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TITLE: Using a Passive Remedy to Ensure Compliance with Applicable Standards for Potential “Future” Exposure Scenarios

DATE

EFFECTIVE: June 2001

KEYWORDS: Applicable standards, operation and maintenance plan, remedy, monitoring, passive remedy, natural attenuation

RULES: Rule citations relating to this issue: Ohio Administrative Code (OAC) 3745-300-15(A)(1) and (A)(2).

QUESTION: Can a passive remedy implemented through an Operation and Maintenance (O&M) Plan be used to ensure that applicable standards will not be exceeded for potential “future” exposure pathways for both on and off-property receptors?

ANSWER: Yes, a passive remedy can be implemented at a property to ensure that applicable standards will not be exceeded in the future for both on and off-property receptors. Furthermore, similar to an active remedy, a passive remedy will require an O&M Plan to demonstrate that the assumptions under which the passive remedy was determined to be effective continue to be valid. However, as with any other remedy, the volunteer must demonstrate that the passive remedy is an appropriate remedial activity for the property.

BACKGROUND: According to OAC 3745-300-15 (A)(1), remedial activities must be conducted to meet applicable standards when a Phase II Property Assessment (PA) reveals that concentrations of chemicals of concern (COCs) in any environmental medium exceed applicable standards as determined in accordance with OAC 3745-300-08 (generic numerical standards), 3745-300-09 (standards derived through a property-specific risk assessment), 3745-300-07 (background levels), or any other applicable standard. Applicable standard is defined in rule 3745-300-01 as “...standards established in or pursuant to sections 3746.05, 3746.06, and 3746.07 of the Revised Code, or rule 3745-300-07, 3745-300-08, 3745-300-09, 3745-300-10, or 3745-300-15 of the Administrative Code, as applicable”, unless the context indicates otherwise.

The procedures for demonstrating compliance with applicable standards are included in OAC 3745-300-07, 3745-300-08, 3745-300-09, and 3745-300-10. Included in these procedures are references to the volunteer's responsibility to demonstrate that a property is protective of on and off-property receptors from exposures of COCs above applicable standards. This demonstration includes both existing exposure pathways, as well as any reasonably anticipated potential exposure pathways that have been determined to be complete. Therefore, if a potential exposure pathway has not been eliminated as a pathway of concern, the property does not yet meet applicable standards.

Examples of rules that require an evaluation of potential exposure pathways include, but are not limited to:

- 3745-300-10 (F)(4)(a)(ii), which states that ground water emanating from the property must not exceed UPUS;
- 3745-300-10 (F)(4)(a)(iv)(A), which states that the remedy must ensure protection of humans on and off property from exposures to ground water resulting from non-potable pathways (this includes the pathway of volatilization of COCs in soil or ground water to indoor air);
- 3745-300-07 (D)(2)(a), which states that the volunteer must evaluate the existing and potential exposure pathways that are complete for receptors;
- 3745-300-07 (D)(1)(c)(iii), which requires the volunteer to evaluate degradation products of hazardous substances or petroleum; and
- 3745-300-09 (D)(3)(b), which requires the volunteer to conduct an exposure assessment including evaluation of all exposure pathways in accordance with 3745-300-07 (D)(2), which includes potential pathway considerations.

Assuming that the appropriate Phase II PA information is collected and can support the use of a passive remedy, a passive remedy may be selected to achieve compliance with applicable standards for potential exposure scenarios. However, a passive remedy requires an O&M Plan¹ per OAC 3745-300-15(A)(2)(c). The implementation of a

¹ OAC 3745-300-15(F)(1) lists the requirements of an O&M Plan. One such requirement is that the remedy achieve compliance with applicable standards "...within 5 years or such other time frame agreed upon by the director

passive remedy through an O&M Plan essentially requires the collection of appropriate monitoring data and subsequent data analysis. This is required to evaluate the protectiveness of the passive remedy to both verify and ensure that an exceedance of applicable standards will not occur in the future. Until adequate data are collected to ensure that an exceedance of applicable standards will not occur in the future, the property does not yet meet applicable standards for potential receptors for future scenarios.

The use of a passive remedy is justifiable when property-specific information collected as part of the Phase II PA suggests that *in situ* natural processes will reduce the mass, toxicity, mobility, or concentrations of COCs over distance and time. However, it is often necessary to verify this determination before eliminating a potential exposure pathway as a pathway of concern. For instance, if modeling is used to eliminate a potential exposure pathway, a passive remedy (i.e., monitoring and data analysis) may be necessary as part of the field validation phase of the modeling evaluation (e.g., off-property migration of a ground water plume). Once adequate data have been collected and the data analysis shows that the potential exposure pathway can be eliminated as a pathway of concern, the property can be considered to be in compliance with all applicable standards and the monitoring requirements of the O&M Plan can be discontinued. Of course, if adequate data are collected as part of the Phase II PA and an analysis of these data determines that the potential exposure pathways can be eliminated as pathways of concern, remedial activities to address those pathways would not be required.

SUMMARY:

When a Phase II PA reveals that concentrations of COCs exceed applicable standards, remedial activities must be conducted. The determination of whether applicable standards are met includes the consideration of reasonably anticipated potential exposure pathways.

in an operation and maintenance agreement.” This can be significant if the passive remedy requires more than five years to implement, as could often be the case. In these situations, the volunteer will have to seek approval from the director for an extension of the time frame to achieve compliance with applicable standards.

If these potential exposure pathways cannot be eliminated as pathways of concern, then remedial activities must be implemented. Assuming that the appropriate Phase II PA information is collected and can support the use of a passive remedy, a passive remedy may be selected to achieve compliance with applicable standards for potential exposure scenarios. Furthermore, as with any remedy that is not recorded on a deed, an O&M Plan is required to implement a passive remedy. The implementation of a passive remedy generally requires the collection of appropriate monitoring data and subsequent data analysis. Once adequate data have been collected and the data analysis shows that the potential exposure pathway can be eliminated as a pathway of concern, the property can be considered to be in compliance with all applicable standards and the monitoring requirements of the O&M Plan can be discontinued.

OHIO EPA
CONTACT:

For any questions concerning this issue, please contact the VAP central office at (614) 644-2924.