

# CONTAMINATED SOILS FORUM

*A stakeholder body advising the Florida Department of Environmental Protection*

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07 March 2003

John M. Ruddell, Director  
Division of Waste Management  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

*Re: Reports and Recommendations Regarding Update to Soil Arsenic CTLs*

Dear Mr. Ruddell,

This letter summarizes the consensus recommendations of the Contaminated Soils Forum's Methodology Focus Group (MFG) regarding an update to computation of the default direct-contact soil Cleanup Target Levels (CTLs) for arsenic and also indicates the transmittal to you of two attached documents prepared by the MFG.

The first of the attached documents, *Recommendations for Update to the Arsenic Soil CTL Computation*, discusses the deliberations of the MFG and presents recommendations based on available studies, and based on their companion evaluation, also attached, *Arsenic Bioavailability from Florida Soils: Uncertainty Evaluation of the University of Florida/Florida Department of Environmental Protection Study*. This second document focuses specifically on the uncertainties associated with a study of soil arsenic bioavailability commissioned by FDEP and carried out by University of Florida researchers.

The MFG evaluated three charges, 1) the overall scientific merits of the UF/FDEP study and the appropriateness of using its results to recommend an update to the computation of the arsenic soil CTLs, 2) the relative strengths of the UF/FDEP study in comparison with other studies of soil arsenic bioavailability, and 3) the possibility to make technically based recommendations for an update to the assumptions of bioavailability incorporated into soil CTL calculation. The default assumption in direct-contact CTL calculation, currently used for arsenic in soil, is that the chemical in soil is absorbed within the body to the same extent as in the underlying toxicology study (100% relative bioavailability). For arsenic, where the underlying studies are dependent on dissolved arsenic in water and absorption from soil is readily observed to be less efficient, the assumption of 100% bioavailability significantly overestimates the risks from arsenic in soil.

The evaluation of these three charges lead the MFG to conclude that the UF/FDEP study was appropriate for obtaining numerical bioavailability factors for soil arsenic and represented currently the best scientific study design for such a study. This has also been the only study to evaluate Florida soil samples. The MFG made further, specific recommendations for numerical updates to the bioavailability assumption incorporated into the direct-contact soil CTLs for arsenic. These recommendations included a conservative central tendency estimate of 19% and three recommendations for possible upper-bound values. The MFG also provided a technically-based prioritization of their upper-bound recommendations and identified a bioavailability factor of 25% as having the strongest technical basis. The MFG deferred the selection of a specific

value to the Contaminated Soils Forum, FDEP, and other stakeholders, noting that selection among the technically-derived candidate values required considerations about the desired level of protectiveness.

The Contaminated Soils Forum appreciates your charge to consider the topic of soil arsenic bioavailability in detail so that technically warranted updates could be both made and clearly explained. The Forum also appreciates the effort put forth by the MFG members to evaluate the scientific information available and identify consensus recommendations on this topic.

The Contaminated Soils Forum met on 17 December 2002 and discussed the findings and recommendations of the MFG. The Forum reached a consensus recommendation that the soil arsenic CTLs based on direct contact should be revised through the use of a chemical-specific bioavailability factor to replace the default assumption of 100% relative bioavailability. Forum members considered the potential uncertainties associated with any soil bioavailability adjustment and the uncertainty white paper by the MFG and determined that the upper-bound recommendations of the MFG were suitable for application in calculating the default direct-contact soil CTLs for arsenic. The Forum considered the appropriate level of protectiveness for any bioavailability adjustment and further recommended the chemical-specific value of 25% relative bioavailability for soil arsenic to FDEP for use in updating the corresponding CTLs. This value was presented by the MFG as an upper-bound characterization of bioavailability based on the result reported in the publication of the UF/FDEP study for the "most bioavailable" of the Florida soil samples evaluated.

At the rule workshop held by FDEP regarding the cleanup programs on 13 February 2003, the topic of arsenic soil bioavailability was included on the agenda. I presented the Forum's conclusions and recommendations and solicited input from any additional interested parties. Subsequently, the MFG finalized their two reports which are now submitted to you.

On behalf of the Contaminated Soils Forum, I am pleased to communicate these findings and recommendations to you and request that you consider incorporating the MFG recommendations in revising the CTLs during the current rule-making process. Thank you in advance for considering this input and for your support of having a standing stakeholder forum such as the Contaminated Soils Forum where extended evaluations of complex topics can be fostered.

Sincerely yours,



Robert P. DeMott, Ph.D., DABT  
Chairperson

Attachments: MFG recommendation report and uncertainty white paper