ARCHIVE: **Archived due to the 2019 rule revision. Revision was necessary to update rule references for the rules that became effective October 2019. Refer to VA30007.19.012 for the updated document.**

TITLE: **Applicability of U.S. EPA's Soil Screening Levels via the Leaching Pathway**

DATE EFFECTIVE: August 2003

HISTORY: Update of VA30007.09.023 - Revision was necessary to reflect changes in the rule citations that became effective in August 2014.

KEYWORDS: Soil Screening Levels, leaching, ground water, migration, Dilution Attenuation Factors, Protection of Ground Water Meeting Unrestricted Potable Use Standards, Leach-Based Soil Values

RULES/ AUTHORITY: OAC 3745-300-07(F)(4) and 3745-300-10(D)

QUESTION: Can the U.S. EPA's Soil Screening Levels (U.S. EPA, 1996) be used to determine that chemicals of concern in the soil above a ground water zone will not leach to ground water in excess of unrestricted potable use standards (UPUS)?

BACKGROUND: OAC 3745-300-10(D) requires that ground water currently meeting UPUS must continue to do so. Therefore, the CP/Volunteer must ensure that migration of hazardous substances or petroleum from source areas on the property will not cause UPUS to be exceeded anywhere within the ground water zone. The methodology to demonstrate compliance with the provisions to protect ground water meeting UPUS are provided in OAC 3745-300-07(F)(4).

Pursuant to OAC 3745-300-07(F)(4)(a), the options for determining that soil in the unsaturated zone will not impact ground water above UPUS include 1) comparing the site-specific data to a leach-based soil value, and/or 2) a qualitative assessment (weight-of-evidence approach).

ANSWER: The U.S. EPA Soil Screening Levels (SSL) (1996) can be used to demonstrate that chemicals of concern in the soil zone will not leach to ground water above UPUS. When utilizing the U.S. EPA SSLs, the CP/Volunteer should consider whether the SSLs values are protective of the same ground water standard (e.g., MCLs are the same but risk-derived may not be the same). In addition, the SSL values listed in the U.S. EPA Soil Screening Guidance, Appendix A (1996) include a dilution-attenuation factor (DAF) of 1 and 20. The U.S. EPA SSL

values with a DAF of 1 should be used to demonstrate that ground water is protected from sources on the Property.

EXPLANATION: The U.S. EPA's SSLs are based on linear equilibrium partitioning between the adsorbed and the dissolved

phases, and on a dilution-attenuation factor of either 1 or 20. The SSLs corresponding to a DAF of 1 assume no dilution/attenuation. The U.S. EPA DAF value of 20 is based on fate and transport modeling in the unsaturated and saturated zones and on dilution calculated from data listed in two databases. The hydraulic characteristics of the sites listed in the databases generally have higher capacity for water to flow through the property; thus, they may not be representative of the types of ground water zones requiring protection in accordance with the VAP rules.

Therefore, the U.S. EPA SSL values with a DAF of 1 may be used to demonstrate that ground water is protected from sources on the property. For a Voluntary Action, the volunteer may calculate a site-specific dilution-attenuation factor or use the generic dilution factors in "*Ohio EPA Derived Leach-Based Soil Values, Appendix Technical Support Document, July 1996, Revised November 2002*". The leach-based soil value (LBSV) for the property is LBSV = SSL $\times$ dilution factor.

SUMMARY: The VAP allows the use of the U.S. EPA SSL values to demonstrate that ground water is protected if the aforementioned conditions are met and properly documented.

OHIO EPA CONTACT: For any questions concerning this issue, please contact the VAP Central Office at (614) 644-2924 or DDAGW-VAP support staff at (614) 644-2752.

REFERENCES:

U.S. EPA. 1996. Soil Screening Guidance: User's Guide. United States Environmental Protection Agency. Office of Solid Waste and Emergency Response. Washington D.C. Publication 9355.4-23.

U.S. EPA. 1996. Soil Screening Guidance Technical Background Document. United States Environmental Protection Agency. Office of Solid Waste and Emergency Response. Washington D.C. Publication 9355.4-17A.

U.S. EPA. 2001. Supplemental Guidance for Development of Soil Screening Levels for Superfund. United States Environmental Protection Agency. Office of Solid Waste and Emergency Response. Washington D.C. Publication OSWER 9355.4-24