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December 19, 2025

Julia Degagne
Cleaner Air Oregon Project Engineer
Oregon Department of Environmental Quality (Oregon DEQ)
700 NE Multnomah Street, Suite 600
Portland, OR 97232
Julia.DEGAGNE@deq.oregon.gov

RE: Microchip Gresham – Cleaner Air Oregon Emissions Inventory Submittal

Dear Julia Degagne:

Microchip Technology, Inc. (Microchip) is pleased to provide a timely submission of the Cleaner Air Oregon (CAO) Emission Inventory for its Gresham, Oregon facility. Microchip was called into the CAO program by Oregon DEQ on June 30, 2025. On September 17, 2025, Oregon DEQ extended the deadline for submittal of the CAO Emissions Inventory to December 29, 2025. Accordingly, with this letter, Microchip is submitting the enclosed CAO Emissions Inventory Form and associated documents to comply with the requirement to submit an emissions inventory pursuant to Oregon Administrative Rule (OAR) 340-245-0030.

The enclosed inventory form and supporting documentation were prepared using best engineering estimates, process knowledge, source test data, and/or published emission factors for toxic air contaminants listed in OAR 340-247-8010, Table 1. Microchip reserves the right to update the enclosed documentation upon obtaining updated and/or additional information.

FACILITY DESCRIPTION

The Gresham Facility, located at 21015 SE Stark Street in Gresham, Oregon, is semiconductor manufacturing facility which includes two fabrication buildings: Fab 4-1 and 4-2. There are several support buildings (e.g., water and wastewater treatment, emergency generators, boilers) also located at the facility. Operations at the Gresham facility are authorized under Oregon Department of Environmental Quality (Oregon DEQ) Standard Air Contaminant Discharge Permit (ACDP) 26-3240-ST-01.

The manufacturing-related emissions from both buildings are currently controlled by either wet scrubber systems or three (3) rotor concentrator thermal oxidizers (RCTOs). The wet scrubber systems are used to control acid gas and alkali exhausts and the RCTOs control organics from the organics exhaust from fab process tools. A process flow diagram is provided in Attachment 1.

CAO EMISSION INVENTORY METHODOLOGY

Identification of Toxic Emission Units (TEUs)

Microchip has identified the following significant TEUs, which are consistent with the permitted emission units under Microchip's current permit.

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- Fab 4-1 and Fab 4-2 semiconductor fabs which house tools that exhaust to the general acid, nitric acid, and ammonia exhaust systems and their associated scrubbers or the organics exhaust and associated RCTOs.
  - In some cases, process tools may exhaust to a point-of-use (POU) abatement system primarily designed for maintaining a safe environment in the fab and exhaust systems before entering the house exhaust system.
- Five (5) diesel-fired emergency generators
- One (1) diesel-fired fire pump
- Eight (8) natural gas-fired boilers with diesel dual fire modes
- Three (3) natural gas-fired rotor concentrator thermal oxidizers

Microchip has provided an AQ523 form identifying categorically exempt TEUs at the Gresham Facility in Attachment 3. Additionally, Microchip has provided justification in Attachment 4 on categorically insignificant activities that should be considered exempt TEUs.

Identification of Toxic Air Contaminants Potentially Emitted

As part of the emission calculation process, Microchip reviewed current process chemistries, manufacturing chemicals used, and auxiliary/support operations at the Gresham Facility to determine the presence of TACs as regulated under OAR 340-247-8010, Table 1. The enclosed emission inventory form reflects TACs identified that Microchip estimated could be emitted from the TEUs at the Gresham Facility.

Potential Throughputs

For potential annual throughput presented in this inventory as the requested PTE, Microchip utilized the annual throughput and operating parameters limitations as contained in Standard ACDP 26-3240-ST-01, with the following refinements:

- Semiconductor fab and auxiliary/support chemical usage
  - The maximum manufacturing and auxiliary/support chemical annual throughputs were estimated by reference to the maximum production expected for the facility with known consumption chemical rates in prior years and anticipated changes in technologies to be produced at the facility.
  - The maximum daily chemical throughputs were estimated based on continuous operation of the facility. The Gresham Facility operates continuously, 24 hours a day, 7 days per week, so maximum annual throughputs distributed evenly over operating days in a year would be expected to be representative of a maximum daily throughput due to the nature of continuous operation.
- Five (5) diesel-fired emergency generators
  - Potential annual throughput was estimated using the 100% fuel consumption rate and assuming 30 hours of non-emergency operation per year. On a daily basis, it was assumed that each engine could operate up to 8 hours at maximum load for non-emergency purposes.
- One (1) diesel-fired fire pump
  - Potential annual throughput was estimated using the 100% fuel consumption rate and assuming 30 hours of non-emergency operation per year. On a daily basis, it was assumed that the fire pump could operate up to 8 hours at maximum load for non-emergency purposes.
- Eight (8) natural gas-fired boilers with diesel dual fire modes
  - Potential annual throughput was estimated using a natural gas heat content of 1,020 Btu/scf per AP-42 Section 1.4 and 8,760 hours of operation per year.
  - Potential annual throughput for the diesel dual fire mode was calculated assuming a maximum of 24 hours per year of operation and a maximum of 8 hours per day of operation.

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- Three (3) natural gas-fired RCTOs
  - Potential annual throughput was estimated based on burner capacity and continuous operation assumptions.

Emission Calculation Methodology

To calculate emissions from the various TAC emitting activities, Microchip utilized approved methodology as regulated in Standard ACDP 26-3240-ST-01 with the following refinements:

Emissions from chemical usage in process tools and in some auxiliary/support operations are calculated based on composition of the chemical, its use case, and based on the potential (as applicable) for the chemical to contain precursors for air pollutants. Based on chemical composition, its use case, and expected regulated TAC emissions, an emission factor was calculated or assigned to the individual TAC(s) that could be emitted from direct use of a chemical in process or auxiliary operations. Each chemical's composition was determined by analytical testing, vendor statement, or safety data sheet (SDS).

Emission factors for chemicals used in process tools or in auxiliary operations are generally based on a pound (lb) of TAC emitted per pound of chemical or precursor chemical used. These emission factors were developed based on the following information:

- The composition and use case for a chemical in the process tools, accounting for any POU abatement or control systems;
- Process knowledge on either the direct emission of a process chemical or the conversion of process chemical into byproducts (if applicable).
  - This includes conservative estimates for the TACs that may form as a byproduct of manufacturing chemical use in processes. For example, silicon dioxide formed as a byproduct in process tools is conservatively assumed to be emitted in a crystalline form that is respirable, though it may also be emitted in an amorphous form based on the conditions on a process-by-process basis.

The emission factors methodologies for TAC emissions from process chemical usage used for this CAO Emissions Inventory are consistent with those submitted in the most recent permitting action by Microchip to install the three RCTOs and were approved as part of the site-specific Plant Site Emission Limits (PSELs) that were established in that permit modification.

Potential emissions were determined by multiplying the usage of the chemical by the assigned TAC emission factor. Control efficiencies for the centralized scrubber systems or RCTO are applied to TAC emissions from process chemical usage as applicable based on the exhaust system the chemicals are expected in and a conservative control system efficiency for a given TAC.

Note that fluoride emissions have been calculated using source test data taken from compliance tests completed in accordance with Microchip's Standard ACDP 26-3240-ST-01. These sources tests have already been submitted to Oregon DEQ as required by Microchips ACDP and therefore have not been included in this submittal though they are available upon request.

The calculation methods for the additional TEUs included in the CAO Emission Inventory include:

- Five (5) diesel-fired emergency generators and one (1) diesel-fired fire pump

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  - Microchip used emission factors from Oregon DEQs AQ104B Toxics Reporting and Air Toxics Emissions Inventory Combustion Emission Factor Search Tool to calculate emissions from emergency generators and fire pump operation.
  - Additionally, Microchip estimated emissions from cold starts and included these in the emissions represented in the AQ520. It was assumed that 13 cold starts occur annually per engine to account for one engine readiness test per month and an additional cold start in for an annual preventative maintenance run. A maximum of one cold start per engine per day was assumed.
- Eight (8) natural gas-fired boilers with diesel dual fire modes
  - Microchip used emission factors from the Oregon DEQs AQ104B Toxics Reporting and Air Toxics Emissions Inventory Combustion Emission Factor Search Tool and the known rated capacity of each boiler.
- Three (3) natural gas-fired rotor concentrator thermal oxidizers
  - Microchip used emission factors from the Oregon DEQs AQ104B Toxics Reporting and Air Toxics Emissions Inventory Combustion Emission Factor Search Tool and the known rated capacity of each RCTO burner.

Enclosed Documentation

In addition to the CAO Emissions Inventory Form, Microchip has also enclosed the following per the request of Oregon DEQ during the July 31, 2025, kick-off call with Oregon DEQ:

- Support documentation, including:
  - Toxic emission calculation files detailing methodologies and emission factor references,
  - Process chemical SDSs, and
  - Information regarding exempt TEUs.
- Site map depicting TEUs at the Gresham Facility

Confidential Business Information

Microchip requests that portions of the enclosed submittal be managed as Confidential Business Information (CBI) and entitled to trade secret status. Microchip considers chemical names used in process, SDSs with chemical names, process specific emission factors, and process control efficiencies to be highly confidential information. The justification for why this information qualifies for trade secret protection is stated below. As required by OAR 340-214-0130, we are submitting two versions of the EI submittal. In one version, each aspect of the submittal for which we are seeking confidential status for the chemical names is identified as such under a column with the header "CBI Chemical Names" and indicated in red text and each page on which such information is located is prominently marked as "Confidential Business Information -- Do Not Release to Public." Another copy of the EI is provided with CBI information removed. A CBI copy of the process specific emission factors and process control efficiencies documentation is being provided with this submittal and is marked as "Confidential Business Information -- Do Not Release to Public" as Microchip considers the entire document as CBI. Finally, CBI copies of the facility SDSs are being included with this submission and are marked clearly with "Confidential – Request for Exemption from Disclosure."

Chemical names used in process, SDSs with chemical names, process specific emission factors, and process control efficiencies meet the requirements of Oregon Revised Statute (ORS) §192.345(2) and Oregon Administrative Rule (OAR) 340-214-0130(3) and are therefore exempt from disclosure. Our chemical names used in process, SDSs, process specific emission factors, and process control efficiencies are highly proprietary. If one of our competitors was provided this information, they could use the information to their economic advantage.

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Our chemical names used in process, SDSs, process specific emission factors, and process control efficiencies are entitled to CBI status because: (1) they consist of information that cannot be patented, (2) the information is known only to a limited number of individuals within Microchip who make every effort to ensure this information is not available to or obtained by competitors, (3) Microchip derives economic value by maintaining the confidentiality of chemical names used in process, SDSs, process specific emission factors, and process control efficiencies , and (4) maintaining our chemical names used in process, SDSs, process specific emission factors, and process control efficiencies as confidential provides Microchip with a material business advantage over its competitors. In support of these factors we note that Microchip has never shared these chemical names used in process, SDSs, process specific emission factors, and process control efficiencies with anyone outside of a select group of "need to know" employees and contractors (the latter, subject to non-disclosure agreements). This information is consistently maintained as CBI as our competitors are always keenly interested in knowing details about the success of our operations. This is information we take great pains to keep confidential. If such information was released to the public, competitors could utilize that information to their advantage to steer sales away from Microchip. This information derives independent economic value from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use--the very definition of a trade secret. The business advantage that our chemical names used in process, SDSs, process specific emission factors, and process control efficiencies provide us over our competitors would be eliminated if DEQ were to release these data to any member of the public.

We note that the information being provided are outside the scope of "emissions data." Microchip recognizes that the total emissions and the final emission factor value itself (submitted under previous permitting actions in public documents), used to derive the total facility emissions using manufacturing chemical throughputs, from the facility are emissions data and would be subject to public scrutiny. However, the facility's chemical names used in process, SDSs, process specific emission factors, and process control efficiencies are not.

If the Oregon DEQ determines that any portion of the data for which we are requesting trade secret protection are not immune from a Public Records Act request, we request that you return these materials, in their entirety, to us so that we can find a different means of providing the information you need without endangering our business.

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If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at 609.247.0821. We look forward to working with Oregon DEQ on the CAO risk assessment process.

Sincerely,

Microchip Technology, Inc.

Oteri Oghoghomeh
Fab 4 EHS Manager

Attachments

cc: Lane Meidinger, Microchip
Becky Kim, Microchip
Nazmul Hasan, Microchip
Julia DeGagne, Oregon DEQ
Weston Li, Oregon DEQ
Joshua Alexander, Oregon DEQ
Ali Mirzakhalili, Oregon DEQ
Geoffrey Tichenor, Stoel Rives
Rachel Cox, Stoel Rives
Jesse Gonzalez, Trinity Consultants
Ben Hubertus, Trinity Consultants

ATTACHMENT 1

Process Flow Diagram

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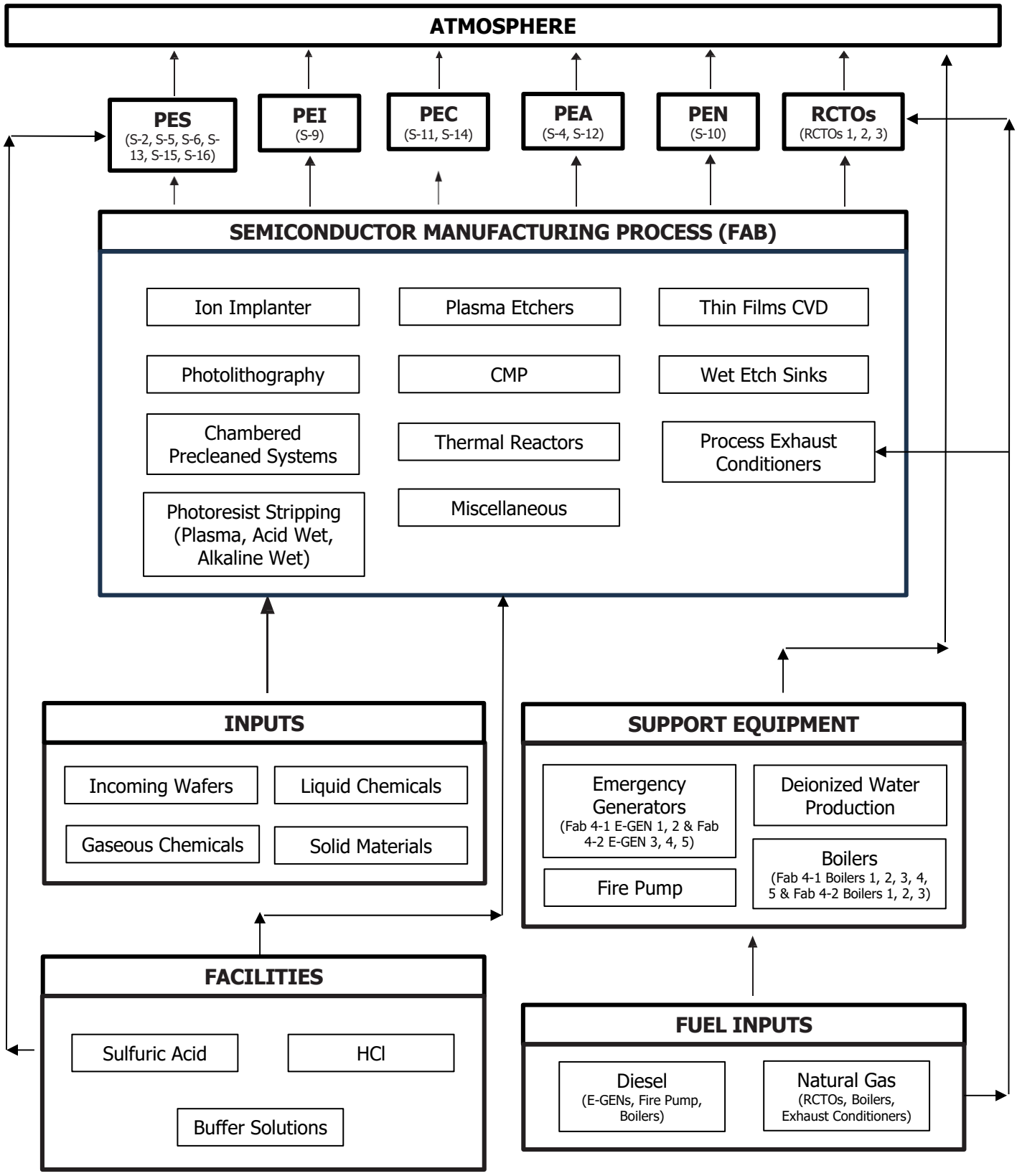
Gresham Fab 4 Process Flow Diagram



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Attachment 2

Supporting Emission Calculation Information

Included in YDO Application

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Attachment 3

Categorically Exempt TEU Form AQ523

DEQ
State of Oregon Department of Environmental Quality

Form AQ523

CATEGORICALLY EXEMPT TOXICS EMISSIONS UNITS **ANSWER SHEET**

Facility name: Microchip Technology Incorporated Permit Number: 26-3240-ST-01

Indicate which of the following categorically exempt activities occur at this facility by checking the appropriate columns below. Submit this form electronically with your Cleaner Air Oregon (CAO) Emissions Inventory AQ520 form to meet the reporting requirements in OAR 340-245-0040(4)(a)(A) for categorically exempt Toxics Emissions Units (TEUs). This form is the complete list of categorically exempt TEUs, which can be found in the division 245 rules under OAR 340-245-0060(3)(b).

Yes	No	Categorically Exempt TEU Activities
☐	☑	Evaporative and tail pipe emissions from on-site motor vehicle operation.
☐	☑	Distillate oil, kerosene, gasoline, natural gas or propane burning equipment, provided the aggregate expected actual emissions of the equipment identified does not exceed the de minimis level for any regulated pollutant, based on the expected maximum annual operation of the equipment. If a source's expected emissions from all such equipment exceed the de minimis levels, then the source may identify a subgroup of such equipment as categorically exempt with the remainder not designated as an exempt TEU. The following equipment may never be included as part of the exempt TEU: A. Any individual distillate oil, kerosene or gasoline burning equipment with a rating greater than 0.4 million Btu/hour; and B. Any individual natural gas or propane burning equipment with a rating greater than 2.0 million Btu/hour.
☑	☐	Distillate oil, kerosene, gasoline, natural gas or propane burning equipment brought on site for six months or less for maintenance, construction or similar purposes, such as but not limited to generators, pumps, hot water pressure washers and space heaters, provided that any such equipment that performs the same function as the permanent equipment, must be operated within the source's existing PSEL.
☑	☐	Office activities.
☑	☐	Food service activities.
☑	☐	Janitorial activities.
☐	☑	Personal care activities.
☑	☐	Grounds keeping activities, including, but not limited to building painting and road and parking lot maintenance.
☐	☑	On-site laundry activities.
☐	☑	On-site recreation facilities.
☑	☐	Instrument calibration.
☐	☑	Automotive storage garages.

☑	☐	Refrigeration systems with less than 50 pounds of charge of ozone depleting substances regulated under Title VI, including pressure tanks used in refrigeration systems but excluding any combustion equipment associated with such systems.
☑	☐	Temporary construction activities.
☑	☐	Warehouse activities.
☐	☑	Accidental fires and fire suppression.
☑	☐	Air vents from compressors.
☑	☐	Air purification systems.
☐	☑	Continuous emissions monitoring lines.
☐	☑	Demineralized water tanks.
☑	☐	Pre-treatment of municipal water, including use of deionized water purification systems.
☐	☑	Electrical charging stations.
☐	☑	Fire brigade training.
☐	☑	Instrument air dryers and distribution.
☑	☐	Fully enclosed process raw water filtration systems.
☑	☐	Electric motors.
☑	☐	Pressurized tanks containing gaseous compounds that do not contain toxic air contaminants.
☐	☑	Vacuum sheet stacker vents.
☐	☑	Emissions from wastewater discharges to publicly owned treatment works (POTW) provided the source is authorized to discharge to the POTW, not including on-site wastewater treatment and/or holding facilities.
☐	☑	Log ponds.
☑	☐	Stormwater settling basins.
☑	☐	Paved roads and paved parking lots within an urban growth boundary.
☐	☑	Hazardous air pollutant emissions in fugitive dust from paved and unpaved roads except for those sources that have processes or activities that contribute to the deposition and entrainment of hazardous air pollutants from surface soils.
☑	☐	Health, safety, and emergency response activities.
☐	☑	Non-diesel, compression ignition emergency generators* and pumps used only during loss of primary equipment or utility service due to circumstances beyond the

		reasonable control of the owner or operator, or to address a power emergency, provided that the aggregate horsepower rating of all stationary emergency generator and pump engines is not more than 3,000 horsepower. If the aggregate horsepower rating of all the stationary emergency generator and pump engines is more than 3,000 horsepower, then no emergency generators and pumps at the source may be considered categorically exempt. ***All spark ignition engines remain exempt.**
☑	☐	Non-contact steam vents and leaks and safety and relief valves for boiler steam distribution systems.
☑	☐	Non-contact steam condensate flash tanks.
☑	☐	Non-contact steam vents on condensate receivers, deaerators and similar equipment.
☑	☐	Boiler blowdown tanks.
☐	☑	Ash piles maintained in a wetted condition and associated handling systems and activities.

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Attachment 4

Categorically Insignificant Activities – Exempt TEUs Justifications

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A Toxic Emission Unit (TEU) is defined as an emissions unit, or one or more individual emissions-producing activities, that emit or have the potential to emit any toxic air contaminant, as designated under OAR 340-245-0060.[1]

In November 2021, The CAO rules in Division 245 were updated which included revisions to the list of activities determined to be Categorically Exempt Toxics Emissions Units (CETEUs). These revisions were completed to remove activities that may contribute to potential health risks from Toxic Air Contaminants (TACs). This letter includes information regarding three (3) Categorically Insignificant Activities (CIAs) that were removed from the CETEU list as a part of the November 2021 revisions. This document compares Microchip's welding operations for tool installation, cooling tower chemicals, and ultrapure water (UPW) system to the Oregon DEQ determined thresholds to determine if these activities may be considered Exempt TEUs in the CAO risk assessment.[2]

CATEGORICALLY INSIGNIFICANT ACTIVITIES

Welding Operations for Tool Installation

The Gresham Facility has welding operations used for tool installation and maintenance. This welding rod usage would be considered routine maintenance, repair, and replacement support primary operations at the facility. Two (2) types of electrodes are used for these Shielded Metal Arc Welding (SMAW) processes: E6010 and E7018. The estimated annual usages of both electrodes are below the reporting thresholds for the CAO risk assessment as shown in Table 1. In accordance with Appendix B of the Oregon DEQ's Exempt TEU Guidance, this classifies the welding operations at the Gresham facility to be an exempt TEU for the CAO risk assessment.

Table 1. Estimated Annual SMAW Electrode Usage

Electrode Type	Microchip Annual Usage (lbs/yr)	Reporting Threshold (lbs/yr)[2]	Exempt?
SMAW E6010	40	500	Yes
SMAW E7018	40	50	Yes

Cooling Tower Chemicals

The three (3) materials used in the Gresham facility's cooling tower are listed in Table 2 below with their respective compositions. Microchip's cooling towers would classify as industrial cooling towers that do not use chromium-based water treatment chemicals but do use water treatment chemicals that may contain volatile or semi-volatile constituents. No constituents of the cooling tower chemicals are TACs listed in Appendix A-1 or A-2 of the Oregon DEQ's Exempt TEU Guidance for volatiles or semi-volatiles. This classifies the cooling tower chemical use at the Gresham facility as an exempt activity for the CAO risk assessment.[2]

[1] OAR 340-245-0020(59)
[2] ExemptTEUReporting-Appendices.pdf

Table 2. Cooling Tower Chemical Usage and Composition

Chemical	2024 Usage (gal)	Component	Component Percent (%)	Present on Oregon DEQ List of Reportable Chemicals?
Biotrol 12.5	1,501	Sodium hypochlorite	12.5	No
		Sodium hydroxide	0.2-5	No
Phoszero 1550	986	Citric acid	1-5	No
Cetamine E655	59	Amines, N-tallow alkyltrimethylenedi-	2.5-10	No
		Amines, tallow alkyl, ethoxylated	≤ 2.5	No
		Tallow amine	≤ 1	No

Ultrapure Water (UPW) System

Chemicals used in the Gresham Facility's UPW system are listed in Table 3 below. The only chemical that has components included on the list of volatiles or semi-volatiles published by Oregon DEQ and usage above the set reporting threshold is 31% HCl which has been included in the CAO emission inventory. The remaining chemicals do not have constituents present on Appendix A-1 or A-2 of the Oregon DEQ's Exempt TEU Guidance and are therefore exempt TEU activities.

Table 3. UPW System Chemical Usage

Chemical	2024 Usage (gal)	Present on Oregon DEQ List of Reportable Chemicals?	Above Oregon DEQ Set Threshold?
Hydrochloric Acid – 31%	4,433	Yes	Yes
Sodium Hydroxide – 25%	623	No	No
Sodium Hydroxide – 50% Membrane	65,130	No	No
RoQuest 4000	450	No	No
RoQuest 6000	2,025	No	No
Vitec 4000	550	No	No

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[2] ExemptTEUReporting-Appendices.pdf

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Attachment 5

Safety Data Sheets

Included in YDO Application

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Attachment 6

Emission Inventory Form AQ520

Included in YDO Application

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