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TITLE: Determining Applicable Standards for Human Direct-Contact Exposures to Sediments Using Generic Direct-Contact Soil Standards

DATE EFFECTIVE: August 2002

HISTORY: New addition to Technical Guidance Compendium

KEYWORDS: Sediment assessment, human health risk assessment, generic direct-contact soil standards, applicable standards

RULE/ AUTHORITY: Ohio Administrative Code (OAC) 3745-300-08 and 3745-300-09(F)

QUESTION: Can generic direct-contact soil standards be used within a human health property-specific risk assessment to determine applicable standards for human direct-contact exposures to sediments?

ANSWER: OAC 3745-300-09(F)(1) requires that an evaluation of sediments be conducted when there are complete exposure pathways to sediments as determined in accordance with OAC 3745-300-07(D)(2). For each complete exposure pathway to human receptors involving sediments, OAC 3745-300-09(F)(2)(a)(ii) requires the volunteer to conduct a human health property-specific risk assessment using the methodology outlined in OAC 3745-300-09(D). The use of generic direct-contact soil standards for direct contact with sediments may serve to streamline this risk assessment process.

A human health property-specific risk assessment consists of four parts in accordance with OAC 3745-300-09(D)(3): the selection of chemicals of concern, exposure assessment, toxicity assessment, and risk characterization. When conducting a human health property-specific risk assessment for sediments limited to direct contact, the routes of exposure include the ingestion, inhalation and dermal pathways, which are the same routes of exposure used in the derivation of the generic direct-contact soil standards contained in OAC 3745-300-08. Because the exposure assumptions used to

derive generic direct-contact soil standards are acceptable assumptions within OAC 3745-300-09(D), the use of the soil standards for sediments can be justified provided the exposure assumptions used to derive the soil standards are sufficiently similar, or more conservative, than the exposure assumptions used within the property-specific risk assessment for direct contact with sediments. OAC 3745-300-09(F)(2)(a)(ii) requires that a human health property-specific risk assessment be performed for sediment exposures. Therefore risk characterization according to OAC 3745-300-09(D)(3) still must be performed.

The use of residential generic direct-contact soil standards for human health exposures to sediments provides a conservative estimate of risk. For example, the number of days per year (exposure frequency) that receptors would likely have direct contact with sediments is much lower than the exposure frequency for a receptor's direct contact with soil. The volatile emissions of chemicals from sediments as well as the particulate emissions from sediments are lower than what is assumed from soil. Therefore, the intake via the inhalation exposure pathway from sediments is limited compared to the intake via the inhalation exposure pathway from soil.

Sediments that meet generic direct-contact soil standards for residential land use can be considered protective within all land uses. Residential standards represent an unrestricted land use category and incorporate exposures to children. Children may have higher and more frequent exposures to sediments during various recreational activities including wading, fishing and swimming compared to adults.

Please note that for each complete exposure pathway involving important ecological resources and sediments, the procedures outlined in OAC 3745-300-09(F)(2)(b) must be followed.

SUMMARY:

Generic direct-contact soil standards can be used within a human health property-specific risk assessment provided that the assumptions for sediments exposure to humans are similar to the exposure assumptions used in the development of the generic direct-contact soil standards. Sediments that meet the residential generic direct-contact soil standards can be considered protective for all land uses. As with other risk based standards, risk characterization must be performed according to OAC 3745-300-09(D)(3).

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