

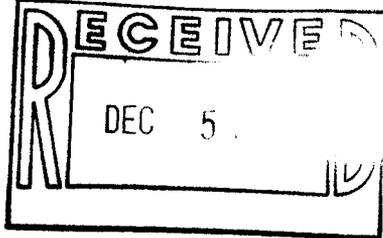
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# Los Alamos National Laboratory

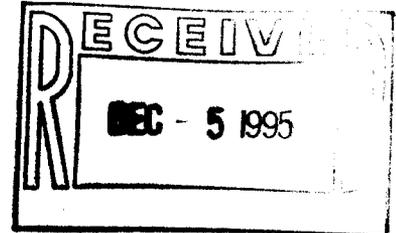
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Date: December 1, 1995  
Refer to: EM/ER:95-641



Ms. Barbara Driscoll  
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EPA, Region 6, 6PD-N  
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**SUBJECT: FOLLOW-UP ON ISSUES FROM JOINT RISK ASSESSMENT WORKSHOP**

Dear Barbara:

This memorandum addresses three issues regarding the Los Alamos National Laboratory (LANL)/Sandia National Laboratory (SNL) Risk-Based Corrective Action Process document that were not resolved during the joint Environmental Protection Agency (EPA)/New Mexico Environment Department (NMED)/SNL/US Department of Energy (DOE) risk assessment workshop in October 1995. Each issue is addressed separately below, according to the following format:

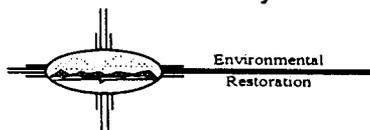
- The applicable section of the draft Risk-Based Corrective Action Process document, dated 16 October 1995, is identified.
- LANL's understanding of EPA/NMED's concern is presented.
- A revision and/or addition to the draft Risk-Based Corrective Action Process document is proposed.

LANL would appreciate receiving EPA's concurrence with the proposed changes or additional clarification of the pertinent issues so that the Risk-Based Corrective Action Process document can be finalized.

## Issue 1: Use of the Detection Limit in Screening Action Level (SAL)/AL Comparisons

Existing Text (Screening Assumptions, Point 7, Bullet 3; page 7)

"If the detection limit of the fixed analytical laboratory method is above the SAL/AL, the detection limit may be used as a trigger level to identify a contaminant of concern."



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### LANL's Understanding of EPA/NMED's Concern

There are several chemicals for which existing analytical methods are not capable of achieving detection limits below the SAL/AL. LANL/SNL had proposed that, in these cases, the detection limit could be used in place of the SAL/AL. However, EPA/NMED stated during the October meetings that these chemicals should be identified as a chemicals of potential concern (COPCs) in the screening assessment and evaluated further in the risk assessment. Depending on site-specific considerations, this assessment may be qualitative in nature based on process knowledge. If the chemical is not expected to be present at the site, then the chemical does not need to be considered further. However, if the chemical is expected to be present, then it should be included in the risk assessment calculations assuming it is present at a concentration equal to one-half the detection limit.

### Proposed Revised Text (Screening Assumptions, Point 7, Bullet 3; page 7)

"If the detection limit of the fixed analytical laboratory method is above the SAL/AL, and the chemical is expected to be present at the site, then the chemical will be identified as a COPC."

### Proposed New Text (Risk-Based Assumptions, Point 11, Bullet 2; page 9)

"Chemicals identified as COPCs because the detection limit was greater than the SAL/AL may be evaluated qualitatively based on process knowledge. If the chemical is not expected to be present at the site, then the chemical does not need to be considered further. However, if the chemical is expected to be present, then it will be included in the risk assessment calculations with the assumption that it is present at a concentration equal to one-half the detection limit."

### **Issue 2: Use of EPA Region IX PRGs as SALs at LANL**

#### Existing Text (Screening Assumptions, Point 5, Bullet 3; page 5)

"SALs for chemical constituents are based on EPA Region IX preliminary remediation goals for residential soil and tap water."

### LANL's Understanding of EPA/NMED's Concern

Historically, LANL calculated SALs for chemical constituents according to U.S. EPA guidance for calculating PRGs. The resulting SAL database was time consuming to maintain, because U.S. EPA-recommended toxicity criteria and, to a lesser extent, exposure assumptions are subject to change. EPA Region IX currently maintains a database of PRGs for several hundred chemicals. This database is updated on an annual basis to reflect any changes in toxicity criteria and, if applicable, exposure assumptions. Because the assumptions used by EPA Region IX to calculate PRGs are very similar to the assumptions used by LANL to calculate SALs, LANL requested permission to adopt the EPA Region IX PRGs as SALs. In July 1995, LANL representatives discussed this proposal with Mr. Jeff Yurk. Mr. Yurk expressed the following concerns:

1. Region IX PRGs do not account for additive effects. LANL explained that additive effects are addressed with the multiple constituent analysis embedded in the LANL screening assessment methodology.
2. Region IX PRGs do not account for eco-risk considerations. LANL explained that eco-risk screening was also being imbedded in the LANL screening assessment methodology.
3. Region IX PRGs do not account for the leaching of contaminants to groundwater. LANL explained that this is not a problem for most LANL sites; however, when groundwater is an issue, careful screening steps are applied.
4. Region IX PRGs do not necessarily use MCLs for water SALs. LANL explained that all MCLs that are available have been adopted as SALs for water.

Based on this discussion, Mr. Yurk expressed his support of adopting EPA Region IX PRGs as SALs for use in screening assessments. During the October meetings, however, EPA/NMED expressed interest in re-evaluating the applicability of EPA Region IX PRGs to LANL. In response to this comment, LANL provided EPA/NMED with a table that compares the former SALs to the EPA Region IX PRGs. LANL has calculated a new SAL for any chemical that had a former SAL but did not have an EPA Region IX PRG.

Based on our discussions with EPA/NMED and the documentation that has been provided, LANL believes that it is appropriate to adopt the EPA Region IX PRGs as SALs for use in screening.

Proposed Revised Text (Screening Assumptions, Point 5, Bullet 3; page 5)

None.

### **Issue 3: Identification of COPCs Based on Results of Multiple Chemical Evaluation**

Existing Text (Screening Assumptions, Point 6, Bullet 5; page 6)

"If the alternative analysis again indicates a problem exists in the MCE, constituents will be retained for further evaluation if they contribute more than 10% of the total normalized sum. For example, if the total normalized sum is 1.7, those constituents with normalized values of 0.17 or greater will be retained. Constituents with a normalized value less than 0.17 would be dropped from further evaluation."

#### LANL's Understanding of EPA/NMED's Concern

Based on comments received during the October meetings, it is our understanding that EPA/NMED are interested in further clarification of this proposed methodology. There are several possible methods for identifying COPCs based on the results of the MCE. The method proposed in the current draft links the magnitude of the total normalized sum to the number of chemicals that would be considered COPCs. Another possibility is to identify a chemical as a COPC if its individual normalized value (i.e., the

maximum detected concentration divided by the SAL) is greater than or equal to 0.1, regardless of the magnitude of the total normalized value. The following table illustrates the difference in these two methods.

**MULTIPLE CONSTITUENT EVALUATION FOR SWMU XX-XXX**

COPC <sup>a</sup>	MAXIMUM CONCENTRATION (mg/kg)	Soil SAL <sup>b</sup> (mg/kg)	Maximum concentration + SAL (NORMALIZED VALUES)
SAL BASED ON NONCARCINOGENIC EFFECTS			
Acetone	0.04	8 000	$5 \times 10^{-06}$
Bis(2-ethylhexyl) phthalate	5.5	1 600	0.0034
<b>Cadmium</b>	19	80	<b>0.24</b>
<i>Copper</i>	300	3 000	=> 0.1 <=
Di-n-Butyl Phthalate	2.0	8 000	$2.5 \times 10^{-04}$
Fluoranthene	2.2	3200	$6.9 \times 10^{-04}$
<i>Nickel</i>	192	1 600	=> 0.12 <=
Pyrene	4.1	2 400	0.002
<b>Silver</b>	200	400	<b>0.5</b>
<b>Thallium</b>	2.4	6.4	<b>0.38</b>
Toluene	0.03	910	$3.3 \times 10^{-5}$
Xylenes	0.039	160 000	$2.4 \times 10^{-7}$
Zinc	320	24 000	0.013
<b>Total Normalized Sum</b>			<b>1.36</b>

<sup>a</sup> COPC = Chemical of potential concern.

<sup>b</sup> SAL = Screening action level.

In this example, cadmium, silver, and thallium would be identified as COPCs using the method described in the current draft (i.e., using **10% of the total normalized sum**). However, if a **normalized value of 0.1** was used instead, copper and nickel would also be identified as COPCs. In any case, use of a normalized value of 0.1 will identify the same or more chemicals as COPCs as would be identified using 10% of the total normalized sum. Therefore, LANL recommends adopting this more conservative methodology as part of the screening process for identifying COPCs based on the results of the MCE.

Proposed Revised Text (Screening Assumptions, Point 6, Bullet 5; page 6)

"If the results of an alternative analysis also suggest that multiple chemical exposure may be of concern, then constituents may be identified as COPCs and retained for further evaluation if their individual normalized values [i.e., the maximum or mean (for

ample data sets)] detected concentration divided by the SAL) are greater than or equal to 0.1. The final decision to retain a constituent as a COPC for further evaluation will also depend on other site-specific considerations and the professional judgments of the risk assessor. Constituents with normalized values less than 0.1 will be dropped from further consideration.

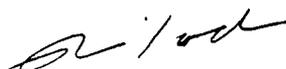
Please call Tracy Glatzmaier at (505) 665-2613 if you have any questions.

Sincerely,



Jörg Jansen, Program Manager  
Environmental Restoration

Sincerely,



Theodore J. Taylor, Program Manager  
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