

15A NCAC 02S .0506 TIERED RISK ASSESSMENT

(a) A tiered risk assessment shall be conducted to establish risk-based screening levels or site-specific target levels for a site.

(b) A site conceptual model shall be developed including the following elements:

- (1) the type and distribution of chemicals of concern;
- (2) the geology and hydrogeology;
- (3) an exposure model that identifies the receptors, including sensitive subgroups, and the exposure pathways; and
- (4) land use classification as either residential or non-residential.

(c) Tier 1. A Tier 1 risk assessment is based on chemical-specific risk-based screening levels. The representative concentrations of chemicals of concern that exist at a site shall be compared to these risk-based screening levels for all complete and potentially complete exposure pathways. If the concentrations exceed the risk-based screening levels, the Division may require remediation of the site to risk-based screening levels or the performance of a Tier 2 risk assessment to establish site-specific target levels. Factors considered by the Division when determining if remediation or a Tier 2 assessment is warranted shall include:

- (1) whether the assumptions on which the risk-based screening levels are based are representative of the site-specific conditions;
- (2) whether the site-specific target levels developed under Tier 2 either are likely to be different than the risk-based screening levels or will modify remediation activities; or
- (3) whether the cost of remediation to achieve risk-based screening levels will likely be greater than the cost of further tier evaluation and subsequent remediation.

(d) Tier 2. A Tier 2 assessment shall allow consideration of site-specific information in order to calculate site-specific target levels. This information includes the locations of actual points of exposure and points of demonstration as well as site-specific geologic, hydrogeologic, and contaminant fate and transport parameters. The representative concentrations of chemicals of concern that exist at a site shall be compared to these Tier 2 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations exceed the Tier 2 site-specific target levels, the Division may require remediation of the site to Tier 2 site-specific target levels or the performance of a Tier 3 risk assessment to establish alternative site-specific target levels. Factors considered by the Division when determining if remediation or a Tier 3 assessment is warranted shall include:

- (1) whether the assumptions on which the Tier 2 site-specific target levels are based are representative of the site-specific conditions;
- (2) whether the alternative site-specific target levels developed under Tier 3 either are likely to be different than the Tier 2 site-specific target levels or will modify remediation activities; or
- (3) whether the cost of remediation to achieve Tier 2 site-specific target levels will likely be greater than the cost of further tier evaluation and subsequent remediation.

(e) Tier 3. A Tier 3 risk assessment shall allow consideration of additional site-specific and toxicological data in order to calculate alternative site-specific target levels. This data may include alternative, technically defensible toxicity factors, physical and chemical properties, site-specific exposure factors, and alternative fate and transport models. The representative concentrations of chemicals of concern that exist at a site shall be compared to these Tier 3 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations exceed the Tier 3 site-specific target levels, the Division shall consider the results of the Tier 2 and Tier 3 assessments to determine the site-specific target levels.

(f) The determination of risk-based screening levels and site-specific target levels shall be based on the following assumptions and requirements:

- (1) concentrations of chemicals of concern in soil shall not exceed Tier 1 residential risk-based screening levels on land classified as residential land use. Concentrations in soil may exceed Tier 1 residential risk-based screening levels on property containing both residential and non-residential land use if the ground-level uses are non-residential and the potential for exposure to contaminated soil has been eliminated;
- (2) an ecological risk evaluation shall be conducted to determine the risk to plant and animal receptors and habitats;
- (3) the most recent versions of the following references, in order of preference, shall be used to obtain the quantitative toxicity values necessary to calculate risk to identified receptors:
 - (A) Integrated Risk Information System (IRIS);
 - (B) provisional peer reviewed toxicity values (PPRTVs); and

- (C) published health risk assessment data, and scientifically valid peer-reviewed published toxicological data;
- (4) all current and probable future use of groundwater shall be protected. If groundwater has been contaminated or is likely to be contaminated, a point of exposure shall be established to quantitatively evaluate the groundwater use pathway. The point of exposure shall be established at the nearest to the source of the following locations:
 - (A) closest existing water supply well;
 - (B) likely nearest future location of a water supply well;
 - (C) hypothetical point of exposure located at a distance of 500 feet from the downgradient property boundary of the facility site; or
 - (D) hypothetical point of exposure located at a distance of 1000 feet downgradient from the source;
- (5) for chemicals of concern for which there is a groundwater quality standard in 15A NCAC 02L, concentrations at the point of exposure shall not exceed the groundwater quality standards as specified in 15A NCAC 02L. For chemicals of concern for which there are no groundwater quality standards, concentrations at the point of exposure shall not exceed the risk-based screening levels or site-specific target levels for these chemicals of concern that assume ingestion based on domestic water use;
- (6) concentrations of chemicals of concern shall be measured and evaluated at a point of demonstration well to ensure that concentrations are protective of any point of exposure;
- (7) surface water is protected. The standards for surface water shall be the water quality standards in 15A NCAC 02B.

*History Note: Authority G.S. 143-215.104D;
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