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REVIEW COMMENTS ON THE DRAFT BASELINE HUMAN HEALTH RISK ASSESSMENT ST. LOUIS ARMY AMMUNITION PLANT ST. LOUIS, MISSOURI DATED SEPTEMBER 2003

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SUPERFUND RECORDS

Submitted to:

U.S. Environmental Protection Agency
Region 7
Superfund Division
Federal Facilities and Special Emphasis Branch
901 North 5th Street
Kansas City, Kansas 66101

Work Assignment No.:	07-YX
Contract No.:	68-W-01-051
Date Prepared:	October 1, 2003
Prepared By:	TechLaw, Inc. Steve Bryant (913) 236-0006 extension 108
TechLaw Project No.:	RR7-K07
EPA Primary Contact:	Thomas Lorenz
Telephone No.:	(913) 551-7292

October 1, 2003 DCN: RR7-TLI-07YX-01-TR-0940

Mr. Thomas Lorenz
U.S. Environmental Protection Agency
Region 7
Superfund Division
Federal Facilities and Special Emphasis Branch
901 North 5th Street
Kansas City, Kansas 66101

Re: EPA Contract No. 68-W-01-051; EPA Work Assignment No. 07-YX
TechLaw Project No. RR7-K07
Review Comments on the *Draft Baseline Human Health Risk Assessment, St. Louis Army Ammunition Plant, St. Louis, Missouri*, dated September 2003

Dear Mr. Lorenz:

TechLaw, Inc., (TechLaw) has completed a technical review of the *Draft Baseline Human Health Risk Assessment, St. Louis Army Ammunition Plant, St. Louis, Missouri* (HHRA), dated September 2003. The following issues are presented to provide a summary of the methodology-based review conducted by TechLaw.

Ecological Assessment: The first paragraph on page 3-4 states that "ecological risks associated with the site appear negligible." In support of that statement, a 1993 Missouri Department of Natural Resources (MDNR) document is cited in the HHRA which reportedly states that there are no endangered species in the vicinity of the site. A copy of the 1993 MDNR document was not included in the HHRA so it is unclear if any threatened species have been identified in vicinity of the site, or if this statement is true for all receptor classes (i.e., mammals, amphibians, reptiles, plants, birds, and insects). Furthermore, the cited document is approximately 10 years old and may not be reflective of current conditions. Additional evidence to support the conclusion that ecological risks at this site are "neglible" must be offered. The HHRA should be revised to include field notes and any maps from ecological surveys conducted at the site. Letters documenting contact with trustees such as the U.S. Fish and Wildlife Service and Natural Heritage Programs should also be included which document the threatened and endangered species in the vicinity of the site. In addition, the HHRA should also include a map which outlines the habitat types and locations both on and near the site. This information will allow for a complete understanding of the environmental

setting, potential ecological receptors, and potential exposure pathways. Alternatively, if this information has been provided in other reports, the HHRA should provide a clear reference to those documents.

Building Materials: URS correctly notes that a risk assessment of the on-site buildings and their construction materials/surfaces is not a wholly practical exercise. Undoubtedly, contamination exists within and on building surfaces. Buildings are not occupied at this time and any future tenant would necessarily need to initiate significant renovation (e.g., cleaning, painting, new flooring, ventilation systems, among others) of the existing structures which would ideally result in a significant reduction in potential exposures. Any building on site that is to be occupied in the future should be thoroughly surveyed to identify materials containing contamination that could affect the proposed use of that building. Such survey or renovation must be appropriately managed to reduce exposure and attendant health risk.

Background Assessment: Section 2.3, Treatment of Chemicals Detected in Background Samples, contains the following statement for treatment of inorganic contaminants:

> *"If the concentrations were within the local background range but exceeded the risk-based screening levels, they were identified as COPCs* [Contaminants of Potential Concern]. *COPCs in this category were not evaluated quantitatively in the risk assessment, but were discussed in the uncertainty analysis."*

According to EPA's latest guidance, this is not the preferred option with respect to background (*Role of Background in the CERCLA Cleanup Program, OSWER 9285.6-07P*, EPA, 2002) - which is referenced by URS. Preferably, the human health risk associated with background should be quantitatively estimated, such that when background risks are added to the site-specific estimates, comprehensive estimates of risk and hazards attributable to a receptor population at issue may be known for the purposes of risk management. However, from a pragmatic standpoint, it would be uncharacteristic of EPA to require active remediation to background levels. For purposes of the public record, the important thing is that these contaminants remain site-associated COPCs and their influence qualitatively assessed within the Uncertainty Analysis.

Conservative Basis of the HHRA: The HHRA appears to have a fundamental and conservative bias. Groundwater is not used at the site for either drinking water or industrial purposes. In addition, groundwater is not used as a drinking water source in the City of St. Louis. According to the HHRA the City of St. Louis has established Ordinance 13,272, that prohibits the installation of drinking water wells within the city limits. Thus, the only direct contact pathway for groundwater is incidental during intrusive soil actions, such as construction activities which progress to or below the water table. An indirect exposure pathway exists from intrusion by volatile contaminants from groundwater into overlying structures (buildings). The groundwater screening criteria for vapor intrusion to an overlying structure are predicated on direct contact (including ingestion) and include

the EPA Region IX Tap Water Preliminary Remediation Goals (PRGs) and Cleanup Levels for Missouri (CALM) groundwater target concentrations. These screening criteria are a conservative basis for screening contaminants in groundwater given the complete exposure pathways at issue. Other less stringent options for screening the vapor intrusion pathway, for example, include the 1E-06 target risk based values presented in Table 2C of the *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (EPA, 2002).

Hotspot Assessment: TechLaw commends URS for including a hotspot analysis. Different from the traditional assessment of hotspot exposure based on the potential to elicit acute health effects, this assessment focuses on supposed chronic exposure, which may greatly facilitate an understanding of the degree and ramifications of site-related contamination under the most health-protective of assumptions. Companies typically avoid this type of assessment, fearing they may be held to ultraconservative standards. However, all information is helpful and this type of assessment does provide bounding for potential exposures and can more quickly elucidate the most problematic of areas at issue.

Averaging Time: Typically, the parameter value for averaging time (AT) is not considered to be less than 365 days. The noncarcinogenic averaging time (AT_n) is the exposure duration (ED) multiplied by the number of days in a year. The minimum ED of one year is used within this assessment in an evaluation of subchronic exposures for a construction worker. Rather than averaging exposure over a year (365 days), URS has proposed AT_n values of 84 days (reasonable maximum exposure [RME]) and 42 days (central tendency exposure [CTE]). From a conservative standpoint, the HHRA benefits from this in that use of these values will tend to overestimate associated hazard and could lead to a more stringent cleanup goal.

Dermal Soil Adherence Factor: To maintain consistency with a conservative approach to dermal risk assessment, two options exist when recommending default weighted adherence factors (AFs): (1) select a central tendency (i.e., typical) soil contact activity and use the high-end weighted AF (i.e., 95th percentile) for that activity; or (2) select a high-end (i.e., reasonable, but higher exposure) soil contact activity and use the central tendency weighted AF (i.e., 50th percentile) for that activity. Section 3.4.8 incorrectly states that EPA's *Risk Assessment Guidance for Superfund* (RAGS) does not provide a recommended soil adherence rate for residents. Actually, RAGS, Part E (EPA, 2001) does provide a value of 0.07 milligrams per square/centimeter (mg/cm^2) which is based on the 50th percentile weighted AF for gardeners (the activity determined to represent a reasonable, high-end activity). Selecting the central tendency weighted AF (i.e., 50th percentile) of a high-end soil contact activity is consistent with an RME for contact rates. All of the soil adherence rates proposed by URS were equal to or in excess of values more commonly used within the program. TechLaw has refrained from commenting on proposed values which would serve to reduce the overall inherent degree of conservatism with the HHRA.

Toxicity Assessment of Lead: It appears (see Sections 5.1.4 and 6.6) that URS has used an upper-bound estimate (95% upper-bound confidence limit [UCL]) on the mean of the data set for lead, rather than the mean itself as the exposure point concentration (EPC), for use in comparison to programmatic cleanup/screening levels. Lead risk assessments differ from conventional human health risk assessments for hazardous chemicals in two respects. First, unlike conventional risk assessments, in which human health risks are estimated for an individual based on assumptions for RME using upper-bound values, lead risks are based on central tendency or average values. A geometric standard deviation (GSD) is applied to the average blood-lead level (PbB) to generate the entire range of plausible PbB levels around the average. This departure from conventional risk assessment practice must be recognized while developing a lead risk assessment, because using conventional RME parameters will lead to ultraconservative estimates of PbB levels. These results will be unrealistic and not plausible. One common mistake of using an RME parameter that can significantly overestimate lead risk involves use of the 95% UCL of the mean soil concentrations. Although this approach is required for conventional risk assessments, only average or central tendency parameters may be used in lead risk assessment.

Quantitative Point Estimates of Risk and Hazard: Due to the schedule and available funding, TechLaw did not engage in a quantitative quality control (QC) of the EPCs, estimates of intake, or risks and hazards. At EPA's discretion, TechLaw can advance a 10% (or however directed by EPA) quantitative check as a follow up to this methodology-based technical review.

Enclosed is a diskette copy of the comments in WordPerfect Version 9.0. If you have any questions concerning the information provided, please contact me at (913) 236-0006, extension 104 or Steve Bryant at extension 108.

Sincerely,

TechLaw, Inc.

Fred Molloy
Senior Project Manager

Enclosure

copy: P. Brown-Derocher/Central Files
Document Control