ECOLOGICAL RISK ASSESSMENT

SRC has extensive technical capabilities and experience in conducting ecological risk assessments, **providing the scientific information relevant for environmental decision makers**

SRC, Inc., has performed numerous site-specific ecological risk assessments including:

Colorado
- California Gulch Site
- Denver Federal Center
- French Gulch Site
- Rocky Flats
- Rocky Mountain Arsenal

Montana
- Clark Fork River Site
- East Helena Site

South Dakota
- Cheyenne River Site
- Gilt Edge Mine Site
- Whitewood Creek Site

Utah
- Intermountain Waste Site
- International Smelter and Refinery Site
- Ogden Railyard
- Ogden River and Weber Rivers
- Richardson Flats Site

SEDIMENT TOXICOLOGY AND RISK ASSESSMENT

SRC is well experienced with sediment toxicology and risk assessment, including the development of methods for estimating population level risks; assessment of risks associated with metals, polychlorinated biphenyls and dioxins; sediment sampling; toxicity testing; and pore water sampling.

SRC has created spatial databases for the distribution of risks to quantify uncertainties and to focus future sampling efforts.

SRC has completed risk assessments of sediment contamination at numerous sites all over the country. We have also been developing sediment screening benchmarks for use in evaluating data at the Denver Federal Center.

BIOLOGICAL ASSESSMENTS

SRC conducted a biological assessment of endangered species at the Clark Fork River. The biological assessment evaluated the potential effects of the preferred remedy (both during construction and post-construction) on the listed species: the bull trout (Salvelinus confluentus), bald eagle (Haliaeetus leucocephalus), gray wolf (Canis lupus) and grizzly bear (Ursus arctos horribilus). Biomonitoring plans have also been developed for evaluating the effectiveness of clean up activities.

SRC HAS EXPERTISE IN THE REVIEW AND ANALYSIS OF CURRENT ECOLOGICAL LITERATURE, INCLUDING THE DESIGN AND IMPLEMENTATION OF ELECTRONIC LITERATURE SEARCHES, AS WELL AS THE USE OF BIBLIOGRAPHIC SOFTWARE

LITERATURE REVIEW AND SYNTHESIS

SRC has expertise in the review and analysis of current ecological literature. SRC completed a review of the current literature on the toxicokinetics and toxicodynamics of methyl mercury to avian species with the review of more than 1,158 literature citations. We have currently completed evaluations of literature on the use of population level endpoints in ecological risk assessment.

USE OF TOXICITY IDENTIFICATION EVALUATION PROCEDURES

SRC adapted methods for toxicity identification evaluation procedures to evaluate risks from the discharge of treated mine water. The toxicity identification evaluation results were also used to evaluate and guide wastewater treatment options. We

ECOLOGICAL RISK ASSESSMENT

are currently evaluating the risks associated with in-place sediment contamination (metals and polymers) and the potential future risk given the possibility for recovery after cessation of metal loading from surface water.

EVALUATING SPECIES SENSITIVITY DISTRIBUTIONS

SRC developed site-specific species sensitivity distributions for the California Gulch Site/Upper Arkansas River. The SSDs were developed for cadmium and zinc to provide information (along with site-specific toxicity data and population studies) on the likely magnitude and severity of adverse effects. We also evaluated the use of SSDs in establishing wildlife toxicity reference values and for assessing population level risks.

ECO-SSLS

Under contract to the U.S. Environmental Protection Agency Office of Superfund Remediation and Technology Innovation, or OSTRI, and EPA Region 8, SRC provides scientific and technical support for the EPA in the development of Ecological Soil Screening Levels for Superfund sites. The Eco-SSLs represent the collaborative effort of a multi-stakeholder workgroup consisting of federal, state, consulting, industry and academic participants. SRC's extensive support of Eco-SSLs spans six years.

DERIVATION OF WILDLIFE TRVS

One of the tasks necessary for deriving Eco-SSLs was the development of wildlife toxicity reference values, or TRVs. The wildlife Eco-SSLs is the soil contaminant concentration where the Effect Dose TRV and Exposure Dose are equal (amount of contaminant in the diet that is taken up from soil). SRC developed and implemented the methods for the derivation of the TRVs. We have reviewed more than 65,000 citations and evaluated data from more than 3,000 of these.

WILDLIFE TRV DATABASE

A Web-based data entry system was developed for the efficient and accurate extraction of data from multiple geographic locations. The system is an html-based system with a Microsoft Access® interface that is also used to download data into spreadsheet (Excel® or Lotus®) applications. The system is currently housed by the EPA with the EcoTox database. SRC continues to provide quality assurance of data entered into the system and is responsible for downloading results for derivation of TRVs and compilation of guidance documents.

DEVELOPMENT OF METHODS FOR SOIL SCREENING LEVEL DERIVATION

SRC assisted the EPA with the development of methods for derivation of Eco-SSLs for both plants, soil invertebrates and wildlife. We provided extensive support in the analyses of key technical issues in the development of the Eco-SSLs (statistics, exposure assessment, dermal and inhalation exposures, bioavailability issues, polychlorinated biphenyls, or PCBs, and dioxin soil risk assessment, background soil levels, database production, document production, and meeting support).

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