



DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
8945 LATTY AVENUE
BERKELEY, MISSOURI 63134

July 1, 2004

REPLY TO
ATTENTION OF:

Formerly Utilized Sites Remedial Action Program

SUBJECT: Derivation of Site-Specific DCGLs for North County Structures, Public
Review Draft dated June 25, 2004

Mr. Dan Wall
U.S. Environmental Protection Agency
Region VII, Superfund Branch
901 North Fifth Street
Kansas City, Kansas 66101-2907

Dear Mr. Wall:

Enclosed is a copy of the subject document. It will be made available for public review on July 3, 2004. A copy of the public notice announcing this availability is also enclosed. The notice will appear in the July 3rd edition of the St. Louis Post Dispatch. This same announcement was also issued to the entire FUSRAP mailing list. The close of the public comment period has been set for August 2, 2004.

Finally, the U.S. Army Corps of Engineers' revised responses to comments received on the Derivation of Site-Specific DCGLs for North County Structures, Revision B2 dated October 29, 2003 are also enclosed. Some of our previous responses were changed following discussions between the Corps, the State, and the USEPA subsequent to the responses that were provided to you on February 20, 2004.

If you have any further questions or concerns regarding this transition, please contact Ms. Jacque Mattingly at (314) 260-3924.

Sincerely,

Sharon R. Cotner
FUSRAP Program Manager

Enclosures

CF (w/ encl): Mr. Robert Geller, Missouri Department of Natural Resources
Mr. Eric Gilstrap, Missouri Department of Natural Resources



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Federal Facilities Section, HWP
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

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Enclosure

CF (w/ encl): Mr. Eric Gilstrap, Missouri Department of Natural Resources
Mr. Dan Wall, U.S. Environmental Protection Agency

Document Review Comment Form

DERIVATION OF SITE-SPECIFIC DCGLS FOR NORTH COUNTY STRUCTURES **REV B2**

Reviewer Name: Eric Gilstrap **Organization:** MDNR **Date:** 12/16/2003

<i>No.</i>	<i>Page/ Section/ Paragraph</i>	<i>Comments (one comment per block, please)</i>	<i>Resolution</i>
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Document Review Comment Form

No.	Page/ Section/ Paragraph	Comments (one comment per block, please)	Resolution
EG1	General	<p>We believe risk-based calculations are needed to demonstrate compliance with CERCLA. Please provide these computations; and we request a technical working group forum to discuss how these will be conducted. Related information is provided below.</p> <ul style="list-style-type: none"> Page 3 of the Derivation of Site-Specific DGCLs for North County Structures states "EPA OSWER 9200.4-18, Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination, recommends that cleanup attain a dose of 15 mrem/year. This level equates to approximately 3×10^{-4} increased lifetime risk and is consistent with levels generally considered protective." Those statements are consistent with the OSWER directive they reference. It has a section titled: RATIONALE FOR 15 MREM/YR AS A MINIMALLY ACCEPTABLE DOSE LIMIT, and includes the statement: "EPA's conclusion is that to be considered protective under CERCLA, remedial actions should generally attain dose levels of no more than 15 mrem/yr EDE for those sites at which a dose assessment is conducted. This dose level corresponds to an excess cancer risk of approximately 3×10^{-4}." However, further clarification is provided in a memorandum by EPA that explains 15 mrem/year was not meant to be a presumptive cleanup level. It explains dose and risk are not directly comparable and thus a risk-based computation must still be used to ensure compliance with CERCLA. These quotes come from Dec. 17, 1999, Memo from Stephen Luftwig, titled Distribution of OSWER Radiation Q&A's Final Guidance: "...the answer to question 32 in the risk Q&A is intended to further clarify that 15 millirem per year is not a presumptive cleanup level under CERCLA, but rather site decision marks should continue to use the risk range where ARARs are not used to set cleanup levels. There has been some confusion among stakeholders regarding this point because of language in the 1997 guidance. Thus in general, sites decision-makers should not use dose-based guidance rather than the CERCLA risk range in developing cleanup levels. This is because for several reasons, using dose-based guidance would result in unnecessary inconsistency regarding how radiological and non-radiological (chemical) contaminants are addressed at CERCLA sites. These reasons include: (1) estimates of risk from given dose estimate may vary by an order of magnitude or more for a particular radionuclide and; (2) dose based guidance generally begins an analysis for determining a site-specific cleanup level at a minimally acceptable level rather than 10⁻⁶ point of departure set out in the NCP." 	<p>The ARAR for structures as established in the Feasibility Study and Proposed Plan is 10 CFR 40, Appendix A, Criterion 6 (6). This ARAR is fully protective of human health and the environment. EPA clearly indicates in OSWER 9200.4-18 that 15 mrem/yr equates to a risk of about 3×10^{-4} and is protective.</p> <p>Neither EPA's Risk Assessment Guidance for Superfund nor RESRAD-Build currently calculates risk for radiological contamination on structures. Until risk bases are developed for surficial radiological contamination, risks are estimated by comparison of doses to the EPA 15 mrem/yr guidance level and its corresponding risk.</p> <p>Actual conditions are such that the dose and associated risk from residual contamination on structures would be expected to be near or below the lower limits for the CERCLA risk range as few, if any, structures are expected to be contaminated to levels comparable to those in the RESRAD-BUILD scenario.</p> <p>Informal discussion of this or other comments may be arranged by contacting the FUSRAP Program Manager.</p>

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EG2	General	<p>If the existing numbers can be demonstrated as compliant with CERCLA, when using risk based computations, further work will still be needed to complete this document and compute gross alpha and beta guidelines. Or please inform us of passages within the document that do address the matter, but we might have accidentally overlooked. Please consider the following statements:</p> <ul style="list-style-type: none"> • Page 1 of the "Derivation of Site Specific DCGLs for North County Structures" has a section titled PURPOSE. It states: "This report also describes how compliance may be demonstrated with dose-based limits using applicable isotopic DCGLs to calculate site-specific gross alpha or gross beta DCGLs." • The only other statements we found regarding the matter was located on page 20, under the section titled Summary. It says, "These results may be used to calculated gross Alpha or gross Beta DCGLs based upon known site-specific information." • The statement "these results" refers to a list of isotopic concentrations. Please provide calculations of gross Alpha and Beta and include decisions such as which radionuclides will be considered and in what ratios. 	<p>Text clarified to state the process to be used to develop DCGLs for given properties. Text inserted as last paragraph of Section 5.0 after Table 5-1 is as follows:</p> <p>"Table 5-1 results may be used to calculate gross Alpha or gross Beta DCGLs based upon known site-specific information. Using site-specific activity fractions, the gross Alpha or Beta DCGL can be calculated by using the following equation:</p> <p>Gross Alpha or Beta DCGL =</p> $\frac{1}{\frac{ActivityFraction_1}{DCGL_1} + \frac{ActivityFraction_2}{DCGL_2} + \frac{ActivityFraction_3}{DCGL_3} + etc...}$

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EG3	General	<p>We believe that the assumptions regarding ingestion might not have been, but should be accounted for an event in which a receptor places a hand on a previously contaminated item (I-beam or something else) and accidentally transfers contaminated dust to their mouth. We would like to discuss this matter within a technical working group forum.</p> <ul style="list-style-type: none"> Page 20 states, "It is also assumed that the ingestion pathway is completed through the redeposition of suspended dust particles followed by inadvertent hand-to-mouth transfer. This passage represents the RESRAD-Build default pathway for ingestion. The direct ingestion pathway (without considering re-deposition) is assumed negligible for all scenarios." I THINK this statement is saying ingestion occurs IF contamination is windborne and lands on something a person intends to eat OR the person would have to be eating the structure itself, which would be unlikely. If so, this does not account for situations when someone, particularly a renovator, might accidentally touch an existing structural member or other object that is already covered with dust and then accidentally transfers the dust on their hands to their mouth 	<p>The direct ingestion pathway was fully considered. Modeling assumes that the floors and walls to two meters above the floor are equally contaminated. This same source term is used for the residential scenario and results in significant conservatism in dose calculations. Contamination on walls above two meters from the floor is modeled to be insignificant in that even that contamination present on floors and lower walls has generally been spotty and tightly adherent to structure surfaces. The direct ingestion pathway is not a credible route of significant exposure for any of the scenarios including renovation. As such, the parameters used appear to fully consider actual site conditions.</p> <p>A technical working group does not appear appropriate until risk approaches acceptable to USEPA are developed for RESRAD Build. In the interim, risk must necessarily be determined based on use of protective ARARs and EPA assessment as to the relationship between risk and dose. Informal discussion of this or other comments may be arranged by contacting the FUSRAP Program Manager.</p>

No.	Page/ Section/ Paragraph	Comments (one comment per block, please)	Resolution
EG4	General	<p>Please correct or omit statements within the section titled PURPOSE that claim the DCGLs would allow release without institutional controls. We agree that these buildings would not likely ever be lived in, but industrial zoning MIGHT have to be maintained based on the rationale provided to select the industrial receptor scenario for developing DCGLs. Other issues, such as inaccessible contaminated soils or contaminated groundwater, might also impact the need for controls. The following provides information related to our statement regarding receptor selection rationale.</p> <ul style="list-style-type: none"> • The critical scenario was the unlikely case that the building might be used for residence. • The more likely industrial worker scenario was used to develop isotopic concentration guidelines. • But the converting of industrial or commercial buildings into apartments does happen, even for ones without seemingly desirable features or historical or architectural interest. So, commercial or industrial zoning may need to be maintained, UNLESS the residential receptor becomes the basis for the DCGL derivation, OR future risk computations show that a resident would not be the critical receptor. 	<p>Text changed to state "The use of the DCGLs specified herein for structures is protective under CERCLA for all scenarios to include residential. Pending revision of RESRAD-Build to calculate risks associated with structures, protectiveness will be documented by comparison with ARARs and using EPA guidance that 15 mrem per year equates to 3×10^{-4} risk. Institutional controls are not required for any structure or area that is suitable for unrestricted use and unlimited exposure."</p> <p>Investigations of soils in vicinity properties containing residences have not detected levels of COCs exceeding proposed remedial goals. Conversion of commercial/ industrial properties for residential use would necessitate building renovation. Although renovation would be accompanied by a significant reduction in the source term, the source term input for RESRAD-Build is the same for the residential as for the commercial/industrial scenario. This approach assures that sufficient conservatism exists to assure protectiveness for residential uses.</p> <p>The text specified above clarifies that the use of ICs as used herein is limited to those associated with contamination on structures. The scope of this document does not include soils or groundwater</p>

Reviewer Name: Scott ClardyOrganization: MDHSSDate: 12/23/2003

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1	Section 3.3.1	<p>In the RESRAD-Build (version 3.1) calculations, SAIC used a value of 0.07 for the Air Release Fraction parameter and a value of 0.2 for the Removable Fraction parameter. Table 3-1 in section 3.3 of the <i>User's Manual for RESRAD-BUILD Version 3</i> lists template data values for key parameters used in the building occupancy and building renovation scenarios. In a December 8, 2003 electronic mail to DHSS, a representative of the Argonne National Laboratory recommended the use of these template data values. Therefore, DHSS recommends that values of 0.357 for the Air Release Fraction and 0.1 for the Removable Fraction be used in the building occupancy scenario or provide further justification as to why these values were not used.</p> <p>DHSS ran the Industrial Worker Building Occupancy Scenario dose calculation with RESRAD-Build (version 3.21, the most recent version) using the recommended template data values for the Air Release Fraction (0.357) and Removable Fraction (0.1) parameters. Derived concentration guideline levels (DCGLs) were considerably less than the SAIC calculated DCGLs.</p>	<p>NUREG/CR-6697 <i>Development of Probabilistic RESRAD 6.0 and RESRAD-Build 3.0 Computer Codes</i> was promulgated in November of 2000. It provides guidance on reasonable input parameters to be used in modeling. The document provides upper and lower bounds and a "most likely value". The values selected as described in the comment represent "most likely values".</p> <p>The order of precedence for the selection of input parameters is described in Section 3.3 of the DCGLs document. This order of precedence is appropriate for St. Louis sites.</p> <p>A removable fraction of 0.2 is conservative for the scenarios based upon available site data. The average total contamination was 175 dpm/100 cm². When you compare that to the max removable result, you only have a 13 % ratio. The average loose to average total ratio will be less than 13%. The process for ensuring that the assumed removable fraction remains conservative will be included in final status survey plans.</p> <p>USACE concurs that using template data values for input parameters instead of parameters that reflect actual conditions expected in structures within the St Louis North County sites will result in different DCGLs and concludes that use of the values specified is appropriate.</p>

2	Section 3.3.2	<p>The Renovation Worker scenario uses building occupancy inputs given an area source. Whereas, the <i>User's Manual for RESRAD-BUILD Version 3</i> sets forth a renovation scenario using a volumetric source with additional inputs that further define the building. DHSS recommends the use of inputs as recommended by the users guide for the renovation scenario or further justification as to why deviation from the users guidance is necessary.</p>	<p>The selected RESRAD-Build inputs appropriately use recommendations from EPA and other regulators preferentially to parameters listed in the RESRAD-Build User's Guide in accordance with Section 3.3. The inputs to the modeling reflect the actual conditions seen and/or expected in structures at the St Louis North County sites to the maximum extent practicable. The nature of FUSRAP COCs serves to preclude volumetric contamination of structural materials. (To date no instance of volumetric contamination of structural materials by FUSRAP COCs has been encountered.)</p> <p>Modeling and the DCGLs are appropriately expressed in terms of surficial activity due to the lack of volumetric contamination and is consistent with Final Status Survey measurements.</p>
3	Section 3.3.2	<p>Contamination of floor, wall, ceiling, or roofing materials should be considered when accounting for the parameter of Direct Ingestion. Materials contaminated with radionuclides, defined as the source in RESRAD-BUILD, may be physically contacted during routine maintenance activities and building renovation. DHSS recommends that a value for the Direct Ingestion Rate be derived by considering the total physical mass of the source and maintaining a mass balance with the erosion of the source.</p>	<p>Concur that direct ingestion should be fully considered. This pathway was fully considered as follows: Consistent with MARSSIM, modeling assumes that the floors and walls to two meters above the floor are equally contaminated. This same source term is used for the residential scenario and results in significant conservatism in dose calculations. Contamination on walls above two meters from the floor is modeled to be insignificant in that even that contamination present on floors and lower walls has generally been spotty and tightly adherent to structure surfaces. The direct ingestion pathway is not a credible route of significant exposure for any of the scenarios including renovation. As such, the parameters used appear to fully consider actual site conditions.</p>

4	Section 3.4	DHSS agrees that the residential occupation of such a building without extensive renovation is unlikely, but SAIC gives little reasoning for this. DHS recommends that the document discuss any zoning requirements, deed restrictions, or other limitations that may prohibit residential use of this property. Furthermore, DHSS recommends that the document briefly address the soil sampling conducted near the existing residential areas along the haul route and determine the potential of contamination for these structures prior to ruling out a residential scenario.	<p>Concur. Additional text has been added in Section 3.4 as follows to improve clarity and understanding:</p> <p>“A variety of factors contribute to preclude conversion of industrial facilities for residential use. These include municipal zoning restrictions, the need for occupancy permits, and FAA surface use restrictions on properties within specified distances from the airport. Investigations of soils on vicinity properties containing residences have not detected levels of COCs exceeding proposed remedial goals. Therefore, the residential scenario is screened out and the industrial scenario is carried forward for the development of DCGLs.”</p>
5	Section 4.0	Table 3.1 in the <i>User's Manual for RESRAD-BUILD Version 3</i> lists the key parameters used in the building occupancy and building renovation scenarios. Only those parameters that would be different are listed. Other parameters are site specific or should be kept at RESRAD-BUILD defaults. DHSS recommends that the uncertainty analysis discuss the use of any parameters that vary from the default or the template data values in the RESRAD-BUILD calculation and what affect such values may have upon the calculated doses.	<p>The value for non-default parameters and the reasoning for their selection were provided in tables for each scenario. Section 4.0, “Uncertainty Analysis” addresses the uncertainty analysis of input parameters.</p> <p>USACE believes it is appropriate to use NRC, EPA, or site-specific values in preference to default values.</p>
6	Section 6.0	<i>Technical Basis for Calculating Radiation Doses for the Building Occupancy Scenario using Probabilistic RESRAD-BUILD 3.0 Code</i> , was incorrectly cited in this section and throughout the document as NUREG/CR-6697. The document should be correctly cited as NUREG/CR-6755.	Reference ANL 2002 has been changed to read NUREG/CR-6755. The reference to NUREG/CR-6697 is correct as used.
7	General	This draft document did not mention analysis plans, site-specific radionuclide concentrations, criteria to determine remediation need, or a means to remediate the buildings. Will these items be forthcoming?	Analysis plans are defined in the FUSRAP Laboratory Procedures Manual. Site-specific soil radionuclide concentrations and alternatives for remediation are detailed in applicable feasibility studies. Remedial goals (e.g., criteria) are defined in decision documents. As such, no additional items will be forthcoming.

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