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ENTERED

February 18, 2004

Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building One
Santa Fe, New Mexico 87505-6303

Reference: Work Assignment No. 06110.130.0003; State of New Mexico Environment Department, Santa Fe, New Mexico; Human Health and Ecological Risk Assessment Support; Review of ECORisk version 2.0, Task 3 Deliverable.

Dear Mr. Cobrain:

Enclosed please find the deliverable for the above-referenced work assignment. The deliverable consists of review comments on Los Alamos National Laboratory's (LANL) ECORisk database, release 2.0, dated November 2003.

The ECORisk database is quite extensive and provides toxicity reference values (TRVs) for several aquatic, mammalian, avian, and plant receptors. Due to the extensiveness of the database, a review of every chemical, study, and derivation of toxicity reference values was not conducted for each receptor. Rather, a more in-depth review of the references and toxicity values for the deer mouse and avian receptors was conducted.

One problem noted with reviewing the references and TRVs cited, is that some of the references cite previous versions of the ECORisk database or internal LANL studies. This makes it difficult to confirm and/or validate studies and TRVs. However, most TRVs could be verified, as the references were Environmental Protection Agency (EPA) values or from other commonly cited documents (e.g., Sample *et al.* (1996)). In cases where a LANL reference was provided, the TRV was compared to other toxicity data available for review. In almost all cases, the LANL-based TRV, as listed in ECORisk, was more conservative.

The document is formatted in Word. A draft of the deliverable was emailed to you on February 18, 2004 at David_Cobrain@nmenv.state.nm.us. A finalized hard (paper) copy of this deliverable will be sent via mail. If you have any questions, please call me at (303) 763-7188 or Ms. Paige Walton at (801) 451-2978.

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Sincerely,

June K. Dreith (p.w.c.t.o.)

June K. Dreith
Program Manager

Enclosure
cc: Mr. John Kieling, NMED
Ms. Paige Walton, TechLaw

# TASK 3 DELIVERABLE

# REVIEW COMMENTS ON THE LOS ALAMOS NATIONAL LABORATORY ECORISK DATABASE, RELEASE 2.0 NOVEMBER 2003

**Human Health and Ecological Risk Assessment Support**

**Submitted by:**

**TechLaw, Inc.**
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**Submitted to:**

**Mr. David Cobrain**
**State of New Mexico Environment Department**
**Hazardous Waste Bureau**
**2905 Rodeo Park Drive East**
**Building One**
**Santa Fe, New Mexico 87505**

**In response to:**

**Work Assignment No. 06110.130**

**February 18, 2004**

**REVIEW COMMENTS ON THE**
**LOS ALAMOS NATIONAL LABORATORY**
**ECORISK DATABASE, RELEASE 2.0**
**NOVEMBER 2003**

## General Comments

1. The ECORisk database was developed by the Los Alamos National Laboratory's (LANL's) Environmental Restoration (ER) Project to provide ecological screening levels (ESLs) for use in ecological risk screening activities conducted by risk assessors in the ER Project at LANL. As such, the values contained within the database, once approved, will be the default ESLs for all ecological screening risk assessments at LANL. ECORisk provides ESLs for several receptors, including assessing phytotoxicity to generic plants. According to Efroymson, *et.al* (1997), "If chemical concentrations reported in the field soils that support vigorous and diverse plant communities exceed one or more of the benchmarks...or if a benchmark is exceeded by background soil concentrations, it is generally safe to assume that the benchmark is a poor measure of risk to the plant community at the site." The phytotoxicity ESLs presented in ECORisk were compared to the LANL background values by media for inorganic chemicals (LANL 1998, Tables 6.0-1 and 6.0-2). For several of the inorganic constituents (specifically antimony, barium, beryllium, chromium, copper, mercury, nickel, selenium, silver, thallium, vanadium, and zinc), the ESL exceeded one or more of the background values by media (soil, canyon sediment, Qbt 2,3,4, Qbt1v, and Qbt1g,/Qct/Qbo). Given this, it appears that the phytotoxicity ESLs as presented in the database are not appropriate for use at LANL. Discuss whether background concentrations at LANL were considered when reviewing the toxicity data used to determine ESLs. Also discuss how phytotoxicity should be addressed for the constituents where the ESL as presented in the ECORisk database is deemed inappropriate.


- Efroymson, R.A., M.E. Will, G.W. Suter, II, and .C. Wooten. "Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision." U.S. Department of Energy, ES/ER/TM-85/R3. November.
- LANL 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory." LANL Environmental Restoration Project, EM/ER: 98-372, September.


## Specific Comments

1. A chronic no-observed-adverse-effect-level (NOAEL) of 0.4 mg/kg/d was used to calculate the effect level for the deer mouse for beta- hexachlorocyclohexane (β-BHC). The NOAEL is cited from Sample *et al.* (1996); the primary reference in Sample *et al.* (1996) is Van Velsen *et al.* (1986). The study in Sample *et al.* (1996) identifies the constituent as "β-Benzene Hexachloride (β-BHC)"; however, the constituent is really hexachlorobenzene, not β-BHC. It is also noted that the

compounds listed in Sample *et al.* as BHC mixed isomers (encompassing Grabt *et al.* (1977), Bleavins *et al.* (1984), and Vos *et al.* (1971)) are for hexachlorobenzene and not β-BHC. Thus the application of the NOAEL may be inappropriate for use for β-BHC, as β-benzene hexachloride is not an appropriate surrogate. Clarify whether the Van Velsen *et al.* study is based upon beta- hexachlorocyclohexane and if Sample *et al.* misidentified the compound. It is suggested that gamma-BHC (Lindane) be used as a surrogate for the BHC isomers if warranted.

- Sample, BE, DM Opresko and GW Suter II. 1996 (June). Toxicological Benchmarks for Wildlife: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, Tennessee. 227 pp. ES/ER/TM-86/R3.