

WAC 173-340-750 Cleanup standards to protect air quality. (1)

General considerations.

(a) This section applies whenever it is necessary to establish air cleanup standards to determine if air emissions at a site pose a threat to human health or the environment. It applies to ambient (outdoor) air and air within any building, utility vault, manhole or other structure large enough for a person to fit into. This section does not apply to concentrations of hazardous substances in the air originating from an industrial or commercial process or operation or to hazardous substances in the air originating from an offsite source. This section does apply to concentrations of hazardous substances in the air originating from other contaminated media or a remedial action at the site. Air cleanup standards shall be established at the following sites:

(i) Where a nonpotable groundwater cleanup level is being established for volatile organic compounds using a site-specific risk assessment under WAC 173-340-720(6).

(ii) Where a soil cleanup level that addresses vapors or dust is being established under WAC 173-340-740 or 173-340-745.

(iii) Where it is necessary to establish air emission limits for a remedial action.

(iv) At other sites as determined by the department.

(b) Cleanup levels to protect air quality shall be based on estimates of the reasonable maximum exposure expected to occur under both current and future site use conditions. The department has determined that residential site use will generally require the most protective air cleanup levels and that exposure to hazardous substances under these conditions represents the reasonable maximum exposure. Air cleanup levels shall use this presumed exposure scenario and be established in accordance with subsection (3) of this section unless the site qualifies for a Method C air cleanup level. If a site qualifies for a Method C air cleanup level, subsection (4) of this section shall be used to establish air cleanup levels.

(c) In the event of a release or potential release of hazardous substances into the air at a site at which this section applies under (a) of this subsection, a cleanup action that complies with this chapter shall be conducted to address all areas of the site where the concentration of the hazardous substances in the air exceeds cleanup levels.

(d) Air cleanup levels shall be established at concentrations that do not directly or indirectly cause violations of groundwater, surface water, or soil cleanup standards established under this chapter or applicable state and federal laws. A site that qualifies for a Method C air cleanup level under this section does not necessarily qualify for a Method C cleanup level in other media. Each medium must be evaluated separately using the criteria applicable to that medium.

(e) The department may require more stringent air cleanup standards than required by this section where, based on a site-specific evaluation, the department determines that this is necessary to protect human health and the environment. Any imposition of more stringent requirements under this provision shall comply with WAC 173-340-702 and 173-340-708.

(2) Method A air cleanup levels.

This section does not provide procedures for establishing Method A cleanup levels. Method B or C, as appropriate, shall be used to establish air cleanup levels.

(3) Method B air cleanup levels.

(a) Applicability. Method B air cleanup levels consist of standard and modified cleanup levels as described in this subsection. Either standard or modified Method B air cleanup levels may be used at any site.

(b) Standard Method B air cleanup levels. Standard Method B cleanup levels for air shall be at least as stringent as all of the following:

(i) Applicable state and federal laws. Concentrations established under applicable state and federal laws; and

(ii) Human health protection. For hazardous substances for which sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Noncarcinogens. Concentrations that are estimated to result in no acute or chronic toxic effects on human health and are determined using the following equation and standard exposure assumptions:

[Equation 750-1]

$$\text{Air cleanup level (ug/m}^3\text{)} = \frac{\text{RfD} \times \text{ABW} \times \text{UCF} \times \text{HQ} \times \text{AT}}{\text{BR} \times \text{ABS} \times \text{ED} \times \text{EF}}$$

Where:

- RfD = Reference dose as specified in WAC 173-340-708(7) (mg/kg-day)
- ABW = Average body weight over the exposure duration (16 kg)
- UCF = Unit conversion factor (1,000 ug/mg)
- BR = Breathing rate (10 m³/day)
- ABS = Inhalation absorption fraction (1.0) (unitless)
- HQ = Hazard quotient (1) (unitless)
- AT = Averaging time (6 years)
- ED = Exposure duration (6 years)
- EF = Exposure frequency (1.0) (unitless)

(B) Carcinogens. For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to one in one million (1 x 10⁻⁶) and are determined using the following equation and standard exposure assumptions:

[Equation 750-2]

$$\text{Air cleanup level (ug/m}^3\text{)} = \frac{\text{RISK} \times \text{ABW} \times \text{AT} \times \text{UCF}}{\text{CPF} \times \text{BR} \times \text{ABS} \times \text{ED} \times \text{EF}}$$

Where:

- RISK = Acceptable cancer risk level (1 in 1,000,000) (unitless)
- ABW = Average body weight over the exposure duration (70 kg)
- AT = Averaging time (75 years)
- UCF = Unit conversion factor (1,000 ug/mg)
- CPF = Carcinogenic potency factor as specified in WAC 173-340-708(8) (kg-day/mg)
- BR = Breathing rate (20 m³/day)
- ABS = Inhalation absorption fraction (1.0) (unitless)
- ED = Exposure duration (30 years)
- EF = Exposure frequency (1.0) (unitless)

(C) Petroleum mixtures. For noncarcinogenic effects of petroleum mixtures, a total petroleum hydrocarbon cleanup level shall be calculated using Equation 750-1 and by taking into account the additive ef-

fects of the petroleum fractions and volatile organic compounds present in the petroleum mixture. Cleanup levels for other noncarcinogens and known or suspected carcinogens within the petroleum mixture shall be calculated using Equations 750-1 and 750-2. See Table 830-1 for the analyses required for various petroleum products to use this method.

(iii) Lower explosive limit limitation. Standard Method B air cleanup levels shall not exceed ten percent (10%) of the lower explosive limit for any hazardous substance or mixture of hazardous substances.

(c) Modified Method B air cleanup levels. Modified Method B air cleanup levels are standard Method B air cleanup levels modified with chemical-specific or site-specific data. When making these adjustments, the resultant cleanup levels shall meet applicable state and federal laws, health risk levels and explosive limit limitations required for standard Method B air cleanup levels. Changes to exposure assumptions must comply with WAC 173-340-708(10). The following adjustments may be made to the default assumptions in the standard Method B equations to derive modified Method B cleanup levels:

(i) The inhalation absorption percentage may be modified if the requirements of WAC 173-340-702 (14), (15), (16) and WAC 173-340-708(10) are met;

(ii) Adjustments to the reference dose and cancer potency factor may be made if the requirements in WAC 173-340-708 (7) and (8) are met;

(iii) The toxicity equivalency factor procedures described in WAC 173-340-708(8) may be used for assessing the potential carcinogenic risk of mixtures of chlorinated dibenzo-p-dioxins, chlorinated dibenzofurans and polycyclic aromatic hydrocarbons;

(iv) Modifications incorporating new science as provided for in WAC 173-340-702 (14), (15) and (16); and

(d) Using modified Method B to evaluate air remediation levels. In addition to the adjustments allowed under subsection (3)(c) of this section, adjustments to the reasonable maximum exposure scenario or default exposure assumptions are allowed when using a quantitative site-specific risk assessment to evaluate the protectiveness of a remedy. See WAC 173-340-355, 173-340-357 and 173-340-708 (3)(d) and (10)(b).

(4) Method C air cleanup levels.

(a) Applicability. Method C air cleanup levels consist of standard and modified cleanup levels as described in this subsection. Method C air cleanup levels may be approved by the department if the person undertaking the cleanup action can demonstrate that the site qualifies for use of Method C under WAC 173-340-706(1).

(b) Standard Method C air cleanup levels. Standard Method C air cleanup levels for ambient air shall be at least as stringent as all of the following:

(i) Applicable state and federal laws. Concentrations established under applicable state and federal laws;

(ii) Human health protection. For hazardous substances for which sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws, concentrations that protect human health and the environment as determined by the following methods:

(A) Noncarcinogens. Concentrations that are anticipated to result in no significant acute or chronic effects on human health and are estimated in accordance with Equation 750-1 except that the average body

weight shall be 70 kg and the estimated breathing rate shall be 20 m³/day;

(B) Carcinogens. For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to one in one hundred thousand (1×10^{-5}) and are determined in accordance with Equation 750-2.

(C) Petroleum mixtures. Cleanup levels for petroleum mixtures shall be calculated as specified in subsection (3)(b)(ii)(C) of this section, except that the average body weight shall be 70 kg and the estimated breathing rate shall be 20m³/day.

(iii) Lower explosive limit limitation. Standard Method C air cleanup levels shall not exceed ten percent (10%) of the lower explosive limit for any hazardous substance or mixture of hazardous substances.

(c) Modified Method C air cleanup levels. Modified Method C air cleanup levels are standard Method C air cleanup levels modified with chemical-specific or site-specific data. The same limitations and adjustments specified in subsection (3)(c) of this section apply to modified Method C cleanup levels.

(d) Using modified Method C to evaluate air remediation levels. In addition to the adjustments allowed under subsection (4)(c) of this section, adjustments to the reasonable maximum exposure scenario or default exposure assumptions are allowed when using a quantitative site-specific risk assessment to evaluate the protectiveness of a remedy. See WAC 173-340-355, 173-340-357 and 173-340-708 (3)(d) and (10)(b).

(5) Adjustments to air cleanup levels.

(a) Total site risk adjustments. Air cleanup levels for individual hazardous substances developed in accordance with subsections (3) and (4) of this section, including cleanup levels based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments need to be made only if, without these adjustments, the hazard index would exceed one (1) or the total excess cancer risk would exceed one in one hundred thousand (1×10^{-5}). These adjustments shall be made in accordance with the procedures in WAC 173-340-708 (5) and (6). In making these adjustments, the hazard index shall not exceed one (1) and the total excess cancer risk shall not exceed one in one hundred thousand (1×10^{-5}).

(b) Adjustments to applicable state and federal laws. Where a cleanup level developed under subsection (3) or (4) of this section is based on an applicable state or federal law and the level of risk upon which the standard is based exceeds an excess cancer risk of one in one hundred thousand (1×10^{-5}) or a hazard index of one (1), the cleanup level must be adjusted downward so that the total excess cancer risk does not exceed one in one hundred thousand (1×10^{-5}) and the hazard index does not exceed one (1) at the site.

(c) Natural background and PQL considerations. Cleanup levels determined under subsection (3) or (4) of this section, including cleanup levels adjusted under (a) or (b) of this subsection, shall not be set at levels below the practical quantitation limit or natural background, whichever is higher. See WAC 173-340-709 and 173-340-707 for additional requirements pertaining to practical quantitation limits and natural background.

(6) Points of compliance. Cleanup levels established under this section shall be attained in the ambient air throughout the site. For sites determined to be industrial sites under the criteria in WAC 173-340-745, the department may approve a conditional point of compliance not to exceed the property boundary. A conditional point of compliance shall not be approved if use of a conditional point of compliance would pose a threat to human health or the environment.

(7) Compliance monitoring.

(a) Where air cleanup levels have been established at a site, monitoring may be required to be conducted to determine if compliance with the air cleanup levels has been achieved. Sampling and analytical procedures shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. The sample design shall provide data that are representative of the site.

(b) Data analysis and evaluation procedures used to evaluate compliance with air cleanup levels shall be defined in a compliance monitoring plan prepared under WAC 173-340-410.

(c) Averaging times specified in applicable state and federal laws shall be used to demonstrate compliance with those requirements.

(d) When cleanup levels are not based on applicable state and federal laws, the following averaging times shall be used:

(i) Compliance with air cleanup levels for noncarcinogens shall be based on twenty-four-hour time weighted averages except where the cleanup level is based upon an inhalation reference dose which specifies an alternate averaging time;

(ii) Compliance with air cleanup levels for carcinogens shall be based on annual average concentrations.

[Statutory Authority: Chapter 70.105D RCW. WSR 01-05-024 (Order 97-09A), § 173-340-750, filed 2/12/01, effective 8/15/01; WSR 91-04-019, § 173-340-750, filed 1/28/91, effective 2/28/91.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.