

General

State of New Mexico  
ENVIRONMENT DEPARTMENT



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CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

June 21, 2004

David Gregory, Federal Project Director  
Los Alamos Site Office  
Department of Energy  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, NM 87544

G. Pete Nanos, Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop A100  
Los Alamos, NM 87545

**RE: REQUEST FOR INFORMATION ON THE  
ANNUAL UPDATE AND REVISION OF THE LABORATORY'S ECORISK  
DATABASE, VERSION 2.0  
LOS ALAMOS NATIONAL LABORATORY (LANL), NM0890010515**

Dear Messrs. Gregory and Nanos:

The New Mexico Environment Department (NMED) is in receipt of the Annual Update and Revision of the Los Alamos National Laboratory's (LANL) Ecorisk Database, Version 2.0. The University of California and the Department of Energy (collectively the "Permittees") have informed NMED that they will use this version of the database during the remainder of their fiscal year. NMED believes the Permittees should provide the following information.

The Ecorisk database was developed by the LANL to provide ecological screening levels (ESLs) for use by LANL risk assessors. As such, the values contained within the database, once approved, will be the default ESLs for all ecological screening risk assessments at LANL. The ECORisk database provides ESLs for several receptors, including phytotoxicity to generic plants. According to Efrogmson, *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



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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). It is apparent that the phytotoxicity ESLs as presented in the database are not appropriate for use at LANL. NMED requests that the Permittees discuss whether background concentrations at LANL were considered when reviewing the toxicity data used to determine ESLs. NMED also requests the Permittees to discuss how phytotoxicity should be addressed for the constituents where the ESL as presented in the ECORisk database is deemed inappropriate.

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 ( $\beta$ -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 “ $\beta$ -benzene hexachloride ( $\beta$ -BHC)”); however, the subject constituent is actually hexachlorobenzene, not  $\beta$ -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  $\beta$ -BHC. Thus the application of the NOAEL may be inappropriate for use for  $\beta$ -BHC, as  $\beta$ -benzene hexachloride is not an appropriate surrogate. The Permittees should 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.

#### References:

Efroymsen, R.A., M.E. Will, G.W. Suter, II, and C. Wooten. November 1997, “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. (Efroymsen *et al.*, 1997)

LANL September 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, Los Alamos, New Mexico. (LANL 1998)

Sample, B.E., D.M. Opresko and G.W. Suter II, June 1996, Toxicological Benchmarks for Wildlife: 1996 Revision, Oak Ridge National Laboratory, Oak Ridge, Tennessee. 227 pp. ES/ER/TM-86/R3. (Sample *et al.* 1996)

Should you have any questions, please feel free to contact Ms. Darlene Goering of my staff at (505) 428-2542.

Messrs. Gregory and Nanos  
June 21, 2004  
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Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

JB:dxg

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