



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

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SEP 08 2009

Mr. David Wright  
Division of Remediation (17 SHS)  
Bureau of Remediation and Waste Management  
Maine Department of Environmental Protection  
Augusta, ME 04333-0017

Dear Mr. Wright:

The Department of Defense appreciates the opportunity to review and comment on the revisions to the Maine Department of Environmental Protection (MEDEP) guidelines titled "Implementation of Maine Remedial Action Guidelines for Soil (MERAGs)" dated July 20, 2009.

The implementation of the MERAGs as well as the three companion documents; (1) MERAGs Appendices, (2) Revised Technical Basis and Background for the revised MERAGs, and (3) Revised Tables for the Technical Basis Manual were reviewed by our cleanup program managers and risk assessors. The Department believes these documents will assist in making remedial decisions for soil at cleanup sites.


Attached is a complete set of comments for your consideration. The following is a brief summary of our comments and recommendation on Implementation of MERAGs:

- In a number of places clarification or additional definition of specific terms would be useful. For example, on Page 9 Section V.G. we suggested providing additional detail on accepted decision criteria to determining volatile contaminants of potential concern. Recommend use of more complete definitions or clarification of terms to avoid confusion.
- Review the consistent use of appropriate regulatory policies and guidelines. For example, on Page 15 Section VI.E, the use of the California OEHHA slope factor to develop a cancer-based guideline value for MERAGs may be in conflict with direction provided in EPA guidelines. Recommend reviewing proposed procedures for consistency with federal standards and guidelines whenever available.
- Ensure a consistent approach is described to determination and use numerical values. For example, Page 15 Section VI.F. the ceiling levels developed appear inconsistent with the earlier definition of "neat materials"

and the direction provided in the Appendix tables. Recommend review approach to determine use of numerical guidelines and their application are consistent throughout the document.

My point of contact for this issue is Ms. Deborah Morefield, who can be reached at 703-571-9067, [deborah.morefield@osd.mil](mailto:deborah.morefield@osd.mil). Please contact her if you have any questions or if you need additional information.

Sincerely,

  
Maureen Sullivan  
Director, Environmental Management

Enclosures:

As stated

cc:

DASA (ESOH)

Acting DASN (E)

Acting DASAF (EESOH)

DES-E

**Department of Defense Comments on  
Implementation of Maine Remedial Action Guidelines for Soil (July 20, 2009)**

13.0	1.0	1	9.0	Comment to: "total site risk"	Clarification needed on the definition of "total site". As written, the criteria applies to an average concentration throughout the entire site
14.0	2.0	1B	12.0	Comment to: "B. Applicable Media"	It is recommended that the guide provide more detail into the definition of "soils" so that applicability is more straight-forward. Quite often hydric soils have been identified as sediments.
15.0	2.0	1C	28.0	<input type="checkbox"/> Not Applicable to Petroleum. This procedure does not apply to soil (or other media) contaminated with petroleum. Petroleum clean-up guidance is provided at <a href="http://www.maine.gov/depr/wm/publications/pdf/cleanupguide08.pdf">http://www.maine.gov/depr/wm/publications/pdf/cleanupguide08.pdf</a>	"Not Applicable to Petroleum. This procedure does not apply to soil (or other media) contaminated with petroleum. Therefore, this procedure does NOT apply to underground storage facilities, other subsurface oil discharges, and above ground storage facilities contaminated by discharges of oil, including gasoline (including ethanol blends of gasoline), methyl tertiary butyl ether (MTBE), kerosene, aviation fuels, #2 heating oil and diesel fuel, or other comparable petroleum hydrocarbons. Petroleum clean-up guidance is provided at <a href="http://www.maine.gov/depr/wm/publications/pdf/cleanupguide08.pdf">http://www.maine.gov/depr/wm/publications/pdf/cleanupguide08.pdf</a> "
16.0	3.0	3B	6.0	"Contaminants at a Hazardous Substance Site that are not due to the releases of contaminants at the Hazardous Substance Site."	"Background contaminants are those that are not due to the releases of contaminants from the Hazardous Substance Site."
17.0	3.0	3B	9.0	"The background contaminants may be naturally occurring or anthropogenic."	"The background contaminants may be naturally occurring or anthropogenic in nature."
18.0	3.0	3B	10.0	"Note: Hazardous Substance Site activity (such as waste disposal practices) may cause naturally occurring substances to be released into other environmental media or chemically transformed."	"Note: Hazardous Substance Site activity (such as waste disposal practices) may cause naturally occurring substances to be released into other environmental media or may become chemically transformed."
19.0	3.0	3B	11.0	"The concentrations of the released naturally occurring substance are not representative of natural background concentrations."	"The concentrations of the chemicals from the site release are not representative of natural background concentrations."
20.0	3.0	3C	14.0	"Areas with relevant media that are similar to the Hazardous Substance Site (i.e., similar soil depths and soil types), that have been influenced to the same degree by regional deposition or other contaminant inputs, but where contaminants released at the Hazardous Substance Site have not come to be located."	"Appropriate background locations are areas with soils that are similar to the Hazardous Substance Site (i.e., similar soil depths and soil types), that have been influenced to the same degree by regional deposition or other contaminant inputs, but where contaminants released at the Hazardous Substance Site have not come to be located."
21.0	3.0	3C	15.0	Comment to: "(i.e., similar soil depths and soil types)"	suggest more detail here to avoid confusion. Appropriate soil type could also be based upon grain size, TOC, and moisture content
22.0	4.0	3F	1.0	"When all five parts are present, the exposure pathway is termed a completed exposure pathway."	"An exposure pathway is termed a completed exposure pathway only when all five parts are present."
23.0	4.0	3G	4.0	"Exposure Point" means a location of potential contact between an organism and a contaminant or physical agent."	"Exposure Point" means a location of potential contact between a human receptor and a hazardous substance."
24.0	4.0	3H	7.0	"Exposure Point Concentration" means an estimate of the arithmetic average concentration for a contaminant that represents the concentration of contaminant in the relevant media that an exposed individual would be exposed to."	"Exposure Point Concentration" means an average, representative concentration of a contaminant in soil that a human receptor would be exposed to relative to the actual route of exposure being considered."
25.0	8.0	5F	7.0	"The CSM should be based upon a complete investigation and identification of potential environmental concerns and should fit all of the data collected."	"The final CSM should be based upon a complete investigation and identification of potential environmental concerns and should fit all of the data collected."
26.0	8.0	5G	37.0	"Vapor intrusion requires three components: a source, an inhabited building, and a pathway from the source to the inhabitants."	"Potential risks due to vapor intrusion requires three components: a source, an inhabited building, and an exposure pathway from the source to the inhabitants."

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27.0	9.0.5G	16.0	Comment to: "Determine whether any COPCs are volatile."	Clarification needed: what is the decision criteria for COPC to be deemed volatile?
28.0	9.0.5G	19.0	"* Identify potential migration pathways of the volatile COPCs from the source."	"* Identify potential migration and exposure pathways of the volatile COPCs from the source."
29.0	9.0.5G	22.0	Comment to: "If the answer is "yes" to any of the above items:"	The above bullets are not yes/no questions. Suggest this be rephrased. In addition, per section III.F of this same guide, the lack of a complete exposure pathway would preclude further investigation if any one of these items were NOT found. Suggest further clarification
30.0	9.0.5G	26.0	Comment to: "Depending upon their proximity to receptors and preferential pathways"	Request clarification: what is considered proximal to require further VI investigation?
31.0	9.0.5H	36.0	Comment to: "H. Determine if Ecological impacts are of concern"	Per II.E this guidance IS NOT applicable to ecological receptors
32.0	9.0.5I	41.0	"Once the procedures in sections C through H are completed, then use this guidance, or the "Guidance for Human Health Risk Assessments for Hazardous Substance Sites in Maine" to determine site specific target clean-up levels for soil at the site."	"Once the procedures in sections C through H of this section are completed, then the use of further procedures in this guidance, or the "Guidance for Human Health Risk Assessments for Hazardous Substance Sites in Maine" to determine site specific target clean-up levels for soil at the site apply."
33.0	10.0.6C	19.0	"The toxicity of a contaminant depends on the amount that is taken into the body, and the mechanism of intake, known as the route of exposure."	"The toxicity of a contaminant depends on the amount (dose) that is taken into the body, the mechanism of intake (route of exposure), bioavailability, and the mode of action or effect."
34.0	11.0.6C	15.0	Comment to: "underground tank"	since the guide stated earlier that it does not apply to petroleum products (including UST's).
1.0	12.0.6.C	General		The MERAG for volatilization from ambient air should not be included in the MERAGS.  The soil-to-ambient air exposure pathway consists of modeling constituent's movement from soil -> soil gas -> ambient air. This is exactly the same process that is associated with the vapor intrusion exposure pathway. As stated in the Draft MERAG Report, "levels in soil are not a reliable indicator VI potential; therefore, DEP did not develop contaminant specific VI soil guidelines (p. 8, section G)." In addition, the Draft MERAG Report also states that, in general, the soil->ambient air exposure pathway is not significant for any exposure scenario. Excavation and construction personnel working with contaminated soil will be 40 hour HAZWOPER trained and OSHA standards will be used to determine a safe work environment.

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2.0	15.0/6.E	General	We agree with USEPA and recommend that the California OEHHA value not be used to determine MERAGs.	The MERAG Report uses the California-OEHHHA carcinogenic slope factor for lead to calculate a MERAG value. The USEPA states in the Integrated Risk Information System that "quantifying lead's cancer risk involves many uncertainties, some of which may be unique to lead. Age, health, nutritional state, body burden, and exposure duration influence the absorption, release, and excretion of lead. In addition, current knowledge of lead pharmacokinetics indicates that an estimate derived by standard procedures would not truly describe the potential risk. Thus, the Carcinogen Assessment Group recommends that a numerical estimate not be used."
3.0	15.0/6F		We agree that any hazardous pure product should be remediated.	The value selected as a ceiling (10,000 mg/kg) appears to be arbitrary and contradicts the definition of "neat materials" presented on page 5, Section O. The definition of neat material is "Neat material" means liquid or solid hazardous substances which occur in a pure or nearly pure form and which may or may not be in a container. Neat material is distinct from dissolved contamination." Substances present in soil are "dissolved" resulting in a heterogeneous mixture.
4.0	15.0/6F	General	We disagree with the approach of setting an arbitrary ceiling concentration for substances present in soil that are not "pure products" and recommend that the text be clarified as such. In addition, the shading in the Appendix tables identifying concentrations greater than 10,000 mg/kg should be removed.	The value selected as a ceiling (10,000 mg/kg) appears to be arbitrary and contradicts the definition of "neat materials" presented on page 5, Section O. The definition of neat material is "Neat material" means liquid or solid hazardous substances which occur in a pure or nearly pure form and which may or may not be in a container. Neat material is distinct from dissolved contamination." Substances present in soil are "dissolved" resulting in a heterogeneous mixture.
35.0	15.0/6F	15.0	*As discussed in section V.D on page 2, the DEP prefers that neat materials be remediated at the site, including saturated soil.*	*As discussed in section V.D on page 2, the DEP prefers that hazardous substances that exist as neat materials be remediated at the site, including saturated soil.*
36.0	16.0	7	26.0 Comment to: "potable water"	Clarification needed. If MDEP has a state GW classification system it should be referenced. Definition of what constitutes "potable" should be provided.

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5.0	16.0 6J	General	<p>We agree that cleanup levels should not be set at soil concentrations that are less than background. There are several things that can be done to improve the approach for determining background concentrations from the USGS data set.</p>	<p>First, the 95% UCL is not an appropriate statistic for determining a representative background concentration because it is an upper bound estimate of the average concentration. Once a representative background concentration is identified, by definition, any concentration that is within the range defined by the dataset would be considered background. Since the data set is representative of background, a value such as the 99th percentile or the maximum concentration should be the background concentration. Second, the USGS data set demonstrates that there is variability in the background metal concentrations in soil throughout the state of Maine (arsenic background concentrations range from 4 mg/kg to 43 mg/kg).</p>
6.0	16.0 6J	General	<p>In light of the variability, default background concentrations should be determined on a regional or county-by-county basis.</p>	<p>In other words, sites in Penobscot County should not be penalized because their background arsenic concentrations are higher than the state average (i.e., the 95% UCL).</p>
7.0	17.0 7A	29.0	<p>It is not clear how this method is to be used</p>	<p>The equation indicates that each constituent should be divided by its associated MERAG to develop and the result can be called an "exceedance factor." The exceedance factors are then to be summed and the sum should be less than or equal to 1. In addition, some MERAGs may be based on soil-to-groundwater or background.</p>
8.0	17.0 7A	29.0	<p>This seems nonsensical since some MERAGs are based on cancer endpoints while others are based on noncancer endpoints.</p>	<p>The equation indicates that each constituent should be divided by its associated MERAG to develop and the result can be called an "exceedance factor." The exceedance factors are then to be summed and the sum should be less than or equal to 1. In addition, some MERAGs may be based on soil-to-groundwater or background.</p>
9.0	17.0 7A	29.0	<p>It is not clear what "Multiple Contaminants by Pathway" means. We recommend that Method 2 use the approach described in the text and that the Appendix 2 values should be eliminated.</p>	<p>This approach would result in all cancer exceedance factors (soil [mg/kg]/MERAG [mg/kg]) being summed and the sum should be less than or equal to 1. Similarly all noncancer exceedance factors (soil [mg/kg]/MERAG [mg/kg]) would be summed and the sum should be less than or equal to 1</p>
37.0	18.0 7B	43.0	<p>b???? Better cross reference needed here.</p>	
38.0	19.0 7B	22.0	<p>The guide is not applicable to ecological risk per II.E (see comment A7)</p>	
39.0	20.0 7C	31.0	<p>"The clean-up level for each site contaminant would be determined by."</p>	
40.0	21.0 7C	6.0	<p>Suggest reevaluation of this statement. A human health risk assessment is an integral part of a remedial investigation and is an analysis of baseline risks and determines the need for action. Once a limited number of viable remedial alternatives has been developed and ARAR's have been identified, the alternatives are then evaluated against the nine NCP as specified in 40 CFR 300.430.</p>	

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10.0	21.0.7D	11.0	The second sentence should be deleted because it contradicts the overall policy.	Report states "In cases where background concentration of a substance is elevated above its MERAG guideline, DEP recommends that the site should meet the acceptable standards for the intended use. For example, to be used as residential property the total site risk, including that posed by background, should not exceed that allowed for residential use. When this is not feasible, those using the site should at least be informed that the risk guideline is exceeded for that use."
11.0	21.0.7D	11.0	The Report should be updated to state that the incremental lifetime cumulative cancer risks associated with all constituents other than those present at background concentrations should not exceed the cancer risk goal of 10-5.	The Report should be updated to state that the incremental lifetime cumulative cancer risks associated with all constituents other than those present at background concentrations should not exceed the cancer risk goal of 10-5.
12.0	22.0.7D	7.0	Recommend that the document states upfront what statistical methods are acceptable by ME DEP.	Report states "ME DEP must review and approve any statistical methods used in indentifying the background level."
41.0	24.0.8B	2.0	The USP is the state equivalent to the Federal Superfund Program. The Uncontrolled Hazardous Substance Sites Act (Act) broadly defines responsible parties and provides for joint and several liability."	The USP is the state equivalent to the Federal Superfund Program and is applicable when the site is NOT on the NPL. The Uncontrolled Hazardous Substance Sites Act (USP act) broadly defines responsible parties and provides for joint and several liability."