

**3745-300-08      Generic numerical standards.**

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, federal rules, and federal statutory provisions referenced in this rule, see paragraph (B) of rule 3745-300-01 of the Administrative Code titled "Incorporation by reference."]

(A) Generic numerical standards.

(1) Applicability.

- (a) Generic numerical standards listed in this rule for hazardous substances and petroleum may be used to demonstrate compliance with applicable standards provided the exposure scenario for the property comports with land use and activity patterns used to derive the generic numerical standard. Generic numerical standards are provided for complete exposure pathways to petroleum releases (paragraph (B) of this rule), direct contact with hazardous substances in soil (paragraph (C) of this rule), indoor air exposure due to vapor intrusion from environmental media to human receptors (paragraph (D) of this rule), unrestricted potable use for hazardous substances in ground water (paragraph (E) of this rule), and complete exposure pathways to human and ecological receptors from surface water and sediment (paragraphs (G), (H) and (I) of this rule). The appendix to this rule contains the generic numerical standards.
- (b) If complete exposure pathways exist on a property that are not considered in the development of a generic numerical standard listed in this rule or if a generic numerical standard is not listed for chemicals of concern on a property, applicable standards must be derived in accordance with rule 3745-300-09 of the Administrative Code. Demonstration of compliance with applicable standards at a property may be made using a combination of generic numerical standards in accordance with this rule and standards developed through a property-specific risk assessment in accordance with rule 3745-300-09 of the Administrative Code or any other applicable standards.
- (c) If radioactive materials are identified at a property, the property may be subject to the Atomic Energy Act and regulations adopted thereunder and Chapters 3701. and 3747. of the Revised Code and rules adopted thereunder. If radionuclides or radioactive materials are present at a property, the cleanup of the radionuclides or radioactive material shall be conducted in compliance with requirements of the Ohio department of health. Remedy approval by the Ohio department of health shall be considered sufficient to meet applicable standards for radionuclides or radioactive materials for the voluntary action and may be considered a generic numerical standard.

- (2) Assumptions. The following assumptions apply for all generic numerical standards except for the generic direct contact soil standards for petroleum described in paragraph (B) of this rule, direct contact soil standards for lead as described in paragraph (C)(3)(e) of this rule, the generic unrestricted potable use standards based on maximum

contaminant levels or other regulatory established criteria as described in paragraph (E) of this rule, and potable use standards for petroleum as described in paragraph (E)(3)(a) of this rule.

- (a) Single chemical. The generic numerical standards assume a single chemical of concern is present within an identified area.
  - (i) The single chemical generic standards set forth in this rule are based on the following risk and hazard levels:
    - (a) For hazardous substances having carcinogenic effects, the chemical-specific carcinogenic risk must not exceed one excess cancer in a population of one hundred thousand (i.e.,  $1 \times 10^{-5}$ ).
    - (b) For hazardous substances having non-carcinogenic effects, the chemical-specific risk must not exceed a hazard index of one.
  - (ii) The concentration of a chemical of concern, as determined in accordance with paragraph (F)(6) of rule 3745-300-07 of the Administrative Code, must not exceed the single chemical generic standard for that chemical.

- (b) Cumulative adjustment for multiple chemicals.

When more than one chemical of concern is present in each media within an identified area and an applicable generic standard for each of the chemicals of concern is contained in this rule, the standard for each chemical of concern in must be adjusted for the presence of multiple chemicals in order to meet the risk and hazard levels described in paragraph (A)(2)(a) of this rule. A cumulative adjustment for multiple chemicals within each media must also be made when using a combination of generic standards and applicable standards determined by a property-specific risk assessment in accordance with rule 3745-300-09 of the Administrative Code. The incremental risk and hazard must be added to the incremental risk and hazard from other complete exposure pathways to the same receptor population, in accordance with paragraph (A)(2)(c) of this rule. All final cumulative human health carcinogenic risk and non-carcinogenic hazard levels are based on one significant figure.

- (c) Summation of risk and hazard across complete exposure pathways.

If more than one complete exposure pathway exists to each receptor population, the incremental cancer risk and hazard indices determined for each exposure pathway must be summed to calculate a cumulative cancer risk and hazard index to each receptor population. All final cumulative human health carcinogenic risk and non-carcinogenic hazard levels are based on one significant figure.

- (d) If the generic numerical standards of this rule are applied to one or more identified areas of the property and applicable standards, as determined in accordance with rule 3745-300-09 of the Administrative Code, are applied to one or more exposure

units or other areas of the property, then the volunteer must ensure that the risk and hazard levels for each receptor on the property do not exceed the following:

- (i) One excess cancer in a population of 100,000 ( $1 \times 10^{-5}$ ).
- (ii) A hazard index of 1.

All final cumulative human health carcinogenic risk and non-carcinogenic hazard levels are based on one significant figure.

- (e) Points of compliance. The volunteer must comply with the applicable standards at all points of compliance at the property, for each environmental media and complete exposure pathway, in accordance with paragraph (I) of rule 3745-300-07 of the Administrative Code.
- (3) A property-specific risk assessment must be conducted in accordance with the procedures established in rule 3745-300-09 of the Administrative Code to determine applicable standards instead of or in addition to using the generic numerical standards from this rule, if any of the following apply to the property:
- (a) The complete exposure pathways as identified in accordance with paragraph (F)(1) of rule 3745-300-07 of the Administrative Code, include exposure pathways that are not considered in the development of standards listed in this rule.
  - (b) The exposure factors for the receptors identified in paragraph (E)(6) of rule 3745-300-07 of the Administrative Code are not considered in the development of standards listed in this rule, or the volunteer evaluates compliance with applicable standards for exposure units instead of identified areas in accordance with rule 3745-300-09 of the Administrative Code.
  - (c) The chemicals of concern on the property consist of hazardous substances or petroleum that do not have generic numerical standards included in this rule. If only some of the chemicals of concern identified have a generic numerical standard listed in this rule, a volunteer may use the applicable generic numerical standards for the chemicals of concern having listed standards and conduct a property-specific risk assessment in accordance with rule 3745-300-09 of the Administrative Code. When using a combination of generic numerical standards and applicable standards determined by a property-specific risk assessment conducted in accordance with rule 3745-300-09 of the Administrative Code, the volunteer must adjust the concentrations of the applicable standards to meet the human health risk and hazard levels described in paragraph (A)(2)(d) of this rule.
  - (d) Concentrations of chemicals of concern in surface water or sediment exceed applicable standards determined in accordance with this rule.
  - (e) Complete exposure pathways to important ecological resources other than sediment or surface water exist.

- (f) Chemicals of concern have been determined to be originating from the property which are persistent, bioaccumulative, and toxic in animal tissue and the development of the generic standards, other than Ohio-specific sediment reference values contained in “attachment H” of Ohio EPA's "Guidance for Conducting Ecological Risk Assessments,” which do not consider bioaccumulative effects.

(B) Generic numerical standards for petroleum.

(1) Applicability.

- (a) The generic numerical standards referenced in paragraph (B)(3) of this rule apply to all petroleum releases regardless of the source or how the petroleum was released. After eligibility requirements in accordance with rule 3745-300-02 of the Administrative Code have been met, applicable standards for all petroleum releases on the property must be achieved in accordance with this chapter.
- (b) The generic numerical standards referenced in paragraph (B)(3) of this rule apply to the exposure pathways for which rules adopted under division (B) of section 3737.882 of the Revised Code have numerical clean-up standards. If an exposure pathway is not addressed by a generic numerical standard under division (B) of section 3737.882 of the Revised Code, then the exposure pathway must be evaluated in accordance with rule 3745-300-09 of the Administrative Code.

(2) Assumptions.

- (a) The points of compliance for generic petroleum standards are those identified in paragraph (I) of rule 3745-300-07 of the Administrative Code. For example, exposure pathways that are encompassed within the generic direct-contact soil standard shall use the points of compliance indicated in paragraph (I)(1)(a)(i) of rule 3745-300-07 of the Administrative Code. The volunteer must comply with the applicable standards at all points of compliance at the property, for each environmental medium and complete exposure pathway, in accordance with paragraph (I) of rule 3745-300-07 of the Administrative Code.
- (b) Cumulative adjustment for multiple chemicals and summation of risk across complete exposure pathways that are required for chemicals of concern on the property in order to comply with paragraphs (A)(2) and (F) of this rule may not necessarily apply for generic petroleum standards referenced in paragraph (B)(3) of this rule. Cumulative adjustment for multiple chemicals and summation of risk across complete exposure pathways to meet generic petroleum standards are required only when required by rules adopted under division (B) of section 3737.882 of the Revised Code.
- (c) When ground water exceeds unrestricted potable use standards, ground water response requirements in accordance with rule 3745-300-10 of the Administrative Code must be met. Properties with free product exceed applicable standards for unrestricted potable use of ground water.

(d) Restricted residential, commercial and industrial land use categories (as described in paragraph (C)(2) of this rule) require implementation of institutional controls in accordance with paragraph (C)(3) of rule 3745-300-11 of the Administrative Code.

(3) Generic numerical clean-up standards for petroleum.

The generic numerical standards for petroleum at residential, commercial, or industrial properties are the standards established in rules adopted under division (B) of section 3737.882 of the Revised Code, as provided in division (B)(1) of section 3746.04 of the Revised Code. The state fire marshal's bureau of underground storage tank regulations administers the rules adopted under division (B) of section 3737.882 of the Revised Code. Property-specific standards for petroleum may be developed using rule 3745-300-09 of the Administrative Code.

(C) Generic standards for hazardous substances- direct-contact with soils and vapor intrusion to indoor air.

(1) Applicability.

(a) When applying generic direct-contact standards to soils on a property, a volunteer must select the generic land use or activity category which is consistent with the exposure factors for the generic land use or activity category contained in paragraph (C)(2) of this rule. The exposure factors used in the development of generic numerical standards are contained in Ohio EPA's "Support Document For the Development of Generic Numerical Standards and Risk Assessment Procedures." Generic direct-contact soil standards for commercial and industrial land uses are equal unless paragraph (B)(1)(b) of rule 3745-300-09 of the Administrative Code applies.

(b) A property-specific risk assessment must be conducted in accordance with the procedures established in rule 3745-300-09 of the Administrative Code, to determine applicable standards instead of or in addition to using the generic direct-contact soil standards, if any conditions of paragraph (A)(3) of this rule apply.

(c) Generic numerical standards for petroleum releases are identified in paragraph (B)(3) of this rule. The standards identified in paragraphs (C)(3) and (D) and contained in the appendix to this rule apply to releases of hazardous substances.

(2) Land use and activity categories.

The generic direct-contact soil standards and vapor intrusion to indoor standards established in this rule are based upon the intended use of the property after the completion of a voluntary action. Standards applied to restricted residential, commercial, and industrial land use categories require implementation of institutional controls in accordance with rule 3745-300-11 of the Administrative Code. Land use and activity categories must be determined as follows:

(a) Residential land use category.

Residential land use is land use with a high frequency of potential exposure of adults and children to dermal contact with soil, inhalation of vapors and particles from soil, incidental ingestion of soil, and inhalation of volatile compounds due to vapor intrusion from environmental media to indoor air.

(i) Unrestricted residential land use category.

Unrestricted residential land use is considered protective for, and may be applied to, any land use, without further restriction.

(ii) Restricted residential land use category.

Restricted residential land use is considered protective for, and may be applied to, residential land uses appropriate for a modified point of compliance supported by institutional or engineering controls.

[Comment: A modified point of compliance consists of any depth less than the minimum depth of ten feet required by rule 3745-300-07 of the Administrative Code.]

(b) Commercial land use category.

Commercial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are customers, patrons or visitors to commercial facilities during the business day. Commercial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil, ingestion of soil and inhalation of volatile compounds due to vapor intrusion to indoor air. Generic direct contact standards for commercial land use may not be appropriate for properties where a high frequency of potential exposure to children may occur, such as at schools and day care facilities.

(c) Industrial land use category.

Industrial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are visitors to industrial facilities during the business day. Industrial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil and ingestion of soil and inhalation of volatile compounds due to vapor intrusion to indoor air.

(d) Construction or excavation activities.

Construction or excavation activities include invasive activities that result in potential exposure of adult workers during the business day for a portion of one year. Exposures during construction or excavation activities are of greater intensity and shorter duration than those for the commercial and industrial land use

categories. Construction or excavation activities have potential exposures of adults to dermal contact with soil, inhalation of vapors and particles from soil, and ingestion of soil.

(3) Generic numerical direct-contact soil standards.

- (a) Standards derivation methods. The generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern are derived considering the following exposures: ingestion of soil, dermal contact with soil, inhalation of volatile compounds in outdoor air and the inhalation and ingestion of particulate emissions. Any and all applicable exposures not considered within the generic direct-contact soil standards shall be addressed in accordance with rule 3745-300-09 of the Administrative Code.

The soil saturation concentrations are calculated using the U.S. EPA recommended soil saturation equation specified in paragraph (H)(5) of rule 3745-300-09 of the Administrative Code. This equation is not recommended for compounds that are at solid phase at ambient soil temperatures; therefore, no generic soil saturation values were calculated for those chemicals whose melting point is greater than seventeen degrees Celsius. Further, soil saturation values were determined only for those chemicals whose physicochemical parameters used to derive the soil saturation concentrations could be verified. The volunteer may use the soil saturation levels as listed in the appendix to this rule, or may calculate a property-specific soil saturation concentration in place of the generic soil saturation in accordance with paragraph (H)(5) of 3745-300-09 of the Administrative Code.

- (b) Generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern - residential land use category. The generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern for residential land use categories are contained in table I of the appendix to this rule.
- (c) Generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern - commercial and industrial land use categories. The generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern for commercial and industrial land use categories are contained in table II of the appendix to this rule.
- (d) Generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern - construction and excavation activities category. The generic direct-contact soil standards for carcinogenic and non-carcinogenic chemicals of concern for the construction and excavation activities category are contained in table III of the appendix to this rule.
- (e) The lead standards contained in tables I, II and III of the appendix to this rule take into account other factors and assumptions in addition to the carcinogenic or non-carcinogenic risk of lead. Therefore, using the cumulative risk considerations contained in paragraph (A)(2) of this rule is not appropriate and need not be performed for lead.

- (D) Generic standards for indoor air due to vapor intrusion from environmental media are derived considering the exposure scenario and the chemical specific inhalation toxicity. Standards apply to indoor air only for chemicals that have volatilized from environmental media to indoor air. Concentrations of chemicals of concern in soil, ground water, or soil gas may be used to approximate indoor air concentrations through modeling conducted in accordance with paragraph (G) of rule 3745-300-07 of the Administrative Code.
- (1) Generic indoor air standards for residential land use. The standards for indoor air exposure due to vapor intrusion from environmental media for the residential land use category are contained in table IV of the appendix to this rule.
  - (2) Generic indoor air standards commercial/industrial land use. The standards for indoor air exposure due to vapor intrusion from environmental media for the commercial or industrial land use categories are contained in table V of the appendix to this rule.
- (E) Generic unrestricted potable use standards for hazardous substances in ground water.
- (1) Applicability.
    - (a) The generic unrestricted potable use standards contained in paragraph (E)(3) of this rule apply as determined in accordance with rule 3745-300-10 of the Administrative Code.
    - (b) A property-specific risk assessment must be conducted in accordance with the procedures established in rule 3745-300-09 of the Administrative Code to determine applicable standards in place of or in addition to using the generic unrestricted potable use standards if any of paragraphs (A)(3)(a) to (A)(3)(c) of this rule apply to the property, and those exposures are required to be evaluated under rule 3745-300-07 of the Administrative Code;
    - (c) The standards in paragraph (E)(3) of this rule apply to releases of hazardous substances. Generic numerical standards for petroleum releases are identified in paragraph (B)(3) of this rule.
  - (2) Assumptions.

The generic unrestricted potable use standards contained in tables VI and VII of the appendix to this rule were determined using the assumption that the ground water on, underlying and emanating from the property will be used as a source of water for drinking, cooking, showering and bathing.
  - (3) Generic unrestricted potable use standards for ground water.
    - (a) Generic unrestricted potable use standards for petroleum only. The generic unrestricted potable use standards for petroleum at commercial, industrial, and residential properties are the standards established in rules adopted under division (B) of section 3737.882 of the Revised Code, as provided by division (B)(1) of section 3746.04 of the Revised Code.

- (b) Generic unrestricted potable use standards based on maximum contaminant levels or other regulatory established criteria. The generic unrestricted potable use standards based on maximum contaminant levels or other regulatory established criteria are contained in table VI of the appendix to this rule. Chemicals of concern contained in table VI of the appendix to this rule do not need to be included in the cumulative adjustment for multiple chemicals.
- (c) Generic risk-derived unrestricted potable use standards. The generic risk-derived unrestricted potable use standards are contained in table VII of the appendix to this rule. Chemicals of concern contained in table VII of the appendix to this rule need to be included in the cumulative adjustment for multiple chemicals.

(F) Procedures for cumulative adjustment for multiple chemicals.

The following procedures may be used to in order to meet the risk and hazard levels described in paragraph (A)(2)(d) of this rule when more than one chemical of concern is present in environmental media within an identified area:

- (1) Several procedures may be used to adjust for the presence of multiple carcinogenic chemicals of concern in an identified area to comply with paragraph (A)(2)(b) of this rule. One method is to divide the exposure point concentration ( $chem_a$ ) for each chemical of concern in the affected media by the “Single Chemical Carcinogenic Standard” ( $SCCS_a$ ) in the appendix to this rule. The resultant ratios are summed as an expression of estimated risk (see the equation below). When the summed ratios result in a value less than one, carcinogenic risk levels have been met on the property for exposure to that media. When the summed ratios result in a value greater than one the carcinogenic risk levels are not met and remedial action is required.

$$\left( \frac{[chem_a]}{SCCS_a} + \frac{[chem_b]}{SCCS_b} + \dots \right) = \text{cumulative cancer risk ratio for affected media}$$

- (2) Several procedures may be used to adjust for the presence of multiple non-carcinogenic chemicals of concern in an identified area to comply with paragraph (A)(2)(b) of this rule. One method is to divide the exposure point concentration ( $chem_a$ ) for each chemical of concern in the affected media by the “Single Chemical Noncarcinogenic Standard” ( $SCNS_a$ ) in the appendix to this rule. The resultant ratios are summed as an expression of estimated hazard index (see the equation below). When the summed ratios result in a value less than one, non-carcinogenic risk levels have been met on the

property. When the summed ratios result in a value greater than one the non-carcinogenic risk levels are not met and remedial action is required.

$$\left( \frac{[chem_a]}{SCNS_a} + \frac{[chem_b]}{SCNS_b} + \dots \right) = \text{cumulative noncancer risk ratio for affected media}$$

Non-cancer risk ratios for non-carcinogenic chemicals of concern which do not exhibit the same toxic endpoint may be excluded from the calculation of the cumulative non-cancer risk ratio described above if a written justification for such exclusion is submitted. The consideration of all major toxic endpoints and mechanisms of action must include, at a minimum, those identified with the critical effect upon which the reference dose or reference concentration for each non-carcinogenic chemical of concern is based. The source for each reference dose and reference concentration for each non-carcinogenic chemical for which generic direct-contact soil standards have been derived, are cited in Ohio EPA's "Support Document for the Development of Generic Numerical Standards and Risk Assessment Procedures." It may be necessary to calculate more than one cumulative non-cancer risk ratio for a property resulting from the segregation of non-carcinogenic chemicals of concern on the basis of toxic endpoints or mechanisms of action.

- (3) For situations where a chemical of concern poses both carcinogenic and non-carcinogenic risks and a value for the chemical of concern is listed in both the "Standard for a Single Chemical Carcinogens" column and the "Standard for a Single Chemical Non-Carcinogens" column contained in the appendix to this rule or an applicable single chemical carcinogen and non-carcinogen standard has been determined in accordance with rule 3745-300-09 of the Administrative Code, the chemical of concern must be included in the multiple carcinogenic chemical adjustment calculation under paragraph (F)(1) of this rule and the adjustment calculation for multiple non-carcinogenic chemicals under paragraph (F)(2) of this rule. The applicable standard for the chemical of concern will be the lowest of the values determined by using the equations in this paragraph or, if appropriate, the soil saturation concentration.

(G) Generic numerical standards for surface water.

(1) Applicability.

- (a) The generic numerical standards for surface water in paragraph (G)(2) of this rule apply to a property as determined in accordance with paragraph (F) of rule 3745-300-07 of the Administrative Code.

- (b) For all releases of petroleum on underlying or emanating to surface water of the state, the generic petroleum standards are contained within paragraph (B) of this rule.

(2) Generic surface water standards.

- (a) For all releases or source areas of hazardous substances on, underlying or emanating from the property to surface waters of the state, surface water chemical concentrations must be compared to the chemical criteria pursuant to Chapter 3745-1 of the Administrative Code. The outside mixing zone average criteria for human health and aquatic life and wildlife should be compared against ambient samples averaged over a thirty-day period. Single ambient samples are not to exceed the outside the mixing zone maximum. If all chemical constituents are below their corresponding chemical criteria, then the surface water may be eliminated as an exposure medium. If chemical constituents exceed their corresponding chemical criteria, then the surface water shall be further assessed in accordance with rule 3745-300-09 of the Administrative Code.

For the purposes of this rule, the generic numerical standards for surface water apply regardless of whether the release or source area of hazardous substances is a point source or nonpoint source.

- (b) All regulated point source discharges of pollutants to surface waters of the state and any other regulated discharges that occur from or on the property must comply with all permit and other applicable requirements of the Federal Water Pollution Control Act and Chapter 6111. of the Revised Code, and the regulations adopted thereunder.

The permit and other applicable requirements of point source discharges include but are not limited to: (i) the national pollutant discharge elimination system permit issued pursuant to Chapter 3745-33 of the Administrative Code (also referred to as Ohio NPDES permits), and (ii) the water quality certification issued pursuant to Chapter 3745-32 of the Administrative Code. A volunteer may obtain a consolidated standards permit for activities conducted in connection with a voluntary action which require permits from the director.

- (c) Storm water associated with industrial activity that is discharged to surface waters of the state or is discharged through a separate municipal storm sewer system must comply with the applicable requirements contained in 40 C.F.R. 122.26.

(H) Generic numerical standards for human exposure to sediments.

(1) Applicability.

- (a) For purposes of this rule and rule 3745-300-07 of the Administrative Code, human health exposure pathways to sediments are considered complete when the surface water which contains the sediments:

- (i) Produces or can produce a consistent supply of edible-sized fish and the chemicals of concern in the sediment are persistent, bioaccumulative and toxic; or
    - (ii) Is reasonably anticipated to support recreational activities such as wading, swimming, or boating.
  - (b) For all releases of petroleum on or from the property to surface waters of the state which contain sediments, the generic petroleum standards are contained in paragraph (B) of this rule.
  - (c) If the concentrations of chemicals of concern in sediment exceed the generic numerical standards for human exposure to sediment, the volunteer must conduct a human health property-specific risk assessment following the methodology outlined in paragraph (D) of rule 3745-300-09 of the Administrative Code or conduct a remedy in accordance with the 3745-300-11 of the Administrative Code.
- (2) Generic numerical standards for human exposure to sediment.
- (a) Generic direct-contact standards for sediments are the generic direct-contact soil standards for residential land use specified in table I of the appendix to this rule. Cumulative adjustment for multiple chemicals must be evaluated in accordance with paragraph (A)(2)(b) of this rule.
  - (b) If chemicals of concern in sediment are persistent, bioaccumulative and toxic and the surface water containing the sediments produces or can produce a consistent supply of edible-sized fish, the volunteer must conduct a human health property-specific risk assessment in accordance with rule 3745-300-09 of the Administrative Code to evaluate fish consumption.
- (I) Generic numerical standards for exposure of important ecological resources to sediments.
- (1) Applicability. The volunteer may do either of the following:
- (a) Sample sediments directly and apply the applicable standards in accordance with paragraphs (I)(2)(a) and (I)(2)(b) of this rule.
  - (b) Demonstrate compliance with applicable standards in accordance with paragraph (F)(5) of rule 3745-300-09 of the Administrative Code.
- (2) Generic numerical standards for exposure of important ecological resources to sediments. The volunteer must do one of the following:
- (a) Compare the concentration of chemicals of concern in sediments on the property to the Ohio-specific sediment reference values contained in “attachment H” of Ohio EPA’s “Guidance for Conducting Ecological Risk Assessments.”
  - (b) For each chemical of concern for which the volunteer does not compare the sediment concentrations to the Ohio-specific sediment reference values, use the ecotoxicologically-based benchmarks from the following hierarchy:

- (i) Consensus-based threshold effects concentration values contained in MacDonald, Ingersoll and Berger's "Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Ecosystems."
  - (ii) U.S. EPA, region 5 ecological screening levels.
- (3) If concentrations of chemicals of concern do not exceed Ohio-specific sediment reference values or appropriate ecotoxicologically-based benchmarks and the provisions in paragraph (A)(3)(f) of this rule do not apply, then the applicable standards have been met.
- (4) The volunteer shall evaluate the sediments in accordance with paragraph (F) of rule 3745-300-09 of the Administrative Code or conduct a remedy in accordance with rule 3745-300-11 of the Administrative Code if any of the following apply:
  - (a) The sediments exceed applicable standards in accordance with this rule.
  - (b) The sediment samples were not compared to the sediment values in accordance with paragraph (I)(2) of this rule.
- (J) Developing soil standards for leaching of chemicals of concern from soil to ground water.
  - (1) Applicability.
    - (a) Soil standards for leaching may be developed when one or more ground water zones are determined to meet unrestricted potable use standards and the potential for leaching of chemicals of concern from soil to ground water is determined to be a complete exposure pathway.
    - (b) Soil standards for leaching may be developed when one or more ground water zones are determined to exceed unrestricted potable use standards and the potential for leaching of chemicals of concern from soil to ground water is a complete exposure pathway that must be evaluated in accordance with either of the following:
      - (i) Applicable ground water response requirements contained in paragraph (E) of rule 3745-300-10 of the Administrative Code.
      - (ii) A pathway completeness determination in paragraph (F)(1) of rule 3745-300-07 of the Administrative Code.
  - (2) Soil standards for leaching.
    - (a) Soil standards for leaching when the underlying ground water zone meets unrestricted potable use standards.

Soil standards for leaching are the soil concentrations determined to be protective of the applicable ground water zone and will not cause unrestricted potable use standards to be exceeded in the ground water zone as demonstrated in accordance with paragraph (F)(4)(a) of rule 3745-300-07 of the Administrative Code.

- (b) Soil standards for leaching when the underlying ground water zone exceeds unrestricted potable use standards.
  - (i) Soil standards for leaching are the soil concentrations determined to be protective of the applicable ground water response requirements for the ground water zone as determined by rule 3745-300-10 of the Administrative Code.
  - (ii) Soil standards for leaching are the soil concentrations determined to be protective of any other applicable standard in ground water that must be met in accordance with a pathway completeness determination and the demonstration of compliance with applicable standards.

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