indicated on the revised AQ520 Form, Version 2.0. Note: A review of facility maps indicates numerous stacks on the roof – these should be clearly represented; and
 - ii. Labels for all TEUs indicated on the AQ520 Form, Version 2.0.

Modeling Protocol Comments:

- 6. **Tables 2-4 and 2-5:** Add footnotes showing all calculations used to derive any values contained in those tables. Specifically, the Initial Vertical Dispersion column calculations should be clarified, and the column name updated to “Initial Vertical Dimension” in both Tables 2-4 and 2-5. If there are any other calculated values in those tables, please add footnotes showing the calculations for those values.
- 7. **Figures 2-5 and 2-6:** Ensure consistency with the Inventory by identifying all point and fugitive emission sources.
- 8. **Submit a receptor grid file in Excel format:** Please provide a receptor grid Excel file so that DEQ can complete its review.

Risk Assessment Work Plan Comments:

- 9. **Section 2.5.1:** The third paragraph of this section says “Columbia Steel has requested ...” instead of referring to Columbia Forest Products. Update this sentence to refer to the correct facility.
- 10. **Section 3.5:** It is not unreasonable for a resident to be present in the same location for 24 hours, so acute risk may not be overestimated for this reason. Also, if the basis for the acute TRV was for a period less than 24 hours, risk may be underestimated if exposure occurs for 24 hours. DEQ recommends revising or removing the first bullet of the uncertainty analysis to better reflect acute risk considerations.
- 11. **Attachment G Appendix A:** The following TACs with DEQ IDs are not identified in Column C of the Emission rate and REER Summary Tables:
 - a. DEQ Seq. ID 504: Phosphorous and compounds
 - b. DEQ Seq. ID 401: PAHs
 - c. DEQ Seq. ID 365: Nickel compounds, insoluble
- 12. **Figure 2-2:** Figure 2-2 does not have sufficient detail to identify receptors in the modeling grid. Assigning correct receptor locations is often the most challenging part of a risk assessment work plan – provide a detailed map with clear identification of receptors for DEQ review.

DEQ requests that you submit additional information to complete your Emissions Inventory, Modeling

Protocol, and Risk Assessment Work Plan. 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 and answer any questions you may have. Failure to provide additional information, corrections, or updates to DEQ by the deadlines in this letter may result in a violation of [OAR 340-245-0030\(2\)](#).

If you have any questions regarding this letter please contact me directly at 503-913-6658 or Katie.Eagleson@deq.oregon.gov, and I look forward to your continued assistance with this process.

Sincerely,

Kathleen H Eagleson

Katie Eagleson, PE
Cleaner Air Oregon Project Engineer

Cc: Sarah Kronholm, SLR International Corporation
Julie Layshock, DEQ
J.R. Giska, DEQ
File

Attachment A – Biomass Boiler Emission Factors

TAC	CASRN or DEQ ID	DEQ Emission Factors (lb/MMBtu)	Source Testing			Emission Factors [lb/MMBtu]
			(lb/Mlb steam)	(lb/MMBtu)	TEU BLR-S	
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	2.60E-04 a	<0.0009	-- c	-- c	
Benzene	71-43-2	9.80E-04 a	<0.0005	-- c	-- c	
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	

TAC	CASRN or DEQ ID	DEQ Emission Factors (lb/MMBtu)	Source Testing		Emission Factors [lb/MMBtu]
			(lb/Mlb steam)	(lb/MMBtu)	TEU BLR-S
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	1.05E-03 a	4.00E-04	2.81E-04 c	2.81E-04 c
Hexane	110-54-3	2.88E-04 a			2.88E-04 a
Hydrochloric Acid	7647-01-0	4.36E-03 a	5.25E-03	3.75E-03 b	3.75E-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
Propionaldehyde	123-38-6	3.11E-04 a			3.11E-04 a
Styrene	100-42-5	4.69E-04 a			4.69E-04 a
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	3.11E-06 a			3.11E-06 a
Arsenic and compounds	7440-38-2	8.55E-06 a			8.55E-06 a
Barium and compounds	7440-39-3	4.83E-03 a			4.83E-03 a
Beryllium and compounds	7440-41-7	1.35E-07 a			1.35E-07 a
Cadmium and compounds	7440-43-9	4.99E-06 a			4.99E-06 a
Chromium VI, chromate, and dichromate particulate	18540-29-9	6.97E-06 a			6.97E-06 a

TAC	CASRN or DEQ ID	DEQ Emission Factors (lb/MMBtu)	Source Testing		Emission Factors [lb/MMBtu]
			(lb/Mlb steam)	(lb/MMBtu)	TEU BLR-S
Cobalt and compounds	7440-48-4	1.67E-06 a			1.67E-06 a
Copper and compounds	7440-50-8	8.25E-05 a			8.25E-05 a
Lead and compounds	7439-92-1	3.10E-05 a			3.10E-05 a
Manganese and compounds	7439-96-5	1.85E-03 a			1.85E-03 a
Mercury and compounds	7439-97-6	1.77E-06 a			1.77E-06 a
Molybdenum trioxide	1313-27-5	3.15E-06 a			3.15E-06 a
Nickel and compounds	7440-02-0	1.32E-05 a			1.32E-05 a
Phosphorus and compounds	504	5.45E-03 a			5.45E-03 a
Selenium and compounds	7782-49-2	7.25E-07 a			9.37E-04 a
Silver and compounds	7440-22-4	9.37E-04 a			9.37E-04 a
Thallium and compounds	7440-28-0	1.85E-06 a			1.85E-06 a
Vanadium (fume or dust)	7440-62-2	9.80E-07 a			9.80E-07 a
Zinc and compounds	7440-66-6	5.69E-04 a			5.69E-04 a
1-Methylphenanthrene	832-69-9	2.59E-07 a			2.59E-07 a
2-Methyl naphthalene	91-57-6	1.40E-06 a			1.40E-06 a
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	8.53E-07 a			8.53E-07 a
Acenaphthylene	208-96-8	4.69E-06 a			4.69E-06 a
Anthracene	120-12-7	2.68E-06 a			2.68E-06 a
Benzo[a]anthracene	56-55-3	8.13E-08 a			8.13E-08 a
Benzo[a]pyrene	50-32-8	2.22E-06 a			2.22E-06 a
Benzo[b]fluoranthene	205-99-2	1.42E-07 a			1.42E-07 a
Benzo[e]pyrene	192-97-2	2.11E-07 a			2.11E-07 a
Benzo[g,h,i]perylene	191-24-2	1.51E-07 a			1.51E-07 a
Benzo[j]fluoranthene	205-82-3	1.56E-07 a			1.56E-07 a
Benzo[k]fluoranthene	207-08-9	5.18E-08 a			5.18E-08 a
Chrysene	218-01-9	7.90E-08 a			7.90E-08 a

TAC	CASRN or DEQ ID	DEQ Emission Factors (lb/MMBtu)	Source Testing		Emission Factors [lb/MMBtu]
			(lb/Mlb steam)	(lb/MMBtu)	TEU BLR-S
Fluoranthene	206-44-0	1.67E-06 a			1.67E-06 a
Fluorene	86-73-7	3.01E-06 a			3.01E-06 a
Indeno[1,2,3-cd]pyrene	193-39-5	1.02E-07 a			1.02E-07 a
Naphthalene	91-20-3	9.96E-05 a			9.96E-05 a
Perylene	198-55-0	3.20E-08 a			3.20E-08 a
Phenanthrene	85-01-8	6.46E-06 a			6.46E-06 a
Pyrene	129-00-0	3.54E-06 a			3.54E-06 a
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 for wood-fired boiler with mechanical collector.

b Source Test Emission Factors from October 3, 2014, and October 28, 2021, tests. Converted to MMBtu basis using steam to Btu conversion of 1,400 Btu/lb steam.

c Source Test Emission Factors from Title V Permit from 2008 Source Test. Converted to MMBtu basis using steam to Btu conversion of 1,400 Btu/lb steam.

Attachment B – Welding Emission Factors

Toxics Emission Unit ID	Welding Process	Electrode Classification	CAS or DEQ ID	Chemical Name	Annual EF ¹ - Chronic	Max Daily EF ¹ - Acute	Units	Reference/Notes
WELD1 1/8" 6010	SMAW	E6010	18540-29-9	Chromium VI, chromate and dichromate particulate	0.001	0.001	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	0.991	0.991	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.004	0.004	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD2 3/32" 6011	SMAW	E6011	18540-29-9	Chromium VI, chromate and dichromate particulate	0.00275	0.00275	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	0.998	0.998	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.005	0.005	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7440-48-4	Cobalt and compounds	0.001	0.001	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD3 1/8" 7018	SMAW	E7018	18540-29-9	Chromium VI, chromate and dichromate particulate	0.0033	0.0033	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	1.03	1.03	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.002	0.002	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7440-48-4	Cobalt and compounds	0.001	0.001	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			239	Fluorides	0.52716	0.52716	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD4 3/32" 7018	SMAW	E7018	18540-29-9	Chromium VI, chromate and dichromate particulate	0.0033	0.0033	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	1.03	1.03	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.002	0.002	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7440-48-4	Cobalt and compounds	0.001	0.001	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			239	Fluorides	0.52716	0.52716	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD5 5/32" 7018	SMAW	E7018	18540-29-9	Chromium VI, chromate and dichromate particulate	0.0033	0.0033	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	1.03	1.03	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.002	0.002	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7440-48-4	Cobalt and compounds	0.001	0.001	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			239	Fluorides	0.52716	0.52716	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD6 308/308L	GMAW	E308	18540-29-9	Chromium VI, chromate and dichromate particulate	0.05464	0.05464	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	0.1366	0.1366	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	1.0928	1.0928	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7440-50-8	Copper and compounds	0.10928	0.10928	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			1313-27-5	Molybdenum trioxide	0.163937084	0.163937084	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
WELD7 3/32" 308L	SMAW	E308L	18540-29-9	Chromium VI, chromate and dichromate particulate	0.27575625	0.27575625	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			7439-96-5	Manganese and compounds	0.07449	0.07449	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			365	Nickel compounds, insoluble	0.501375	0.501375	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022
			239	Fluorides	0.07449	0.07449	lbs/1000 Pounds	AP-42 12.19; SDAPCD 2022

¹Note: Emission factors were developed by DEQ using the Safety Data Sheets (SDSs) provided by the facility and using the CAO Welding Emission Factor Tool – <https://www.oregon.gov/deq/aq/Documents/ateiAQ104BweldTool.xlsx>