Draft Rules – Edits Highlighted

Key to Identifying Changed Text:
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Division 245

CLEANER AIR OREGON

340-245-0005
Purpose and Overview

(1) This statement of purpose and overview is an aid to understanding the rules in OAR 340-245-0010 through 340-245-8050 that follow, and is not for the purpose of regulation or compliance.

(2) Purpose. The purpose of Oregon's risk-based toxic air contaminant permitting program, known as Cleaner Air Oregon, is to:

(a) Prioritize and protect the health and well-being of all Oregonians with a special focus on sensitive populations such as children;

(b) Analyze public health risk due to toxic air contaminant emissions from industrial and commercial sources based on verified science and data;

(c) Consider similar regulations in other states and jurisdictions and use a science-based, consistent and transparent process for communicating and addressing risks from industrial and commercial emissions of toxic air contaminants, provide regulatory predictability to businesses and the communities they are a part of; and

(d) Reduce exposure to industrial and commercial toxic air contaminant emissions while supporting an environment where businesses and communities can thrive.

(3) Overview.

(a) OAR 340-245-0010, Applicability and Jurisdiction, OAR 340-245-0020, Definitions, and OAR 340-245-0022, Abbreviations and Acronyms, describe which sources the risk-based toxic air contaminant permitting program applies to and specifies definitions, abbreviations and acronyms to be used in the program;

(b) OAR 340-245-0030, Submittal and Payment Deadlines, provides the deadlines by which owners or operators must submit risk assessment compliance information when required by DEQ under this division. That rule generally provides owners or operators more time to submit the more complex assessments;

(c) OAR 340-245-0040, Emissions Inventory, authorizes DEQ to require a source to submit an inventory of all of its toxic air contaminant emissions to be used in a risk assessment and to submit periodic emissions inventory updates;

(d) OAR 340-245-0050, Risk Assessment Procedures, includes requirements and procedures for the owners and operators of sources to undertake any of the four levels of risk assessment to demonstrate compliance and determine what requirements apply. The first level of risk assessment is a conservative estimate that is likely to overestimate risk. As the levels progress from Level 1 to Level 4, the assessments become more complex but also provide increasingly more site-specific and refined risk estimates. An owner or operator can choose to start with any level of risk assessment;

(e) OAR 340-245-0060, Toxic Emissions Units, explains how TEUs are analyzed and regulated in the context of assessing and regulating risk from an entire source. This rule includes the criteria for a TEU to be designated exempt or aggregated because it poses very low risk and the requirements for approval of new and modified TEUs;

(f) OAR 340-245-0100, Toxic Air Contaminant Permit Addenda, includes the procedural requirements for obtaining a permit addendum or a new operating permit under these rules. A Toxic Air Contaminant Permit Addendum will amend the source's Air Contaminant Discharge Permit or Title V Operating Permit until the requirements in the addendum can be incorporated into the source's operating permit, but will remain separate for a source that has a General Air Contaminant Discharge Permit;

(g) OAR 340-245-0110, Source Risk Limits, explains how risk limits will be set in Toxic Air Contaminant Permit Addenda or in operating permits with conditions required under this division;

(h) OAR 340-245-0120, Community Engagement, contains requirements for community engagement meetings and other aspects of community engagement;

(i) OAR 340-245-0130, Risk Reduction Plan Requirements, specifies how an owner or operator of an existing source must develop a plan to reduce risk, if required to do so, because the source risk exceeds the TBACT Level or the Risk Reduction Level. Risk can be reduced using a variety of methods as long as they are enforceable as permit conditions and achieve the required level of risk reduction. Provisions for Voluntary Risk Reduction are included in this rule;

(j) OAR 340-245-0140, Pollution Prevention, explains how the owner or operator of a source must perform a pollution prevention analysis when required under OAR 340-245-0130;

(k) OAR 340-245-0150, Postponement of Risk Reduction, specifies how an owner or operator of a source may request postponement of risk reduction due to financial hardship;

(l) OAR 340-245-0200, Risk Estimates, explains how the owner or operator of a source must perform the calculations required in this division. This rule explains how calculations should be rounded to evaluate compliance with Source Risk Limits;

(m) OAR 340-245-0210, Modeling and Risk Assessment Work Plan Requirements, contains air quality modeling and work plan requirements for owners or operators of sources that are required to assess risk;

(n) OAR 340-245-0220, TBACT and TLAER Procedures, explains how the owner or operator of a source must perform, respectively, a Toxics Best Available Control Technology or Toxics Lowest Achievable Emission Rate analysis;

(o) OAR 340-245-0230, Toxic Air Contaminant Monitoring Requirements, allows an owner or operator of a source to perform air monitoring to determine actual concentrations of toxic air contaminants in the ambient air around a source;

(p) OAR 340-245-0300, 340-245-0310, and 340-245-0320, Toxicity Reference Values, Process for Updating Lists of Regulated Toxic Air Contaminants and Their Risk-Based Concentrations, and Standards and Criteria for Noncancer Risk Action Levels for Existing Sources, describe the list of authoritative sources that publish toxicity information that the EQC considers, upon the recommendation of DEQ, in consultation with OHA, to determine the RBCs, ~~and~~ the process of how the RBCs may be updated, and assignment of hazard index values based on health effects.

(q) OAR 340-245-0400, Cleaner Air Oregon Fees, specifies the permitting fees that apply to sources subject to the rules in this division; and

(r) OAR 340-245-8000 through 340-245-8050, Tables, include the established Risk Action Levels, lists of the regulated toxic air contaminants, the values used to develop Risk-Based Concentrations and the Level 1 Risk Assessment Tool.

(4) The long-term goal of Cleaner Air Oregon is to achieve a 50% reduction in the number of existing sources posing either an excess cancer risk of more than 25 in a million or a Hazard Index of more than 1 by the year 2034.

(5) This program supplements requirements in OAR chapter 340, division 244, Oregon Federal Hazardous Air Pollutant Program, and division 246, Oregon State Air Toxics Program. This program includes four levels of risk assessment and allows sources to choose any level of assessment to assess risk.

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155 & Or Laws 2018, ch. 102, §§ 3. 7 and 13
Statutes/Other Implemented: ORS 468.065, 468A.010, 468A.015, 468A.025, 468A.035, 468A.040, 468A.050, 468A.070, 468A.155 & Or Laws 2018, ch. 102, §§ 2, 3, 6, 7~~,~~ and 13.
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-0020
Definitions

The definitions in OAR 340-200-0020, 340-204-0010 and this rule apply to this division. If the same term is defined in this rule and OAR 340-200-0020 or 340-204-0010, the definition in this rule applies to this division.

(1) “ABEL” means a computer model developed by EPA that evaluates a corporation's or partnership's ability to afford compliance costs, cleanup costs or civil penalties. ABEL is available upon request from DEQ.

(2) “Actual toxic air contaminant emission rate” means:

(a) For an existing source, the toxic air contaminant emissions rate from the source’s actual production; or

(b) For a new or reconstructed source, the toxic air contaminant emissions rate from the reasonably anticipated actual production by the new or reconstructed source.

(3) “Acute” means evaluated over a 24-hour period or day.

(4) “Acute exposure location” means an exposure location outside the boundary of a source being modeled for daily average concentrations of a toxic air contaminant, and that is:

(a) A chronic exposure location; or

(b) A location where people may spend several hours of one day.

(5) “AERMOD” is the EPA approved steady-state air dispersion model, specified in 40 CFR part 51, Appendix W, "Guidelines on Air Quality Models (Revised)," that is the primary model used for the analysis of ambient concentrations for regulatory compliance. AERMOD uses a fully developed set of meteorological and terrain data. AERMOD stands for American Meteorological Society/Environmental Protection Agency Regulatory Model. AERMOD is available upon request from DEQ.

(6) “AERSCREEN” is the EPA approved screening dispersion model, specified in 40 CFR part 51, Appendix W, "Guidelines on Air Quality Models (Revised)," based on AERMOD. The model uses conservative screening meteorology to produce estimates of "worst-case" concentration estimates that are equal to or greater than the estimates produced by AERMOD. AERSCREEN stands for American Meteorological Society/Environmental Protection Agency Regulatory Screening Model. AERSCREEN is available upon request from DEQ.

(7) “Aggregate TEU Level” means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, that aggregated TEUs may not exceed, based on a calculation of the cumulative risk of all aggregated TEUs.

(8) “Aggregated TEUs” means all of a source’s TEUs that are identified by an owner or operator with total cumulative risk less than the Aggregate TEU Level. A TEU that is identified as one of the aggregated TEUs is referred to in the singular as an aggregated TEU.

(9) “Area of impact” means the geographic area where risk is determined to be above the applicable Risk Action Level, and is determined by AERMOD or other comparable model approved by DEQ.

(10) “Chronic” means evaluated over a one-year period or longer.

(11) “Chronic exposure location” means an exposure location outside the boundary of a source being modeled for annual average concentrations of a toxic air contaminant, and can be either:

(a) A residential exposure location; or

(b) A non-residential exposure location.

(12) “Community Engagement Level” means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, at which DEQ will conduct community engagement.

(13) “Construction permit” means a Construction Air Contaminant Discharge Permit issued under OAR chapter 340, division 216, or a Standard Air Contaminant Discharge Permit used for approval of Type 3 or 4 changes under OAR chapter 340, division 210.

(14) “De minimis source” means a source whose excess cancer risk, chronic noncancer risk and acute noncancer risk estimates are each less than or equal to the Source Permit Level in OAR 340-245-8010 Table 1 when calculated based on the source’s capacity, as determined under OAR 340-245-0050(7).

(15) “DEQ notice date” means the date that DEQ sends a notice to an owner or operator that a risk assessment is required.

(16) “Environmental Justice” means equal protection from environmental and health hazards, and meaningful public participation in decisions that affect the environment in which people live, work, learn, practice spirituality, and play. Environmental Justice communities include minority and low-income communities, tribal communities, and other communities traditionally underrepresented in the public process.

~~(17~~(17) “Exceedance Ratio” means the calculated value used to determine compliance with noncancer Risk Action Levels for existing individual air contamination sources as determined under OAR 340-245-0200.

(18) “Excess cancer risk” means the probability of developing cancer resulting from exposure to toxic air contaminant emissions from a TEU or an entire source under an applicable exposure scenario, over and above the background rate of cancer. Excess cancer risk is expressed in terms of “X” in a million, and means that approximately “X” number of additional cases of cancer would be expected in a population of one million people subject to the applicable exposure scenario.

(~~18~~19) “Exempt source” means a source at which all TEUs are exempt TEUs or a source that has no TEUs that emit toxic air contaminants, as determined under OAR 340-245-0050(6).

(~~19~~20) “Exempt TEU” means a TEU that DEQ has determined is exempt under OAR 340-245-0060(3). An exempt TEU is not required to comply with any other requirements of this division, other than those applicable to qualify as an exempt TEU and OAR 340-245-0060(4)(c)(A).

(~~20~~21) “Existing source” means a source that:

(a) Commenced construction before November 16, 2018; or

(b) Submitted all necessary applications to DEQ under OAR 340 divisions 210 or 216 before November 16, 2018, and all such applications were deemed complete by DEQ.

(~~21~~22) "Existing TEU" means a TEU that is not a new or modified TEU.

(~~22~~23) "Exposure location" means a location where people, including sensitive populations, actually live or normally congregate and will be exposed to a toxic air contaminant present in the air, and thus be the location of an air quality modeling receptor at which toxic air contaminant concentrations and risk are evaluated. Exposure locations are associated with exposure scenarios and identified based on allowed land use zoning, except as allowed under OAR 340-245-0210(1)(a)(F) or when DEQ has sufficient information to determine that an area is being used in a manner contrary to its land use zoning.

(~~23~~24) "Exposure scenario" means a set of assumptions about how a population is exposed to toxic air contaminants. Included in the assumptions are the type of people exposed (e.g., children or adults), and the frequency and duration of exposure associated with the scenario (e.g., residential or occupational use). Exposure scenarios are associated with exposure locations.

(~~24~~25) "Fixed capital cost" means the capital needed to purchase and construct all the depreciable components of a source.

(~~25~~26) "Hazard Index number" or "Hazard Index," as defined in Oregon Laws 2018, chapter 102, section 2, means a number equal to the sum of the hazard quotients attributable to toxic air contaminants that have noncancer effects on the same target organs or organ systems.

(~~26~~27) "Hazard quotient," as defined in Oregon Laws 2018, chapter 102, section 2, means a calculated numerical value that is used to evaluate noncancer health risk from exposure to a single toxic air contaminant. The calculated numerical value is the ratio of the air concentration of a toxic air contaminant to the noncancer Risk-Based Concentration at which no serious adverse human health effects are expected to occur.

(~~27~~28) "Immediate Curtailment Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, at which an existing source will not be permitted to postpone risk reduction under OAR 340-245-0160.

(~~28~~29) "INDIPAY" means a computer model developed by EPA that evaluates an individual's ability to afford compliance costs, cleanup costs or civil penalties. INDIPAY is available upon request from DEQ.

(~~29~~30) "Inhalation Unit Risk" means the upper-bound lifetime excess cancer risk estimated to result from continuous exposure to a toxic air contaminant at a concentration of 1 $\mu g/m^3$ in air. The interpretation of inhalation unit risk would be as follows: if unit risk = 2×10^{-6} per $\mu g/m^3$, then two excess cancer cases (upper bound estimate) are expected to develop per one million people if exposed daily for 70 years to one microgram of the toxic air contaminant per cubic meter of air.

(~~30~~31) “Multipathway” means consideration of exposure pathways in addition to inhalation of chemicals in air, such as incidental ingestion and dermal contact with toxic air contaminants migrating to soil and water.

(~~31~~32) “MUNIPAY” means a computer model developed by EPA that evaluates a municipality's or regional utility's ability to afford compliance costs, cleanup costs or civil penalties. MUNIPAY is available upon request from DEQ.

(~~32~~33) “New or modified TEU” means a TEU at an existing source where one of the following criteria is met:

(a) Approval to construct or operate under OAR 340-210-0205 through 340-210-0250 was not required for the TEU, and construction commenced on or after November 16, 2018;

(b) Approval to construct or operate under OAR 340-210-0205 through 340-210-0250 is or was required for the TEU, and the owner or operator submitted the application on or after November 16, 2018; or

(c) Approval to construct or operate under OAR 340-210-0205 through 340-210-0250 was required for the TEU, but the owner or operator did not obtain the approval as required, and construction commenced on or after the following, as applicable:

(A) For Type 1 changes under OAR 340-210-0225, 10 days before November 16, 2018;

(B) For Type 2 changes under OAR 340-210-0225, 60 days before November 16, 2018;

(C) For Type 3 changes under OAR 340-210-0225, 120 days before November 16, 2018; and

(D) For Type 4 changes under OAR 340-210-0225, 240 days before November 16, 2018;

(d) With respect to a modification to a TEU, approval to construct or operate refers to approval to construct or operate the modification.

(~~33~~34) “New source” means a source that is not an existing source.

(~~34~~35) “Noncancer risk” means the chance of noncancer harmful effects to human health resulting from exposure to toxic air contaminant emissions from a TEU or an entire source under an applicable exposure scenario. There are two types of noncancer risk, chronic and acute. Noncancer risk is expressed numerically using the Hazard Index. Below a Hazard Index of 1, adverse noncancer health effects are unlikely, and above a Hazard Index of 1, adverse noncancer health effects become more likely.

(~~35~~36) “Nonresident” means people who regularly spend time at a location but do not reside there. This includes, but is not limited to, children attending schools and daycare facilities and adults at workplaces.

(~~36~~37) “Nonresidential exposure location” means an exposure location outside the boundary of a source where people may reasonably be present for a few hours several days per week, possibly

over a period of several years, and that is zoned for uses that do not allow residential use. A nonresidential exposure location includes non-residential worker exposure locations and non-residential child exposure locations.

(~~37~~38) "Notification area" means the area of impact or the area within a distance of 1.5 kilometers of a source, whichever is greater.

(~~38~~39) "Operating permit" means a General, Basic, Simple or Standard Air Contaminant Discharge Permit under OAR chapter 340, division 216 or an Oregon Title V Operating Permit under OAR chapter 340, division 218.

(~~39~~40) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.

(~~40~~41) "Permit Denial Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, at which DEQ will not approve an operating permit for a new source, as provided in OAR 340-245-0100(5).

(~~41~~42) "Pollution Prevention" means any practice that reduces, eliminates, or prevents pollution at its source, as described in OAR 340-245-0140.

(~~42~~43) "Reconstructed," as defined in Oregon Laws 2018, chapter 102, section 2, means an individual project is constructed at an air contamination source that, once constructed, increases the hourly capacity of any changed equipment to emit and where the fixed capital cost of new components exceeds 50 percent of the fixed capital cost that would have been required to construct a comparable new source.

(~~43~~44) "Residential exposure location" means an exposure location outside the boundary of a source where people may reasonably be present for most hours of each day over a period of many years, including individual houses and areas that are zoned to allow residential use either exclusively or in conjunction with other uses.

(~~44~~45) "Risk" means the chance of harmful effects to human health resulting from exposure to a toxic air contaminant emitted from a TEU or an entire source under an applicable exposure scenario. For the purpose of these rules, risk includes three types of risk: excess cancer risk, chronic noncancer risk, and acute noncancer risk.

(~~45~~46) "Risk Action Level" as identified under OAR 340-245-8010 Table 1, means the levels of risk posed by a source or a TEU at which particular requirements of these rules will apply, or the owner or operator will be required to take specific action, depending on the risk posed to the area of impact as described in these rules.

(~~46~~47) "Risk assessment" means a procedure that identifies toxic air contaminant emissions from a source or a TEU and calculates the risk from those emissions. This term specifically refers to the procedures under OAR 340-245-0050(8) through (11) and may include the results of air monitoring as allowed under OAR 340-245-0050(1)(c)(B). The procedures are designated Level 1 through Level 4, respectively, with complexity of a risk assessment increasing as the level

numeration increases, (i.e., a Level 1 Risk Assessment is the simplest and a Level 4 Risk Assessment is the most complex).

(~~47~~48) "Risk limit" means a condition or requirement in a permit or permit addendum that serves to limit the risk from a source or part of a source. Such conditions or requirements may include, but are not restricted to, limits on risk from the source or part of a source, limits on emissions of one or more toxic air contaminants, limits on emissions from one or more TEUs, or limits on source operation. A Source Risk Limit established under OAR 340-245-0110 is a risk limit.

(~~48~~49) "Risk-Based Concentration" or "RBC" means the concentration of a toxic air contaminant listed in OAR 340-245-8040 Table 4 that, for the designated exposure scenario, results in an excess cancer risk of one in one million, or a noncancer hazard quotient of one for either chronic exposure or acute daily exposure.

(~~49~~50) "Risk Reduction Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, at which the owner or operator of an existing source will be required to have an approved Risk Reduction Plan under OAR 340-245-0130.

(~~50~~51) "Sensitive Population" means people with biological traits that may magnify the harmful effects of toxic air contaminant exposures that include individuals undergoing rapid rates of physiological change, such as children, pregnant women and their fetuses, and individuals with impaired physiological conditions, such as elderly people with existing diseases such as heart disease or asthma. Other sensitive populations include those with lower levels of protective biological mechanisms due to genetic factors and those with increased exposure rates.

(~~51~~52) "Significant TEU" means a TEU that is not an exempt TEU and is not an aggregated TEU.

(~~52~~53) "Source Permit Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, below which a source will be considered a de minimis source.

(~~53~~54) "Source risk" means the cumulative risk from all toxic air contaminants emitted by all significant TEUs at a source except that the source risk calculation for a de minimis source will include consideration of all of the source's TEUs, including both significant TEUs and aggregated TEUs.

(~~54~~55) "TBACT Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, below which an existing source will be considered to be in compliance with these rules without having to further reduce its risk, and above which will require the owner or operator of the existing source either to demonstrate that its significant TEUs meet TBACT or to further reduce risk from the source, under OAR 340-245-0050(1)(c).

(~~55~~56) "TLAER Level" means the risk action levels, as identified under that name in OAR 340-245-8010 Table 1, below which a new or reconstructed source will be considered to be in compliance with these rules, and above which will require the owner or operator of the new or reconstructed source to demonstrate that its significant TEUs meet TLAER, under OAR 340-245-0050(2)(b).

(~~56~~57) “Toxic air contaminant” means an air pollutant that has been determined by the EQC to cause, or reasonably be anticipated to cause, adverse effects to human health and is listed in OAR 340-245-8020 Table 2.

(~~57~~58) “Toxic Air Contaminant Permit Addendum” means written authorization that incorporates the requirements under this division into a permit by amending an Air Contaminant Discharge Permit or a Title V Operating Permit, or in the case of a source assigned to a General Air Contaminant Discharge Permit, means written authorization imposing requirements under this division as additional source-specific permit conditions.

(~~58~~59) “Toxicity Reference Value” or “TRV” means the following:

(a) For carcinogens, the air concentration corresponding to a one in one million excess cancer risk, calculated by dividing one in one million (0.000001) by the inhalation unit risk specific to that toxic air contaminant as established by the authoritative body that establishes the value, and as approved by the EQC; and

(b) For noncarcinogens, the air concentration above which relevant effects might occur to humans following environmental exposure, and below which is reasonably expected that effects will not occur.

(~~59~~60) “Toxics Best Available Control Technology” or “TBACT” means a toxic air contaminant emission limitation or emission control measure or measures based on the maximum degree of reduction of toxic air contaminants that is feasible, determined using the procedures in OAR 340-245-0220.

(~~60~~61) “Toxics emissions unit” or “TEU” means 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.

(~~61~~62) “Toxics Lowest Achievable Emission Rate” or “TLAER” means that rate of emissions which reflects the most stringent emission limitation which is achieved in practice by a source in the same class or category of sources as the proposed source, determined using the procedures in OAR 340-245-0220.

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155 & Or Laws 2018, ch. 102, §§ 3, 7 and 13
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015, 468A.035 & Or Laws 2018, ch. 102, §§ 2, 3, 6, 7 and 13
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-0050
Risk Assessment Procedures

(1) Existing source.

(a) When notified in writing by DEQ, at DEQ's discretion, the owner or operator of an existing source with an operating permit must either demonstrate that it is an exempt source or:

(A) Assess risk from the source using any of the Level 1 through Level 4 Risk Assessment procedures in sections (8) through (11);

(B) Assess risk from the source using the emissions inventory submitted under OAR 340-245-0040(1); and

(C) Follow the applicable calculation procedures under OAR 340-245-0200.

(b) If the owner or operator of an existing source proposes to modify the source in a way that would require compliance under OAR chapter 340, division 224, "New Source Review," excluding actions described in OAR 340-224-0010(2)(b) and (d)(B) that require compliance only as Type B State New Source Review, then the owner or operator must perform a risk assessment and demonstrate compliance under this division and must include its compliance demonstration under this division with its application submitted under OAR chapter 340, division 224.

(c) The owner or operator must demonstrate compliance with paragraph (A), (B), (C) or (D), and also comply with paragraph (E), if applicable.

(A) The owner or operator must demonstrate that the source is a de minimis source by following the procedure in section (7), or demonstrate that the risk from the source is less than or equal to the TBACT Level. The owner or operator of a source whose risk is less than or equal to the TBACT Level must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 with Source Risk Limits or an application that modifies the existing permit in a manner that ensures that the risk from the source will be less than or equal to the TBACT Level.

(B) Toxic air contaminant monitoring.

(i) Before the owner or operator of a source may begin air monitoring, the owner or operator must complete and submit to DEQ a Level 3 or Level 4 Risk Assessment and comply with the applicable requirements of OAR 340-245-0230.

~~(I) If the Level 3 or Level 4 Risk Assessment calculates risk from the source that exceeds an excess cancer risk of 200 in one million or a Hazard Index of 20, then the owner or operator may not delay submission of an application for a Toxics Air Contaminant Permit Addendum and subsequent implementation of the approved Risk Reduction Plan prepared under OAR 340-245-0130; and~~

(ii) An owner or operator may not delay submission of an application for an Air Contaminant Permit Addendum and subsequent implementation of the approved Risk Reduction Plan prepared under OAR 340-245-0130 if a Level 3 or 4 Risk Assessment shows that:

(I) Calculated cancer risk exceeds 200 in 1 million;

(II) Calculated noncancer risk exceeds a Hazard Index of 12 if all toxic air contaminants emitted have been assigned a noncancer TBACT Risk Action Level of a Hazard Index of 3;

(III) Calculated noncancer risk exceeds a Hazard Index of 20 if all toxic air contaminants emitted have been assigned a noncancer TBACT Risk Action Level of a Hazard Index of 5; or

(IV) Calculated noncancer Exceedance Ratio exceeds 4 if air toxic contaminants emitted include a mixture of toxic air contaminants assigned noncancer TBACT Risk Action Levels of both a Hazard Index of 3 and a Hazard Index of 5.

~~(II)~~ (iii) If the Level 3 or Level 4 Risk Assessment calculates risk from the source that does not ~~exceed an excess cancer risk of 200 in one million or a Hazard Index of 20,~~cause any exceedances of the criteria in subparagraph (ii), then DEQ shall issue a Toxics Air Contaminant Permit Addendum addressing only toxic air contaminant monitoring requirements, including a reporting and compliance schedule for implementing the Toxic Air Contaminant Monitoring Plan required under OAR 340-245-0230;

(~~ii~~iv) Upon completion and DEQ approval of toxic air contaminant monitoring in compliance with OAR 340-245-0230, the owner or operator must use the toxic air contaminant monitoring results, in association with other applicable, relevant data to determine compliance requirements under paragraph (c)(A), (C), or (D) and apply for a Toxic Air Contaminant Permit Addendum modification under OAR 340-245-0100;

(C) TBACT compliance. If the risk from the source is greater than the TBACT Level and less than or equal to the Risk Reduction Level, and all significant TEUs meet TBACT under OAR 340-245-0220, then the owner or operator must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 that includes Source Risk Limits that ensure the risk from the source will be less than or equal to the Risk Reduction Level; or

(D) Risk Reduction Plan. The owner or operator may demonstrate compliance with this paragraph under either subparagraph (i), (ii), or (iii), whichever is applicable:

(i) If the risk from the source is greater than the TBACT Level and the owner or operator can make physical, operational or process changes to reduce the risk to less than or equal to the TBACT Level, then the owner or operator must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 that includes a Risk Reduction Plan under OAR 340-245-0130 and Source Risk Limits that ensure that the risk from the source will be less than or equal to the TBACT Level;

(ii) If the risk from the source is greater than the TBACT Level and less than or equal to the Risk Reduction Level, but not all significant TEUs meet TBACT under OAR 340-245-0220, then the owner or operator must either reduce risk below the TBACT Level under subparagraph (i) or apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 that includes a Risk Reduction Plan under OAR 340-245-0130 to meet TBACT on all significant TEUs and Source Risk Limits that ensure that the risk from the source will be less than or equal to the Risk Reduction Level; or

(iii) If the risk from the source is greater than the Risk Reduction Level, then the owner or operator must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 that includes a Risk Reduction Plan under OAR 340-245-0130 with additional risk reduction

measures and Source Risk Limits that ensure that the risk from the source will be less than or equal to the Risk Reduction Level;

(E) If the risk from the source is greater than the Immediate Curtailment Level, then the owner or operator must take immediate action to reduce risk to below the Immediate Curtailment Level.

(2) New or reconstructed source.

(a)(A) The owner or operator of a proposed new or reconstructed source that is required to obtain a Simple or Standard Air Contaminant Discharge Permit, and that is not an exempt source, must also perform a risk assessment, and if applicable, apply for a Toxic Air Contaminant Permit Addendum concurrently with an application for a permit under OAR chapter 340, division 216, before a permit is issued. If DEQ approves the applications, then DEQ will incorporate the toxic air contaminant permit conditions directly into the new Simple or Standard Air Contaminant Discharge Permit and will not issue a separate Toxic Air Contaminant Permit Addendum.

(B) DEQ may require the owner or operator of a proposed new or reconstructed source that is required to obtain a Basic or a General Air Contaminant Discharge Permit to perform a risk assessment and demonstrate compliance with this division, and if applicable, apply for a Toxic Air Contaminant Permit Addendum concurrently with an application for a permit under OAR chapter 340, division 216.

(i) If DEQ approves the applications for a source that will have a Basic Air Contaminant Discharge Permit, then DEQ will incorporate the toxic air contaminant permit conditions directly into the new operating permit.

(ii) If DEQ approves the applications for a source that will be assigned to a General Air Contaminant Discharge Permit, then DEQ will issue a Toxic Air Contaminant Permit Addendum as a source-specific addendum to the new operating permit that will not be incorporated into the operating permit.

(C) Any owner or operator of a proposed new or reconstructed source that is required to perform a risk assessment must:

(i) Assess risk from the source using any of the Level 1 through Level 4 Risk Assessment procedures in sections (8) through (11);

(ii) Assess risk from the source using the emissions inventory submitted under OAR 340-245-0040(1); and

(iii) Follow the applicable calculation procedures under OAR 340-245-0200.

(b) The owner or operator of a new or reconstructed source must demonstrate compliance with either paragraph (A) or (B).

(A) The owner or operator must demonstrate that the source is a de minimis source by following the procedure in section (7), or demonstrate that the risk from the source is less than or equal to the TLAER Level. The owner or operator of a source whose risk is less than or equal to the

TLAER Level must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 or an operating permit with Source Risk Limits that ensure that the risk from the source will be less than or equal to the TLAER Level; or

(B) TLAER compliance. If the risk from the new or reconstructed source is greater than the TLAER Level and less than or equal to the Permit Denial Level, and all significant TEUs meet TLAER under OAR 340-245-0220, then the owner or operator must apply for a Toxic Air Contaminant Permit Addendum under OAR 340-245-0100 or an operating permit that includes Source Risk Limits that ensure the risk from the source will be less than or equal to the Permit Denial Level.

(3) Other sources. When notified in writing by DEQ, the owner or operator of a source that is not subject to sections (1) or (2) must perform a risk assessment using any of the Level 1 through Level 4 Risk Assessment procedures in sections (8) through (11). DEQ may notify such a source after determining through an investigation or file review that the source may emit toxic air contaminants in quantities that may cause the source's risk to exceed the Source Permit Level.

(4) A risk assessment for a source must include all TEUs at the source, as of the date that the owner or operator submits an application under OAR 340-245-0100 for a Toxic Air Contaminant Permit Addendum, except for the following:

(a) Exempt TEUs;

(b) Gas combustion TEUs, as provided under section (5); and

(c) Aggregated TEUs, except when the owner or operator is requesting approval as a de minimis source under section (7).

(5) Gas combustion exemption. This exemption applies to TEUs that solely combust natural gas, propane, liquefied petroleum gas, and, when approved by DEQ in response to a written request by an owner or operator, pretreated landfill gas and pretreated digester gas or biogas. Risk from toxic air contaminants emitted from such combustion must be calculated and reported in the risk assessment, but the risk from such toxic air contaminants may be treated as follows:

(a) At each exposure location, risk must be reported as two values:

(A) The risk from toxic air contaminants emitted from such combustion of natural gas, propane, liquefied petroleum gas, pretreated landfill gas and pretreated digester gas or biogas ; and

(B) The risk from all other toxic air contaminant emissions;

(b) At each exposure location, the risk from toxic air contaminants emitted solely from the combustion of natural gas, propane, liquefied petroleum gas, pretreated landfill gas and pretreated digester gas or biogas may be excluded from the total risk for the purpose of determining compliance with Risk Action Levels and may be omitted from any requirements determined under a Risk Reduction Plan under OAR 340-245-0130 if good air pollution control practices are followed; and

(c) Notwithstanding subsections (a) and (b), an owner or operator must include in its risk assessment any toxic air contaminants that are emitted from materials that are contacted by the flame or combustion gases from the combustion of natural gas, propane, liquefied petroleum gas, pretreated landfill gas or pretreated digester gas or biogas. Materials that may emit toxic air contaminants include but are not limited to VOCs combusted in thermal oxidizers and materials dried in direct-contact dryers.

(6) Exempt Source Determination.

(a) To be approved as an exempt source, no later than 30 days after the date that DEQ sends a notice under subsection (1)(a) or with submittal of an application for a new or reconstructed source under subsection (2)(a), the owner or operator must submit information to DEQ that demonstrates that all TEUs at the source are exempt TEUs; and

(b) Upon receipt of a submittal from an owner or operator under subsection (a), DEQ will:

(A) Review the submissions and, if approved, write a memo to the DEQ file for the source summarizing the assessment that will be:

(i) Incorporated into the review report of a permitted source upon permit issuance or renewal; or

(ii) Maintained in the file and tracked in a DEQ database.

(B) Follow the Category I public notice procedure in OAR chapter 340, division 209, prior to approving or denying the request to be considered an exempt source; and

(C) Keep records of exempt sources in a database for the emissions inventory and future communication if RBCs change or other information about risk is received such that toxic air contaminant emissions must be reevaluated.

(7) De minimis Source Determination.

(a) To be approved as a de minimis source, the owner or operator must assess risk at the capacity of each TEU, including aggregated TEUs, using any of the Level 1 through Level 4 Risk Assessment procedures in sections (8) through (11). The owner or operator must submit to DEQ the following:

(A) Information that demonstrates that the source does not exceed the Source Permit Level if the owner or operator is not required to operate and maintain control devices to remain a de minimis source;

(B) Information that demonstrates that the existing source does not exceed the Source Permit Level if the owner or operator is required to operate and maintain control devices to remain a de minimis source, and the existing operating permit includes necessary conditions to operate and maintain the control devices; or

(C) An application for a Toxic Air Contaminant Permit Addendum that demonstrates that the source does not exceed the Source Permit Level if the owner or operator is required to operate

and maintain control devices to remain a de minimis source, and the source is a new source or the existing operating permit does not include necessary conditions to operate and maintain the control devices;

(b) Upon receipt of a submittal from an owner or operator under subsection (a), DEQ will:

(A) Review the submissions and, if approved, either:

(i) Write a memo to the DEQ file for the source summarizing the assessment that will be:

(I) Incorporated into the review report of a permitted source upon permit issuance or renewal; or

(II) Maintained in the file and tracked in a DEQ database for sources that meet the criteria in paragraph (a)(A) or (B); or

(ii) Issue a Toxic Air Contaminant Permit Addendum or operating permit, for sources that meet the criteria in paragraph (a)(C);

(B) Follow the Category I public notice procedure in OAR chapter 340, division 209, prior to approving or denying the request to be considered a de minimis source; and

(C) Keep records of de minimis sources in a database for the emissions inventory and future communication if RBCs change or other information about risk is received such that toxic air contaminant emissions must be reevaluated.

(8) Level 1 Risk Assessment. To complete a Level 1 Risk Assessment, the owner or operator must comply with OAR 340-245-0210(1) and then assess risk by using the Level 1 Risk Assessment Tool in OAR 340-245-8050 Table 5 to determine toxic air contaminant concentrations at approved exposure locations.

(a) The owner or operator must follow the directions for using the Level 1 Risk Assessment Tool described in OAR 340-245-0200(2);

(b) For sources with multiple stacks, stacks must either be considered individually using OAR 340-245-8050 Tables 5A and 5B with risk calculated as the summation of individual stack risk, or the stacks combined into a single stack in a manner approved by DEQ and risk calculated for that single stack;

(c) A Level 1 Risk Assessment will not be approved if the source is located near elevated terrain that DEQ determines could invalidate the assumptions used to develop the Level 1 Risk Assessment Tool; and

(d) If DEQ concludes that the source complies with this division based on a Level 1 Risk Assessment, then DEQ will follow the Category II public notice procedure in OAR chapter 340, division 209 for issuance of the Toxic Air Contaminant Permit Addendum.

(9) Level 2 Risk Assessment. To complete a Level 2 Risk Assessment, the owner or operator must comply with OAR 340-245-0210(1) and then assess risk by submitting a modeling

protocol, conducting modeling, and performing a risk assessment. The owner or operator must use AERSCREEN or comparable screening model approved by DEQ to determine air concentrations at approved exposure locations. If DEQ concludes that the source complies with this division based on a Level 2 Risk Assessment, then DEQ will follow the Category II public notice procedure in OAR chapter 340, division 209 for issuance of the Toxic Air Contaminant Permit Addendum.

(10) Level 3 Risk Assessment. To complete a Level 3 Risk Assessment, the owner or operator must comply with OAR 340-245-0210 and then assess risk by submitting a modeling protocol and a risk assessment work plan, conducting modeling, and performing a risk assessment. The owner or operator must use AERMOD or comparable model approved by DEQ to determine air concentrations at approved exposure locations. If DEQ concludes that the source complies with this division based on a Level 3 Risk Assessment, then DEQ will follow the Category III public notice procedure in OAR chapter 340, division 209 for issuance of the Toxic Air Contaminant Permit Addendum.

(11) Level 4 Risk Assessment. To complete a Level 4 Risk Assessment, the owner or operator must comply with OAR 340-245-0210 and then assess risk by submitting a modeling protocol and a risk assessment work plan, conducting modeling, and performing a risk assessment. The owner or operator must use AERMOD or comparable model approved by DEQ to determine air concentrations at approved exposure locations. The risk assessment must include toxicity and bioaccumulation assessments, and may include proposed modifications to default exposure assumptions as specified in OAR 340-245-0210. If DEQ concludes that the source complies with this division based on a Level 4 Risk Assessment, then DEQ will follow the Category III public notice procedure in OAR chapter 340, division 209 for issuance of the Toxic Air Contaminant Permit Addendum.

(12) DEQ may require the owner or operator of a source to conduct and submit an additional multipathway risk evaluation for any level of risk assessment if DEQ determines that airborne deposition of chemicals could be important for scenarios not included in the default multipathway adjustment factor assumptions used in the original risk assessment for the source.

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155 & Or Laws 2018, ch. 102, §§ 3 and 7
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015, 468A.035 & Or Laws 2018, ch. 102, §§ 2, ~~and~~ 3, and 7
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-0200
Risk Estimates

(1) When a risk assessment is required under this division, the risk assessment must consider the toxic air contaminants and the Risk-Based Concentrations listed in OAR 340-245-8040 Table 4 to assess excess cancer and noncancer risk.

(2) Directions for the Level 1 Risk Assessment Tool.

(a) An owner or operator that chooses to perform a Level 1 Risk Assessment under OAR 340-245-0050, must calculate a separate sum of risk ratios for each of the following categories: excess cancer risk, chronic noncancer risk, and acute noncancer risk for the applicable exposure locations;

(b) When making this calculation, the owner or operator must use the emissions inventory submitted under OAR 340-245-0040(1) for:

(A) Excess cancer risk and chronic noncancer risk, the average annual emission rates; and

(B) Acute noncancer risk, the maximum daily emission rates.

(c) The owner or operator must perform each of the following calculations in paragraphs (A) and (B), except as allowed in paragraph (C):

(A) For excess cancer risk and chronic noncancer risk:

(i) For each TEU, use the stack height and distance to the nearest exposure locations to identify the appropriate dispersion factor under OAR 340-245-8050 Table 5A. If the TEU is a fugitive source, use the area and height of the building and distance to the nearest exposure locations to identify the appropriate dispersion factor under OAR 340-245-8050 Table 5C;

(ii) For each TEU and each toxic air contaminant emitted from the TEU, multiply the annual emission rate by the dispersion factor identified under subparagraph (i) to calculate an air concentration at the nearest exposure location;

(iii) For each TEU, divide the air concentration of each toxic air contaminant calculated under subparagraph (ii) by the appropriate RBC of that toxic air contaminant under OAR 340-245-8040 Table 4;

(iv) For each TEU, add up the risk from each toxic air contaminant calculated under subparagraph (iii); and

(v) For all TEUs, add up all of the risks calculated under subparagraph (iv) to obtain the total excess cancer risk in one million or the total chronic noncancer Hazard Index for the entire source. For chronic noncancer risk, Hazard Indices may be calculated by noncancer target organ or organ systems in consultation with DEQ;

(vi) When an existing source emits a mixture of toxic air contaminants assigned noncancer TBACT Risk Action Levels of both a Hazard Index of 3 and a Hazard Index of 5 as identified in OAR 340-245-8030, Table 3 and OAR 240-245-8040, Table 4 , the owner or operator must calculate an Exceedance Ratio using the formula in section (5) of this rule.

(B) For acute noncancer risk:

(i) For each TEU, use the stack height and distance to the nearest exposure location to identify the appropriate dispersion factor under OAR 340-245-8050 Table 5B. If the TEU is a fugitive

source, use the area and height of the building and distance to the nearest exposure locations to identify the appropriate dispersion factor under OAR 340-245-8050 Table 5D;

(ii) For each TEU and each toxic air contaminant emitted from the TEU, multiply the maximum daily emission rate by the dispersion factor identified under subparagraph (i) to calculate an air concentration at the nearest exposure location;

(iii) For each TEU, divide the air concentration of each toxic air contaminant calculated under subparagraph (ii) by the acute RBC for that toxic air contaminant under OAR 340-245-8040 Table 4;

(iv) For each TEU, add up the risk from each toxic air contaminant calculated under subparagraph (iii); and

(v) For all TEUs, add up all of the risks calculated under subparagraph (iv) to obtain the total acute noncancer Hazard Index for the entire source. Hazard Indices may be calculated by noncancer target organ or organ systems in consultation with DEQ;

(vi) When an existing source emits a mixture of toxic air contaminants assigned noncancer TBACT Risk Action Levels of both a Hazard Index of 3 and a Hazard Index of 5 as identified in OAR 340-245-8030, Table 3 and OAR 340-245-8040, Table 4, the owner or operator must calculate an Exceedance Ratio using the formula in section (5) of this rule.

(C) Instead of using stack height and distance or area and height of the building and distance to the nearest exposure locations to obtain the appropriate dispersion factor under OAR 340-245-8050 Table 5, the owner or operator may instead use, as a default, the most conservative dispersion factor;

(i) For stack emissions, use the dispersion factor associated with a stack height of five meters and an exposure location distance of 50 meters, which is listed in the upper-left corner of OAR 340-245-8050 Table 5A and B;

(ii) For fugitive emissions, use the dispersion factor associated with an area of less than or equal to 3,000 square feet, a building height of less than or equal to 20 feet, and an exposure location distance of 50 meters, which is listed in the upper-left corner of OAR 340-245-8050 Table 5C and D; and

(iii) Using these default dispersion factors will result in protective calculations of risk. If the risks calculated using these default dispersion factors are less than or equal to the applicable Risk Action Levels, the owner or operator may choose to use the risks calculated in this manner to show compliance with the Source Risk Limits.

(3) Sum of Risk Ratios calculation procedure for Level 2, Level 3 and Level 4 Risk Assessments.

(a) An owner or operator that chooses to perform a Level 2, Level 3 or Level 4 Risk Assessment under OAR 340-245-0050, must calculate a separate sum of risk ratio for each of the following risk categories: excess cancer risk, chronic noncancer risk, and acute noncancer risk for the applicable exposure locations;

(b) When making this calculation, the owner or operator must use the following modeled ambient concentrations for each toxic air contaminant at all exposure locations:

(A) For excess cancer risk and chronic noncancer risk, the annual average concentrations must be used; and

(B) For acute noncancer risk, the maximum daily concentrations must be used;

(c) The owner or operator must perform the following calculations for each of the risk categories listed in subsection (a) and using the concentrations in subsection (b):

(A) For each TEU, divide the modeled concentration of each toxic air contaminant by the appropriate RBC of that toxic air contaminant under OAR 340-245-8040 Table 4, ensuring that the concentration is expressed in micrograms per cubic meter;

(B) For each TEU, add up the risk from each toxic air contaminant calculated under paragraph (A); and

(C) For all TEUs at each exposure location, add up all of the risks calculated under paragraph (B) to obtain the total excess cancer risk in one million, the total chronic noncancer Hazard Index, or the total acute noncancer Hazard Index for the entire source. For noncancer risk, Hazard Indices may be calculated by noncancer target organ or organ systems in consultation with DEQ.

(D) When an existing source emits a mixture of toxic air contaminants assigned noncancer TBACT Risk Action Levels of both a Hazard Index of 3 and a Hazard Index of 5 as identified in OAR 340-245-8030, Table 3 and OAR 340-245-8040, Table 4, the owner or operator must calculate an Exceedance Ratio using the formula in section (5) of this rule

(4) Significant figures and rounding. When a risk is calculated for comparison to a Risk Action Level or Source Risk Limit:

(a) The final risk calculation must be rounded off as follows:

(A) For comparison to the Aggregate TEU Level and the Source Permit Level, round off to one decimal place; and

(B) For comparison to other Risk Action Levels or Source Risk Limits, round off to a whole number;

(b) Round up if the last figure to be rounded off is 5 or greater, otherwise round down.

(c) Rounding is not allowed when calculating Exceedance Ratios, and the final Exceedance Ratio shall be expressed to two decimal places.

(5) Calculating an Exceedance Ratio. The formula for calculating an Exceedance Ratio is:

$$Risk_{HI3} = \sum_{HI3\ chemicals} \frac{Concentration}{RBC}$$

$$Risk_{HI5} = \sum_{HI5\ chemicals} \frac{Concentration}{RBC}$$

$$Exceedance\ Ratio = \frac{Risk_{HI3}}{3} + \frac{Risk_{HI5}}{5}$$

HI3 = Toxic air contaminants assigned noncancer TBACT Risk Action Level of 3 (OAR 340-245-8030, Table 3 and OAR 340-245-8040, Table 4) .

HI5 = Toxic air contaminants assigned noncancer TBACT Risk Action Level of 5 (OAR 340-245-8030, Table 3 and OAR 340-245-8040, Table 4) .

Concentration = monitored or modeled concentrations of toxic air contaminant at exposure location for use in risk assessment.

RBC = risk-based concentrations in OAR 340-245-8040 Table 4.

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155 & Or Laws 2018, ch. 102, §§ 3 and 7
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015, 468A.035 & Or Laws 2018, ch. 102, §§ 2, ~~and~~ 3 and 7
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-0320
Standards and Criteria for Noncancer Risk Action Levels for Existing Individual Air Contamination Sources

(1) The noncancer Risk Action Levels for existing sources are identified in OAR 340-245-8010, Table 1.

(2) The toxic air contaminants for which an adjusted noncancer Risk Action Level will apply are identified in OAR 340-245-8030, Table 3, and OAR 340-245-8040, Table 4, in the column named "Noncancer TBACT Risk Action Level."

(3) An adjusted Risk Action Level will be applied to existing sources that emit one or more toxic air contaminants identified in OAR 340-245-8030, Table 3, or OAR 340-245-8040, Table 4, with a noncancer TBACT Risk Action Level of a Hazard Index of 3. For sources that emit a mixture of toxic air contaminants with noncancer TBACT Risk Action Levels of both a Hazard Index of 3 and a Hazard Index of 5, the Exceedance Ratio calculation expresses the degree to which the applicable Risk Action Level may be adjusted for each individual air contamination source.

Statutory/Other Authority: ORS 468.020 & Or Laws 2018, ch. 102, § 7.
Statutes/Other Implemented: Or Laws 2018, ch. 102, §7.
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-8010
Table 1 - Risk Action Levels

Table 1 - Risk Action Levels

[ED. NOTE: To view tables referenced in rule text, click here to view rule.]

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070 & 468A.155 and Or Laws 2018, ch. 102, § 7
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015 & 468A.035 and Or Laws 2018, ch. 102, § 7
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-8030
Table 3 - Toxicity Reference Values

Table 3 - Toxicity Reference Values

[ED. NOTE: To view tables referenced in rule text, click here to view rule.]

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070 & 468A.155 and Or Laws 2018, ch. 102, § 7
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015 & 468A.035 and Or Laws 2018, ch. 102, § 7
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

340-245-8040
Table 4 - Risk-Based Concentrations

Table 4 - Risk-Based Concentrations

[ED. NOTE: To view tables referenced in rule text, click here to view rule.]

Statutory/Other Authority: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070 & 468A.155 and Or Laws 2018, ch. 102, § 7
Statutes/Other Implemented: 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155, 468A.010, 468A.015 & 468A.035 and Or Laws 2018, ch. 102, § 7
History: DEQ 197-2018, adopt filed 11/16/2018, effective 11/16/2018

~~1/16/2018, effective 11/16/2018~~

OAR 340-245-8010 Table 1

Risk Action Levels

OAR 340-245-8010
Table 1 Risk Action Levels†

Applicability	Risk Action Level	Excess Cancer Risk per Million	Noncancer Hazard Index
New and Reconstructed Source	Aggregate TEU Level	0.5	0.1
	Source Permit Level	0.5	0.5
	Community Engagement Level	5	1
	TLAER Level	10	1
	Permit Denial Level	25	1
Existing Source	Aggregate TEU Level	2.5	0.1
	Source Permit Level	5	0.5
	Community Engagement Level	25	1
	TBACT Level	50	5[a] ~~a~~ or 3[b] or Exceedance Ratio of> 1[c]~~.~~
	Risk Reduction Level	200	10[a] or 6[b] or Exceedance Ratio of 2[c]~~.~~
	Immediate Curtailment Level	500	20[a] or 12[b] or Exceedance Ratio of 4~~.~~[c]

Footnotes for OAR 340-245-8010 Table 1:

†Facility risk that is equal to or less than the values in the table is considered compliant with the Risk Action Level. Risk Action Levels are considered consistent with benchmarks in Oregon Laws 2018, chapter 102 (Senate Bill (SB) 1541 (2018)).

a If all toxic air contaminants emitted by the source are identified as HI5 in OAR 340-245-8030, Table 3, and OAR 340-245-8040, Table 4.

b If all toxic air contaminants emitted by the source are identified as HI3 in OAR 340-245-8030, Table 3, and OAR 340-245-8040, Table 4.

c If toxic air contaminants emitted by the source include contaminants listed as both HI3 and HI5 in OAR 340-245-8030, Table 3, and OAR 340-245-8040, Table 4, and an Exceedance Ratio is required to be calculated under OAR 340-245-0200.

Stat. Auth.: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155
Stats. Implemented: ORS 468.065, 468A.010, 468A.015, 468A.025, 468A.035, 468A.040, 468A.050, 468A.070, and 468A.155

OAR 340-245-8030 Table 3

Toxicity Reference Values

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
75-07-0	Acetaldehyde		HI3	0.45	A	140	O	470	O
60-35-5	Acetamide			0.050	O				
67-64-1	Acetone		HI3			31,000	T	62,000	S
75-05-8	Acetonitrile		HI3			60	I		
107-02-8	Acrolein		HI5			0.35	A	6.9	T
79-06-1	Acrylamide		HI3	0.010	I	6.0	I		
79-10-7	Acrylic acid		HI3			1.0	I	6,000	O
107-13-1	Acrylonitrile		HI3	0.015	A	5.0	O	220	T
309-00-2	Aldrin			0.00020	I				
107-05-1	Allyl chloride		HI3	0.17	O	1.0	I		
7429-90-5	Aluminum and compounds	O	HI5			5.0	P		
7664-41-7	Ammonia		HI3			500	A	1,200	T

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
62-53-3	Aniline		HI5	0.63	O	1.0	I		
7440-36-0	Antimony and compounds	o	HI3			0.30	T	1.0	T
140-57-8	Aramite			0.14	I				
7440-38-2	Arsenic and compounds	o	HI3	0.00023	A	0.015	O	0.20	S
7784-42-1	Arsine		HI3			0.015	O	0.20	O
1332-21-4	Asbestos	k		4.3E-06	I				
103-33-3	Azobenzene			0.032	I				
71-43-2	Benzene	j	HI3	0.13	A	3.0	O	29	T
92-87-5	Benzidine (and its salts)			7.1E-06	O				
100-44-7	Benzyl chloride		HI3	0.020	O	1.0	P	240	O
7440-41-7	Beryllium and compounds	o	HI3	0.00042	A	0.0070	O	0.020	S
111-44-4	*Bis*(2-chloroethyl) ether (B~~D~~CEE)		HI3	0.0014	O			120	Tint
542-88-1	*Bis*(chloromethyl) ether		HI5	7.7E-05	O			1.4	Tint

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
117-81-7	*Bis*(2-ethylhexyl) phthalate (DEHP)			0.42	O				
75-25-2	Bromoform			0.91	I				
74-83-9	Bromomethane (Methyl bromide)		HI3			5.0	A	3,900	O
106-94-5	1-Bromopropane (*n*-propyl bromide)		HI3	0.48	A	33	T	1,700	T
106-99-0	1,3-Butadiene		HI3	0.033	A	2.0	O	660	O
78-93-3	2-Butanone (Methyl ethyl ketone)		HI3			5,000	I	5,000	S
78-92-2	*sec*-Butyl alcohol		HI3			30,000	P		
7440-43-9	Cadmium and compounds	o	HI3	0.00056	A	0.010	T	0.030	S
105-60-2	Caprolactam		HI3			2.2	O	50	O
75-15-0	Carbon disulfide		HI3			800	A	6,200	O
56-23-5	Carbon tetrachloride		HI3	0.17	A	100	I	1,900	O
463-58-1	Carbonyl sulfide		HI3			10	O	660	O
57-74-9	Chlordane	j	HI3	0.010	I	0.020	T	0.20	Tint
108171-26-2	Chlorinated paraffins	n		0.040	O				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
7782-50-5	Chlorine		HI3			0.15	A	170	T
10049-04-4	Chlorine dioxide		HI3			0.60	O	2.8	Tint
532-27-4	2-Chloroacetophenone		HI5			0.030	I		
108-90-7	Chlorobenzene		HI3			50	P		
75-68-3	1-Chloro-1,1-difluoroethane		HI3			50,000	I		
75-45-6	Chlorodifluoromethane (Freon 22)		HI3			50,000	I		
75-00-3	Chloroethane (Ethyl chloride)		HI3			30,000	O	40,000	T
67-66-3	Chloroform		HI3		A2	300	A	490	T
74-87-3	Chloromethane (Methyl chloride)		HI3			90	A	1,000	T
95-83-0	4-Chloro-*o*-phenylenediamine			0.22	O				
76-06-2	Chloropicrin		HI3			0.40	O	29	O
126-99-8	Chloroprene		HI3	0.0033	I	20	I		
95-69-2	*p*-Chloro-*o*-toluidine			0.013	O				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
18540-29-9	Chromium VI, chromate and dichromate particulate	d	HI3	8.3E-05	A	0.20	O	0.30	S
18540-29-9	Chromium VI, chromic acid aerosol mist	d	HI3	8.3E-05	A	0.0050	T	0.0050	S
7440-48-4	Cobalt and compounds	o	HI3		A2	0.10	A		
	Coke Oven Emissions			0.0016	I				
7440-50-8	Copper and compounds	o	HI3					100	O
120-71-8	*p*-Cresidine			0.023	O				
1319-77-3	Cresols (mixture), including *m*-cresol, *o*-cresol, *p*-cresol		HI3			600	O		
135-20-6	Cupferron			0.016	O				
74-90-8	Cyanide, Hydrogen		HI3			0.80	A	340	O
110-82-7	Cyclohexane		HI3			6,000	I		
50-29-3	DDT	e		0.010	I				
615-05-4	2,4-Diaminoanisole			0.15	O				
95-80-7	2,4-Diaminotoluene (2,4-Toluene diamine)			0.00091	O				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
333-41-5	Diazinon		HI3					10	Tint
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)		HI3	0.00017	P	0.20	I	1.9	Tint
106-46-7	*p*-Dichlorobenzene (1,4-Dichlorobenzene)		HI3	0.091	A	60	T	12,000	T
91-94-1	3,3'-Dichlorobenzidine			0.0029	O				
75-34-3	1,1-Dichloroethane (Ethylidene dichloride)			0.63	O				
156-60-5	*trans*-1,2-dichloroethene		HI3					790	T
75-09-2	Dichloromethane (Methylene chloride)		HI3	100	A	600	I	2,100	T
78-87-5	1,2-Dichloropropane (Propylene dichloride)		HI3			4.0	I	230	T
542-75-6	1,3-Dichloropropene		HI5	0.25	A	32	T	36	Tint
62-73-7	Dichlorovos (DDVP)		HI5			0.54	T	18	T
60-57-1	Dieldrin			0.00022	I				
	Diesel Particulate Matter		HI5	0.10	A	5.0	O		
111-42-2	Diethanolamine		HI3			0.20	P		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
112-34-5	Diethylene glycol monobutyl ether		HI3			0.10	P		
111-90-0	Diethylene glycol monoethyl ether		HI5			0.30	P		
75-37-6	1,1-Difluoroethane		HI5			40,000	I		
60-11-7	4-Dimethylaminoazobenzene			0.00077	O				
68-12-2	Dimethyl formamide		HI3			80	O		
57-14-7	1,1-Dimethylhydrazine		HI3					0.49	Tint
121-14-2	2,4-Dinitrotoluene			0.011	O				
123-91-1	1,4-Dioxane		HI3	0.20	I	30	I	7,200	T
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)			0.0045	I				
1937-37-7	Direct Black 38			7.1E-06	O				
2602-46-2	Direct Blue 6			7.1E-06	O				
16071-86-6	Direct Brown 95 (technical grade)			7.1E-06	O				
298-04-4	Disulfoton		HI3					6.0	T

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
106-89-8	Epichlorohydrin		HI3	0.043	O	3.0	O	1,300	O
106-88-7	1,2-Epoxybutane		HI5			20	O		
140-88-5	Ethyl acrylate		HI3			8.0	P		
100-41-4	Ethyl benzene		HI3	0.40	A	260	T	22,000	T
106-93-4	Ethylene dibromide (EDB, 1,2-Dibromoethane)		HI3	0.0017	A	9.0	I		
107-06-2	Ethylene dichloride (EDC, 1,2-Dichloroethane)		HI3	0.038	A	7.0	P		
107-21-1	Ethylene glycol		HI3			400	O	2,000	T
111-76-2	Ethylene glycol monobutyl ether		HI3			82	O	29,000	T
110-80-5	Ethylene glycol monoethyl ether		HI3			70	O	370	O
111-15-9	Ethylene glycol monoethyl ether acetate		HI3			60	P	140	O
109-86-4	Ethylene glycol monomethyl ether		HI3			60	O	93	O
110-49-6	Ethylene glycol monomethyl ether acetate		HI3			1.0	P		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
75-21-8	Ethylene oxide		HI3	0.00033	A	30	O	160	Tint
96-45-7	Ethylene thiourea			0.077	O				
	Fluorides		HI3			13	A	240	O
7782-41-4	Fluorine gas		HI3					16	T
50-00-0	Formaldehyde		HI3	0.17	A	9.0	O	49	T
111-30-8	Glutaraldehyde		HI5			0.080	O	4.1	T
76-44-8	Heptachlor			0.00077	I				
1024-57-3	Heptachlor epoxide			0.00038	I				
118-74-1	Hexachlorobenzene			0.0020	O				
87-68-3	Hexachlorobutadiene			0.045	I				
608-73-1	Hexachlorocyclohexanes (mixture) including but not limited to:			0.00091	O				
319-84-6	Hexachlorocyclohexane, *alpha-*			0.00091	O				
319-85-7	Hexachlorocyclohexane, *beta-*			0.00091	O				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
58-89-9	Hexachlorocyclohexane, *gamma*- (Lindane)			0.0032	O				
77-47-4	Hexachlorocyclopentadiene		HI3			0.20	I	110	Tint
67-72-1	Hexachloroethane		HI3			30	I	58,000	T
822-06-0	Hexamethylene-1,6-diisocyanate		HI5			0.069	T	0.21	Tint
110-54-3	Hexane		HI3			700	A		
302-01-2	Hydrazine		HI3	0.00020	O	0.030	P	5.2	Tint
7647-01-0	Hydrochloric acid		HI3			20	A	2,100	O
7664-39-3	Hydrogen fluoride		HI3			13	A	16	T
7783-06-4	Hydrogen sulfide		HI3			2.0	A	98	S
78-59-1	Isophorone		HI3			2,000	O		
67-63-0	Isopropyl alcohol		HI3			200	P	3,200	O
98-82-8	Isopropylbenzene (Cumene)		HI3			400	I		
7439-92-1	Lead and compounds	o	HI3		A2	0.15	A	0.15	S
108-31-6	Maleic anhydride		HI5			0.70	O		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
7439-96-5	Manganese and compounds	o	HI3			0.090	A	0.30	S
7439-97-6	Mercury and compounds	o	HI3			0.30	A	0.60	O
67-56-1	Methanol		HI3			4,000	A	28,000	O
101-14-4	4,4'-Methylene *bis*(2-chloroaniline) (MOCA)			0.0023	O				
101-77-9	4,4'-Methylenedianiline (and its dichloride)		HI5	0.0022	O	20	O		
101-68-8	Methylene diphenyl diisocyanate (MDI)		HI3			0.080	O	12	O
108-10-1	Methyl isobutyl ketone (MIBK, Hexone)		HI3			3,000	I		
624-83-9	Methyl isocyanate		HI3			1.0	O		
80-62-6	Methyl methacrylate		HI5			700	I		
1634-04-4	Methyl *tert*-butyl ether		HI3	3.8	O	8,000	O	8,000	O
90-94-8	Michler's ketone			0.0040	O				
91-20-3	Naphthalene		HI3	0.029	A	3.7	T	200	S
	Nickel compounds, insoluble	f	HI3	0.0038	A	0.014	O	0.20	O

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
	Nickel compounds, soluble	f	HI3		A2	0.014	A	0.20	O
7697-37-2	Nitric acid		HI5					86	O
98-95-3	Nitrobenzene		HI3	0.025	I	9.0	I		
79-46-9	2-Nitropropane		HI5			20	I		
924-16-3	*N*-Nitrosodi-*n*-butylamine			0.00032	O				
55-18-5	*N*-Nitrosodiethylamine			1.0E-04	O				
62-75-9	*N*-Nitrosodimethylamine			0.00022	O				
86-30-6	*N*-Nitrosodiphenylamine			0.38	O				
156-10-5	*p*-Nitrosodiphenylamine			0.16	O				
621-64-7	*N*-Nitrosodi-*n*-propylamine			0.00050	O				
10595-95-6	*N*-Nitrosomethylethylamine			0.00016	O				
59-89-2	*N*-Nitrosomorpholine			0.00053	O				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
100-75-4	*N*-Nitrosopiperidine			0.00037	O				
930-55-2	*N*-Nitrosopyrrolidine			0.0017	O				
8014-95-7	Oleum (fuming sulfuric acid)		HI5					120	O
56-38-2	Parathion		HI3					0.020	Tint
87-86-5	Pentachlorophenol			0.20	O				
108-95-2	Phenol		HI3			200	O	5,800	O
75-44-5	Phosgene		HI3			0.30	A	4.0	O
7803-51-2	Phosphine		HI3			0.80	A		
7664-38-2	Phosphoric acid		HI3			10	A		
12185-10-3	Phosphorus, white		HI3			9.0	A	20	T
85-44-9	Phthalic anhydride		HI3			20	O		
	Polybrominated diphenyl ethers (PBDEs)	g	HI3					6.0	Tint
1336-36-3	Polychlorinated biphenyls (PCBs)			0.010	A				
	Polychlorinated biphenyls (PCBs) TEQ	h	HI3	2.6E-08	A1	4.E-05	O		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
32598-13-3	PCB 77 [3,3',4,4'-tetrachlorobiphenyl]	h	HI3	0.00026	A1	0.40	O		
70362-50-4	PCB 81 [3,4,4',5-tetrachlorobiphenyl]	h	HI3	8.8E-05	A1	0.13	O		
32598-14-4	PCB 105 [2,3,3',4,4'-pentachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
74472-37-0	PCB 114 [2,3,4,4',5-pentachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
31508-00-6	PCB 118 [2,3',4,4',5-pentachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
65510-44-3	PCB 123 [2,3',4,4',5'-pentachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
57465-28-8	PCB 126 [3,3',4,4',5-pentachlorobiphenyl]	h	HI3	2.6E-07	A1	0.00040	O		
38380-08-4	PCB 156 [2,3,3',4,4',5-hexachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
69782-90-7	PCB 157 [2,3,3',4,4',5'-hexachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
52663-72-6	PCB 167 [2,3',4,4',5,5'-hexachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
32774-16-6	PCB 169 [3,3',4,4',5,5'-hexachlorobiphenyl]	h	HI3	8.8E-07	A1	0.0013	O		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
39635-31-9	PCB 189 [2,3,3',4,4',5,5'-heptachlorobiphenyl]	h	HI3	0.00088	A1	1.3	O		
	Polychlorinated dibenzo-*p*-dioxins (PCDDs) & dibenzofurans (PCDFs) TEQ	h	HI3	2.6E-08	A1	4.0E-05	O		
1746-01-6	2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)		HI3	2.6E-08	A	4.0E-05	O		
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD)	h	HI3	2.6E-08	A1	4.0E-05	O		
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	h	HI3	2.6E-07	A1	0.00040	O		
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	h	HI3	2.6E-07	A1	0.00040	O		
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD)	h	HI3	2.6E-07	A1	0.00040	O		
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD)	h	HI3	2.6E-06	A1	0.0040	O		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
3268-87-9	Octachlorodibenzo-*p*-dioxin (OCDD)	h	HI3	8.8E-05	A1	0.13	O		
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran (TcDF)	h	HI3	2.6E-07	A1	0.00040	O		
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	h	HI3	8.8E-07	A1	0.0013	O		
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	h	HI3	8.8E-08	A1	0.00013	O		
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	h	HI3	2.6E-07	A1	0.00040	O		
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	h	HI3	2.6E-07	A1	0.00040	O		
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	h	HI3	2.6E-07	A1	0.00040	O		
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	h	HI3	2.6E-07	A1	0.00040	O		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	h	HI3	2.6E-06	A1	0.0040	O		
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	h	HI3	2.6E-06	A1	0.0040	O		
39001-02-0	Octachlorodibenzofuran (OCDF)	h	HI3	8.8E-05	A1	0.13	O		
	Polycyclic aromatic hydrocarbons (PAHs)			0.0017	A				
191-26-4	Anthanthrene	i		0.0042	A1				
56-55-3	Benz[a]anthracene	i		0.0083	A1				
50-32-8	Benzo[a]pyrene	m	HI3	0.0017	A	0.0020	I	0.0020	I
205-99-2	Benzo[b]fluoranthene	i		0.0021	A1				
205-12-9	Benzo[c]fluorene	i		8.3E-05	A1				
191-24-2	Benzo[g,h,i]perylene	i		0.19	A1				
205-82-3	Benzo[j]fluoranthene	i		0.0056	A1				
207-08-9	Benzo[k]fluoranthene	i		0.056	A1				
218-01-9	Chrysene	i		0.017	A1				

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
27208-37-3	Cyclopenta[c,d]pyrene	i		0.0042	A1				
53-70-3	Dibenz[a,h]anthracene	i		0.00017	A1				
192-65-4	Dibenzo[a,e]pyrene	i		0.0042	A1				
189-64-0	Dibenzo[a,h]pyrene	i		0.0019	A1				
189-55-9	Dibenzo[a,i]pyrene	i		0.0028	A1				
191-30-0	Dibenzo[a,l]pyrene	i		5.6E-05	A1				
206-44-0	Fluoranthene	i		0.021	A1				
193-39-5	Indeno[1,2,3-cd]pyrene	i		0.024	A1				
3697-24-3	5-Methylchrysene	i		0.0017	A1				
7496-02-8	6-Nitrochrysene	i		0.00017	A1				
7758-01-2	Potassium bromate			0.0071	O				
1120-71-4	1,3-Propane sultone			0.0014	O				
123-38-6	Propionaldehyde		HI5			8.0	I		
115-07-1	Propylene		HI5			3,000	O		
6423-43-4	Propylene glycol dinitrate		HI5			0.27	T	20	T

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
107-98-2	Propylene glycol monomethyl ether		HI3			7,000	O		
75-56-9	Propylene oxide		HI3	0.27	O	30	O	3,100	O
	Refractory Ceramic Fibers	k	HI5			0.030	T		
7783-07-5	Selenide, hydrogen		HI3					5.0	O
7782-49-2	Selenium and compounds	j, o	HI3				A3	2.0	S
7631-86-9	Silica, crystalline (respirable)		HI5			3.0	O		
1310-73-2	Sodium hydroxide		HI3					8.0	O
100-42-5	Styrene		HI3			1,000	A	21,000	S
7664-93-9	Sulfuric acid		HI5			1.0	O	120	O
505-60-2	Sulfur Mustard		HI3					0.70	T
7446-71-9	Sulfur trioxide		HI5			1.0	O	120	O
630-20-6	1,1,1,2-Tetrachloroethane			0.14	I				
79-34-5	1,1,2,2-Tetrachloroethane			0.017	O				
127-18-4	Tetrachloroethene (Perchloroethylene)		HI3	3.8	A	41	T	41	T
811-97-2	1,1,1,2-Tetrafluoroethane		HI3			80,000	I		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
62-55-5	Thioacetamide			0.00059	O				
7550-45-0	Titanium tetrachloride		HI3			0.10	T	10	Tint
108-88-3	Toluene		HI3			5,000	A	7,500	T
26471-62-5	Toluene diisocyanates (2,4- and 2,6-)		HI3	0.091	O	0.021	A	0.071	T
8001-35-2	Toxaphene (Polychlorinated camphenes)			0.0031	I				
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)		HI3			5,000	A	11,000	T
79-00-5	1,1,2-Trichloroethane (Vinyl trichloride)			0.063	O				
79-01-6	Trichloroethene (TCE, Trichloroethylene)		HI3	0.24	A	2.1	T	2.1	Tint
88-06-2	2,4,6-Trichlorophenol			0.050	O				
96-18-4	1,2,3-Trichloropropane		HI5			0.30	I	1.8	T
121-44-8	Triethylamine		HI3			200	O	2,800	O
526-73-8	1,2,3-Trimethylbenzene		HI3			60	I		
95-63-6	1,2,4-Trimethylbenzene		HI3			60	I		

OAR 340-245-8030
Table 3 Toxicity Reference Values

			Noncancer TBACT RAL [p]	Toxicity Reference Values (TRVs)					
				Chronic Cancer[a]		Chronic Noncancer[b]		Acute Noncancer[c]	
CAS#	Chemical	Notes		(µg/m³)	Notes	(µg/m³)	Notes	(µg/m³)	Notes
108-67-8	1,3,5-Trimethylbenzene		HI3			60	I		
51-79-6	Urethane (Ethyl carbamate)			0.0034	O				
7440-62-2	Vanadium (fume or dust)		HI3			0.10	T	0.80	T
1314-62-1	Vanadium pentoxide		HI3	0.00012	P	0.0070	P	30	O
108-05-4	Vinyl acetate	J	HI3			200	O	200	I
593-60-2	Vinyl bromide		HI5			3.0	I		
75-01-4	Vinyl chloride		HI3	0.11	I	100	I	1,300	T
75-35-4	Vinylidene chloride	J	HI3			200	I	200	I
1330-20-7	Xylene (mixture), including *m*-xylene, *o*-xylene, *p*-xylene		HI3			220	A	8,700	T

Notes:

a TRV based on a 1 in 1 million excess cancer risk.
TRV = $1x10^{-6}$ / IUR, where IUR = chemical-specific inhalation unit risk value [$(\mu g/m^3)^{-1}$].

b TRV based on chronic non-cancer value from authoritative sources ($\mu g/m^3$).

c TRV based on acute or subchronic non-cancer value from authoritative sources ($\mu g/m^3$).

d The TRVs presented for chromium are applicable to hexavalent chromium.

e DDT TRVs apply to the sum of DDT, DDE, and DDD compounds.

f As recommended by the ATSAC in 2018, the two categories of nickel compounds contain the following specific nickel compounds:

Soluble nickel compounds are considered to be emitted mainly in aerosol form, to be less potent carcinogens than insoluble nickel compounds, and include nickel acetate, nickel chloride, nickel carbonate, nickel hydroxide, nickelocene, nickel sulfate, nickel sulfate hexahydrate, nickel nitrate hexahydrate, nickel carbonate hydroxide.

Insoluble nickel compounds are considered to be emitted mainly in particulate form, to be more potent carcinogens than soluble nickel compounds, and to include nickel subsulfide, nickel oxide, nickel sulfide, nickel metal.

g TRVs apply to octabrominated diphenyl ethers (CAS# 32536-52-0) and pentabrominated diphenyl ethers (CAS# 32534-81-9), including BDE-99.

h TRV for chronic cancer calculated by applying toxicity equivalency factor to 2,3,7,8-TCDD TRV.

i TRV for chronic cancer calculated by applying toxicity equivalency factor to benzo[a]pyrene TRV.

j If the short-term toxicity reference value is lower than the chronic noncancer toxicity reference value, the chronic noncancer toxicity reference value was used for the short-term toxicity reference value because chronic noncancer toxicity reference values are generally more reliable.

k TRVs for asbestos and refractory ceramic fibers are in units of fibers/cm^3.

m Because benzo[a]pyrene can cause developmental effects, the chronic noncancer TRV is also used as the acute noncancer TRV.

n Chlorinated paraffins of average chain length of C12, approximately 60% chlorine by weight.

o An inorganic chemical designated with "and compounds" indicates that the TRV applies to the sum of all forms of the chemical, expressed as the inorganic element.

p. Noncancer TBACT RAL = noncancer Toxics Best Available Control Technology Risk Action Level, OAR 340-245-8010, Table 1.

Legend:

A = ATSAC, DEQ Air Toxics Science Advisory Committee, 2018.
A1 = ATSAC, 2018. TRV for cancer calculated by applying toxic equivalency factor.
A2 = Because the ATSAC decided it was inappropriate to develop an ABC based on carcinogenic effects, DEQ did not obtain a cancer TRV from the other authoritative sources.
A3 = Because the ATSAC decided it was inappropriate to develop an ABC based on noncarcinogenic effects, DEQ did not obtain a TRV from the other authoritative sources.
CAS# = Chemical Abstracts Service number
I = IRIS, EPA integrated risk information system
O = OEHHA, California Environmental Protection Agency, Office of Environmental Health Hazard Assessment
P = PPRTV, EPA preliminary peer reviewed toxicity value
S = SGC, DEQ short-term guideline concentration
T = ATSDR, U.S. Agency for Toxic Substances and Disease Registry
TEQ = toxic equivalency, relative to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin.
Tint = ATSDR, intermediate minimal risk level
TRV = toxicity reference value

Stat. Auth.: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155
Stats. Implemented: ORS 468.065, 468A.010, 468A.015, 468A.025, 468A.035, 468A.040, 468A.050, 468A.070, and 468A.155 & Or Laws 2018, ch.102, § 7.

340-245-8040 Table 4

Risk-Based Concentrations

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
75-07-0	Acetaldehyde		HI3	0.45	140	12	620	5.5	620	470
60-35-5	Acetamide			0.050		1.3		0.60		
67-64-1	Acetone		HI3		31,000		140,000		140,000	62,000
75-05-8	Acetonitrile		HI3		60		260		260	
107-02-8	Acrolein		HI5		0.35		1.5		1.5	6.9
79-06-1	Acrylamide	g	HI3	0.0059	6.0	0.062	26	0.12	26	
79-10-7	Acrylic acid		HI3		1.0		4.4		4.4	6,000
107-13-1	Acrylonitrile		HI3	0.015	5.0	0.38	22	0.18	22	220
309-00-2	Aldrin			0.00020		0.0053		0.0024		
107-05-1	Allyl chloride		HI3	0.17	1.0	4.3	4.4	2.0	4.4	
7429-90-5	Aluminum and compounds	l	HI5		5.0		22		22	
7664-41-7	Ammonia		HI3		500		2,200		2,200	1,200
62-53-3	Aniline		HI5	0.63	1.0	16	4.4	7.5	4.4	
7440-36-0	Antimony and compounds	l	HI3		0.30		1.3		1.3	
140-57-8	Aramite			0.14		3.7		1.7		
7440-38-2	Arsenic and compounds	l	HI3	2.4E-05	0.00017	0.0013	0.0024	0.00062	0.0024	0.20
7784-42-1	Arsine		HI3		0.015		0.066		0.066	0.20
1332-21-4	Asbestos	I		4.3E-06		0.00011		5.2E-05		
103-33-3	Azobenzene			0.032		0.84		0.39		
71-43-2	Benzene		HI3	0.13	3.0	3.3	13	1.5	13	29
92-87-5	Benzidine (and its salts)	G		4.2E-06		4.4E-05		8.6E-05		
100-44-7	Benzyl chloride		HI3	0.020	1.0	0.53	4.4	0.24	4.4	240
7440-41-7	Beryllium and compounds	L	HI3	0.00042	0.0070	0.011	0.031	0.0050	0.031	0.020

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
111-44-4	*Bis*(2-chloroethyl) ether (B~~D~~CEE)		HI3	0.0014		0.037		0.017		120
542-88-1	*Bis*(chloromethyl) ether		HI5	7.7E-05		0.0020		0.00092		1.4
117-81-7	*Bis*(2-ethylhexyl) phthalate (DEHP)	C		0.080		11		5.0		
75-25-2	Bromoform			0.91		24		11		
74-83-9	Bromomethane (Methyl bromide)		HI3		5.0		22		22	3,900
106-94-5	1-Bromopropane (n-propyl bromide)		HI3	0.48	33	12	150	5.7	150	1,700
106-99-0	1,3-Butadiene		HI3	0.033	2.0	0.86	8.8	0.40	8.8	660
78-93-3	2-Butanone (Methyl ethyl ketone)		HI3		5,000		22,000		22,000	5,000
78-92-2	*sec*-Butyl alcohol		HI3		30,000		130,000		130,000	
7440-43-9	Cadmium and compounds	c, l	HI3	0.00056	0.0050	0.014	0.037	0.0067	0.037	0.030
105-60-2	Caprolactam		HI3		2.2		9.7		9.7	50
75-15-0	Carbon disulfide		HI3		800		3,500		3,500	6,200
56-23-5	Carbon tetrachloride		HI3	0.17	100	4.3	440	2.0	440	1,900
463-58-1	Carbonyl sulfide		HI3		10		44		44	660
57-74-9	Chlordane		HI3	0.010	0.020	0.26	0.088	0.12	0.088	0.20
108171-26-2	Chlorinated paraffins	j		0.040		1.0		0.48		
7782-50-5	Chlorine		HI3		0.15		0.66		0.66	170
10049-04-4	Chlorine dioxide		HI3		0.60		2.6		2.6	2.8
532-27-4	2-Chloroacetophenone		HI5		0.030		0.13		0.13	
108-90-7	Chlorobenzene		HI3		50		220		220	
75-68-3	1-Chloro-1,1-difluoroethane		HI3		50,000		220,000		220,000	
75-45-6	Chlorodifluoromethane (Freon 22)		HI3		50,000		220,000		220,000	

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
75-00-3	Chloroethane (Ethyl chloride)		HI3		30,000		130,000		130,000	40,000
67-66-3	Chloroform		HI3		300		1,300		1,300	490
74-87-3	Chloromethane (Methyl chloride)		HI3		90		400		400	1,000
95-83-0	4-Chloro-*o*-phenylenediamine			0.22		5.7		2.6		
76-06-2	Chloropicrin		HI3		0.40		1.8		1.8	29
126-99-8	Chloroprene		HI3	0.0033	20	0.087	88	0.040	88	
95-69-2	*p*-Chloro-*o*-toluidine			0.013		0.34		0.16		
18540-29-9	Chromium VI, chromate and dichromate particulate	c, d	HI3	3.1E-05	0.083	0.00052	0.88	0.0010	0.88	0.30
18540-29-9	Chromium VI, chromic acid aerosol mist	c, d	HI3	3.1E-05	0.0021	0.00052	0.022	0.0010	0.022	0.0050
7440-48-4	Cobalt and compounds	l	HI3		0.10		0.44		0.44	
	Coke Oven Emissions	g		0.00095		0.0100		0.019		
7440-50-8	Copper and compounds	l	HI3							100
120-71-8	*p*-Cresidine			0.023		0.60		0.28		
1319-77-3	Cresols (mixture), including *m*-cresol, *o*-cresol, *p*-cresol		HI3		600		2,600		2,600	
135-20-6	Cupferron			0.016		0.41		0.19		
74-90-8	Cyanide, Hydrogen		HI3		0.80		3.5		3.5	340
110-82-7	Cyclohexane		HI3		6,000		26,000		26,000	
50-29-3	DDT	e		0.010		0.27		0.12		
615-05-4	2,4-Diaminoanisole			0.15		3.9		1.8		
95-80-7	2,4-Diaminotoluene (2,4-Toluene diamine)			0.00091		0.024		0.011		
333-41-5	Diazinon		HI3							10
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	g	HI3	9.8E-05	0.20	0.0010	0.88	0.0020	0.88	1.9

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
106-46-7	*p*-Dichlorobenzene (1,4-Dichlorobenzene)		HI3	0.091	60	2.4	260	1.1	260	12,000
91-94-1	3,3'-Dichlorobenzidine			0.0029		0.076		0.035		
75-34-3	1,1-Dichloroethane (Ethylidene dichloride)			0.63		16		7.5		
156-60-5	*trans*-1,2-dichloroethene		HI3							790
75-09-2	Dichloromethane (Methylene chloride)		HI3	59	600	620	2,600	1,200	2,600	2,100
78-87-5	1,2-Dichloropropane (Propylene dichloride)		HI3		4.0		18		18	230
542-75-6	1,3-Dichloropropene		HI5	0.25	32	6.5	140	3.0	140	36
62-73-7	Dichlorovos (DDVP)		HI5		0.54		2.4		2.4	18
60-57-1	Dieldrin			0.00022		0.0057		0.0026		
	Diesel Particulate Matter		HI5	0.10	5.0	2.6	22	1.2	22	
111-42-2	Diethanolamine		HI3		0.20		0.88		0.88	
112-34-5	Diethylene glycol monobutyl ether		HI3		0.10		0.44		0.44	
111-90-0	Diethylene glycol monoethyl ether		HI5		0.30		1.3		1.3	
75-37-6	1,1-Difluoroethane		HI5		40,000		180,000		180,000	
60-11-7	4-Dimethylaminoazobenzene			0.00077		0.020		0.0092		
68-12-2	Dimethyl formamide		HI3		80		350		350	
57-14-7	1,1-Dimethylhydrazine		HI3							0.49
121-14-2	2,4-Dinitrotoluene			0.011		0.29		0.13		
123-91-1	1,4-Dioxane		HI3	0.20	30	5.2	130	2.4	130	7,200
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)			0.0045		0.12		0.055		
1937-37-7	Direct Black 38			7.1E-06		0.00019		8.6E-05		
2602-46-2	Direct Blue 6			7.1E-06		0.00019		8.6E-05		

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
16071-86-6	Direct Brown 95 (technical grade)			7.1E-06		0.00019		8.6E-05		
298-04-4	Disulfoton		HI3							6.0
106-89-8	Epichlorohydrin		HI3	0.043	3.0	1.1	13	0.52	13	1,300
106-88-7	1,2-Epoxybutane		HI5		20		88		88	
140-88-5	Ethyl acrylate		HI3		8.0		35		35	
100-41-4	Ethyl benzene		HI3	0.40	260	10	1,100	4.8	1,100	22,000
106-93-4	Ethylene dibromide (EDB, 1,2-Dibromoethane)		HI3	0.0017	9.0	0.043	40	0.020	40	
107-06-2	Ethylene dichloride (EDC, 1,2-Dichloroethane)		HI3	0.038	7.0	1.0	31	0.46	31	
107-21-1	Ethylene glycol		HI3		400		1,800		1,800	2,000
111-76-2	Ethylene glycol monobutyl ether		HI3		82		360		360	29,000
110-80-5	Ethylene glycol monoethyl ether		HI3		70		310		310	370
111-15-9	Ethylene glycol monoethyl ether acetate		HI3		60		260		260	140
109-86-4	Ethylene glycol monomethyl ether		HI3		60		260		260	93
110-49-6	Ethylene glycol monomethyl ether acetate		HI3		1.0		4.4		4.4	
75-21-8	Ethylene oxide	g	HI3	0.00020	30	0.0021	130	0.0040	130	160
96-45-7	Ethylene thiourea			0.077		2.0		0.92		
	Fluorides	c	HI3		2.3		20		20	240
7782-41-4	Fluorine gas		HI3							16
50-00-0	Formaldehyde		HI3	0.17	9.0	4.3	40	2.0	40	49
111-30-8	Glutaraldehyde		HI5		0.080		0.35		0.35	4.1
76-44-8	Heptachlor			0.00077		0.020		0.0092		
1024-57-3	Heptachlor epoxide			0.00038		0.010		0.0046		

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
118-74-1	Hexachlorobenzene			0.0020		0.051		0.024		
87-68-3	Hexachlorobutadiene			0.045		1.2		0.55		
608-73-1	Hexachlorocyclohexanes (mixture) including but not limited to:	c		0.00017		0.018		0.0084		
319-84-6	Hexachlorocyclohexane, *alpha-*	c		0.00017		0.018		0.0084		
319-85-7	Hexachlorocyclohexane, *beta-*	c		0.00017		0.018		0.0084		
58-89-9	Hexachlorocyclohexane, *gamma-* (Lindane)	c		0.00060		0.065		0.030		
77-47-4	Hexachlorocyclopentadiene		HI3		0.20		0.88		0.88	110
67-72-1	Hexachloroethane		HI3		30		130		130	58,000
822-06-0	Hexamethylene-1,6-diisocyanate		HI5		0.069		0.30		0.30	0.21
110-54-3	Hexane		HI3		700		3,100		3,100	
302-01-2	Hydrazine		HI3	0.00020	0.030	0.0053	0.13	0.0024	0.13	5.2
7647-01-0	Hydrochloric acid		HI3		20		88		88	2,100
7664-39-3	Hydrogen fluoride	c	HI3		2.1		19		19	16
7783-06-4	Hydrogen sulfide		HI3		2.0		8.8		8.8	98
78-59-1	Isophorone		HI3		2,000		8,800		8,800	
67-63-0	Isopropyl alcohol		HI3		200		880		880	3,200
98-82-8	Isopropylbenzene (Cumene)		HI3		400		1,800		1,800	
7439-92-1	Lead and compounds	c, l	HI3		0.15		0.66		0.66	0.15
108-31-6	Maleic anhydride		HI5		0.70		3.1		3.1	
7439-96-5	Manganese and compounds	l	HI3		0.090		0.40		0.40	0.30
7439-97-6	Mercury and compounds	c, l	HI3		0.077		0.63		0.63	0.60
67-56-1	Methanol		HI3		4,000		18,000		18,000	28,000

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
101-14-4	4,4'-Methylene *bis*(2-chloroaniline) (MOCA)			0.0023		0.060		0.028		
101-77-9	4,4'-Methylenedianiline (and its dichloride)		HI5	0.00030	20	0.023	88	0.010	88	
101-68-8	Methylene diphenyl diisocyanate (MDI)		HI3		0.080		0.35		0.35	12
108-10-1	Methyl isobutyl ketone (MIBK, Hexone)		HI3		3,000		13,000		13,000	
624-83-9	Methyl isocyanate		HI3		1.0		4.4		4.4	
80-62-6	Methyl methacrylate		HI5		700		3,100		3,100	
1634-04-4	Methyl *tert*-butyl ether		HI3	3.8	8,000	100	35,000	46	35,000	8,000
90-94-8	Michler's ketone			0.0040		0.10		0.048		
91-20-3	Naphthalene	c	HI3	0.029	3.7	0.76	16	0.35	16	200
	Nickel compounds, insoluble	f	HI3	0.0038	0.014	0.10	0.062	0.046	0.062	0.20
	Nickel compounds, soluble	f	HI3		0.014		0.062		0.062	0.20
7697-37-2	Nitric acid		HI5							86
98-95-3	Nitrobenzene		HI3	0.025	9.0	0.65	40	0.30	40	
79-46-9	2-Nitropropane		HI5		20		88		88	
924-16-3	*N*-Nitrosodi-*n*-butylamine			0.00032		0.0084		0.0039		
55-18-5	*N*-Nitrosodiethylamine	g		5.9E-05		0.00062		0.0012		
62-75-9	*N*-Nitrosodimethylamine	g		0.00013		0.0013		0.0026		
86-30-6	*N*-Nitrosodiphenylamine			0.38		10		4.6		
156-10-5	*p*-Nitrosodiphenylamine			0.16		4.1		1.9		
621-64-7	*N*-Nitrosodi-*n*-propylamine			0.00050		0.013		0.0060		
10595-95-6	*N*-Nitrosomethylethylamine			0.00016		0.0041		0.0019		
59-89-2	*N*-Nitrosomorpholine			0.00053		0.014		0.0063		
100-75-4	*N*-Nitrosopiperidine			0.00037		0.0096		0.0044		

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
930-55-2	*N*-Nitrosopyrrolidine			0.0017		0.043		0.020		
8014-95-7	Oleum (fuming sulfuric acid)		HI5							120
56-38-2	Parathion		HI3							0.020
87-86-5	Pentachlorophenol			0.20		5.1		2.4		
108-95-2	Phenol		HI3		200		880		880	5,800
75-44-5	Phosgene		HI3		0.30		1.3		1.3	4.0
7803-51-2	Phosphine		HI3		0.80		3.5		3.5	
7664-38-2	Phosphoric acid		HI5		10		44		44	
12185-10-3	Phosphorus, white		HI3		9.0		40		40	20
85-44-9	Phthalic anhydride		HI3		20		88		88	
	Polybrominated diphenyl ethers (PBDEs)	h	HI3							6.0
1336-36-3	Polychlorinated biphenyls (PCBs)	c		0.00053		0.020		0.0092		
	Polychlorinated biphenyls (PCBs) TEQ	c	HI3	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	
32598-13-3	PCB 77 [3,3',4,4'-tetrachlorobiphenyl]	c	HI3	1.0E-05	0.0013	0.00090	0.26	0.00042	0.26	
70362-50-4	PCB 81 [3,4,4',5-tetrachlorobiphenyl]	c	HI3	3.4E-06	0.00042	0.00030	0.085	0.00014	0.085	
32598-14-4	PCB 105 [2,3,3',4,4'-pentachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
74472-37-0	PCB 114 [2,3,4,4',5-pentachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
31508-00-6	PCB 118 [2,3',4,4',5-pentachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
65510-44-3	PCB 123 [2,3',4,4',5'-pentachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
57465-28-8	PCB 126 [3,3',4,4',5-pentachlorobiphenyl]	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
38380-08-4	PCB 156 [2,3,3',4,4',5-hexachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
69782-90-7	PCB 157 [2,3,3',4,4',5'-hexachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
52663-72-6	PCB 167 [2,3',4,4',5,5'-hexachlorobiphenyl]	c	HI3	3.4E-05	0.0042	0.0030	0.85	0.0014	0.85	
32774-16-6	PCB 169 [3,3',4,4',5,5'-hexachlorobiphenyl]	c	HI3	3.4E-08	4.2E-06	3.0E-06	0.00085	1.4E-06	0.00085	
39635-31-9	PCB 189 [2,3,3',4,4',5,5'-heptachlorobiphenyl]	c	HI3	0.00088	1.3	0.023	5.7	0.011	5.7	
	Polychlorinated dibenzo-*p*-dioxins (PCDDs) & dibenzofurans (PCDFs) TEQ	c	HI3	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	
1746-01-6	2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)	c	HI3	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (PeCDD)	c	HI3	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (HxCDD)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (HxCDD)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (HpCDD)	c	HI3	1.0E-07	1.3E-05	9.0E-06	0.0026	4.2E-06	0.0026	
3268-87-9	Octachlorodibenzo-*p*-dioxin (OCDD)	c	HI3	3.4E-06	0.00042	0.00030	0.085	0.00014	0.085	

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran (TcDF)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	c	HI3	3.4E-08	4.2E-06	3.0E-06	0.00085	1.4E-06	0.00085	
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	c	HI3	3.4E-09	4.2E-07	3.0E-07	8.5E-05	1.4E-07	8.5E-05	
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	c	HI3	1.0E-08	1.3E-06	9.0E-07	0.00026	4.2E-07	0.00026	
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	c	HI3	1.0E-07	1.3E-05	9.0E-06	0.0026	4.2E-06	0.0026	
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	c	HI3	1.0E-07	1.3E-05	9.0E-06	0.0026	4.2E-06	0.0026	
39001-02-0	Octachlorodibenzofuran (OCDF)	c	HI3	3.4E-06	0.00042	0.00030	0.085	0.00014	0.085	
	Polycyclic aromatic hydrocarbons (PAHs)	c, g		4.3E-05		0.0016		0.0030		
191-26-4	Anthanthrene	c, g		0.00011		0.0039		0.0076		
56-55-3	Benz[a]anthracene	c, g		0.00021		0.0078		0.015		
50-32-8	Benzo[a]pyrene	c, g	HI3	4.3E-05	0.0020	0.0016	0.0088	0.0030	0.0088	0.0020
205-99-2	Benzo[b]fluoranthene	c, g		5.3E-05		0.0020		0.0038		

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
205-12-9	Benzo[c]fluorene	c, g		2.1E-06		7.8E-05		0.00015		
191-24-2	Benzo[g,h,i]perylene	c, g		0.0047		0.17		0.34		
205-82-3	Benzo[j]fluoranthene	c, g		0.00014		0.0052		0.010		
207-08-9	Benzo[k]fluoranthene	c, g		0.0014		0.052		0.10		
218-01-9	Chrysene	c, g		0.00043		0.016		0.030		
27208-37-3	Cyclopenta[c,d]pyrene	c, g		0.00011		0.0039		0.0076		
53-70-3	Dibenz[a,h]anthracene	c, g		4.3E-06		0.00016		0.00030		
192-65-4	Dibenzo[a,e]pyrene	c, g		0.00011		0.0039		0.0076		
189-64-0	Dibenzo[a,h]pyrene	c, g		4.7E-05		0.0017		0.0034		
189-55-9	Dibenzo[a,i]pyrene	c, g		7.1E-05		0.0026		0.0051		
191-30-0	Dibenzo[a,l]pyrene	c, g		1.4E-06		5.2E-05		0.00010		
206-44-0	Fluoranthene	c, g		0.00053		0.020		0.038		
193-39-5	Indeno[1,2,3-cd]pyrene	c, g		0.00061		0.022		0.043		
3697-24-3	5-Methylchrysene	c, g		4.3E-05		0.0016		0.0030		
7496-02-8	6-Nitrochrysene	c, g		4.3E-06		0.00016		0.00030		
7758-01-2	Potassium bromate			0.0071		0.19		0.086		
1120-71-4	1,3-Propane sultone			0.0014		0.038		0.017		
123-38-6	Propionaldehyde		HI5		8.0		35		35	
115-07-1	Propylene		HI5		3,000		13,000		13,000	
6423-43-4	Propylene glycol dinitrate		HI5		0.27		1.2		1.2	20
107-98-2	Propylene glycol monomethyl ether		HI3		7,000		31,000		31,000	
75-56-9	Propylene oxide		HI3	0.27	30	7.0	130	3.2	130	3,100
	Refractory Ceramic Fibers	i	HI5		0.030		0.13		0.13	
7783-07-5	Selenide, hydrogen		HI3							5.0
7782-49-2	Selenium and compounds	l	HI3							2.0

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
7631-86-9	Silica, crystalline (respirable)		HI5		3.0		13		13	
1310-73-2	Sodium hydroxide		HI3							8.0
100-42-5	Styrene		HI3		1,000		4,400		4,400	21,000
7664-93-9	Sulfuric acid		HI5		1.0		4.4		4.4	120
505-60-2	Sulfur Mustard		HI3							0.70
7446-71-9	Sulfur trioxide		HI5		1.0		4.4		4.4	120
630-20-6	1,1,1,2-Tetrachloroethane			0.14		3.5		1.6		
79-34-5	1,1,2,2-Tetrachloroethane			0.017		0.45		0.21		
127-18-4	Tetrachloroethene (Perchloroethylene)		HI3	3.8	41	100	180	46	180	41
811-97-2	1,1,1,2-Tetrafluoroethane		HI3		80,000		350,000		350,000	
62-55-5	Thioacetamide			0.00059		0.015		0.0071		
7550-45-0	Titanium tetrachloride		HI3		0.10		0.44		0.44	10
108-88-3	Toluene		HI3		5,000		22,000		22,000	7,500
26471-62-5	Toluene diisocyanates (2,4- and 2,6-)		HI3	0.091	0.021	2.4	0.092	1.1	0.092	0.071
8001-35-2	Toxaphene (Polychlorinated camphenes)			0.0031		0.081		0.038		
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)		HI3		5,000		22,000		22,000	11,000
79-00-5	1,1,2-Trichloroethane (Vinyl trichloride)			0.063		1.6		0.75		
79-01-6	Trichloroethene (TCE, Trichloroethylene)	g	HI3	0.20	2.1	3.5	9.2	2.9	9.2	2.1
88-06-2	2,4,6-Trichlorophenol			0.050		1.3		0.60		
96-18-4	1,2,3-Trichloropropane		HI5		0.30		1.3		1.3	1.8
121-44-8	Triethylamine		HI3		200		880		880	2,800
526-73-8	1,2,3-Trimethylbenzene		HI3		60		260		260	

OAR 340-245-8040
Table 4 - Risk-Based Concentrations

			Noncancer TBACTRAL [m]	Residential Chronic		Non-Residential Chronic				Acute
				Cancer RBC[a]	Non-cancer RBC[a]	Child Cancer RBC[a]	Child Non-cancer RBC[a]	Worker Cancer RBC[a]	Worker Non-cancer RBC[a]	Non-cancer RBC[a]
CAS#[b]	Chemical	Notes		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
95-63-6	1,2,4-Trimethylbenzene		HI3		60		260		260	
108-67-8	1,3,5-Trimethylbenzene		HI3		60		260		260	
51-79-6	Urethane (Ethyl carbamate)	g		0.0020		0.021		0.041		
7440-62-2	Vanadium (fume or dust)		HI3		0.10		0.44		0.44	0.80
1314-62-1	Vanadium pentoxide		HI3	0.00012	0.0070	0.0031	0.031	0.0014	0.031	30
108-05-4	Vinyl acetate		HI3		200		880		880	200
593-60-2	Vinyl bromide		HI5		3.0		13		13	
75-01-4	Vinyl chloride	g, k	HI3	0.11	100	0.22	440	2.7	440	1,300
75-35-4	Vinylidene chloride		HI3		200		880		880	200
1330-20-7	Xylene (mixture), including *m*-xylene, *o*-xylene, *p*-xylene		HI3		220		970		970	8,700

Notes:

a RBC = Risk-Based Concentration

b CAS# = Chemical Abstracts Service number

c Chronic RBCs include factors for multipathway risk.

d The RBCs presented for chromium are applicable to hexavalent chromium. In the absence of data indicating otherwise, assume that any total chromium (i.e., unspeciated) that is measured or modeled is entirely in the hexavalent form. Determine, based on information about the source of emissions, whether hexavalent chromium is emitted in aerosol or particulate form, and apply the corresponding RBC. Because there are no RBCs for trivalent chromium, a source determined to be emitting only trivalent chromium cannot be shown to pose an unacceptable risk, so the risk in this case will be considered acceptable.

e DDT RBCs apply to the sum of DDT, DDE, and DDD compounds.

f As recommended by DEQ's Air Toxics Science Advisory Committee (ATSAC) in 2018, the two categories of nickel compounds contain the following specific nickel compounds:
Soluble nickel compounds are considered to be emitted mainly in aerosol form, to be less potent carcinogens than insoluble nickel compounds, and include nickel acetate, nickel chloride, nickel carbonate, nickel hydroxide, nickelocene, nickel sulfate, nickel sulfate hexahydrate, nickel nitrate hexahydrate, nickel carbonate hydroxide.
Insoluble nickel compounds are considered to be emitted mainly in particulate form, to be more potent carcinogens than soluble nickel compounds, and to include nickel subsulfide, nickel oxide, nickel sulfide, nickel metal.

g RBCs adjusted to protect early-life exposure to infants and children because chemical is carcinogenic by a mutagenic mode of action.

h RBCs apply to octabrominated diphenyl ethers (CAS# 32536-52-0) and pentabrominated diphenyl ethers (CAS# 32534-81-9), including BDE-99.

i RBCs for asbestos and refractory ceramic fibers are in units of fibers/cm^3.

j Chlorinated paraffins of average chain length of C12, approximately 60% chlorine by weight.

k DEQ followed the ATSAC recommendation to develop a vinyl chloride TRV that already includes early-life exposure.

l An inorganic chemical designated with "and compounds" indicates that the RBC applies to the sum of all forms of the chemical, expressed as the inorganic element.

m Noncancer TBACT RAL = noncancer Toxics Best Available Control Technology Risk Action Level, OAR 340-245-8010, Table 1.

Stat. Auth.: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155
Stats. Implemented: ORS 468.065, 468A.010, 468A.015, 468A.025, 468A.035, 468A.040, 468A.050, 468A.070, and 468A.155 & Or Laws 2018, ch.102, § 7.