

Acute and Sublethal Toxicity Testing for Mining Effluents Workshop

Instructor	Dr. Bernard Vigneault
Date	September, 19, 2005 (1:00 pm to 4:30 pm)
Fee	\$150.00
Location	Ramada Plaza Inn, Abbotsford, B.C.
Registration	Register by indicating attendance on Symposium registration form

Target Audience The course is recommended for professional and technical personnel who receive aquatic toxicity data as part of effluent regulations or ecological risk assessment.

Instructor Dr. Bernard Vigneault has developed a unique expertise in metals and mine effluents geochemistry and toxicity. His research activities are conducted in a regulatory context, such as international risk assessments for metals, federal Metal Mining Effluent Regulations and other provincial regulations for the mining industry.

Course Outline

1. Basis of aquatic toxicology
 - 1.1. Dose-response curve and descriptive parameters
 - 1.2. Standard toxicity testing
 - 1.2.1. Acute toxicity
 - 1.2.2. Sublethal toxicity
 - 1.2.3. Factors that affect toxicity and measured toxicity variability
2. Description of acute toxicity tests[†]
 - 2.1. Rainbow trout survival
 - 2.2. *Daphnia magna* (cladoceran) survival
3. Description of sublethal toxicity tests[†]
 - 3.1. Growth of the algae *Selenastrum capricornutum*
 - 3.2. Growth of the macrophyte *Lemna minor*
 - 3.3. Survival and reproduction of the cladoceran *Ceriodaphnia dubia*
 - 3.4. Survival and reproduction of the fathead minnow larvae
4. The use of toxicity testing to develop discharge objectives and limits
 - 4.1. Global toxicity criteria and limits
 - 4.2. Discharge objectives based on generic water quality criteria
 - 4.3. Discharge objectives based on site-specific water quality criteria
5. Interpretation of sublethal toxicity test results in the metal mining effluent regulations (environmental effects monitoring)
 - 5.1. Role of sublethal toxicity testing in environmental effects monitoring
 - 5.2. Sublethal toxicity and effluent physico-chemical characterization
 - 5.3. Sublethal toxicity and biological monitoring
 - 5.4. Example of the pulp and paper industry

† For each toxicity test, methods will be described (duration, measured endpoints, data analysis, variability, quality control) and an example of certificate of analysis will be discussed.

The British Columbia Technical and Research Committee on Reclamation

The Technical and Research Committee on Reclamation (TRCR) originated, and first became active in the early 1970's in response to a demonstrated need in British Columbia mining for greater government-industry communication in the area of environmental protection and reclamation. Membership is drawn from industry, the Ministry of Energy and Mines, the Ministry of Water, Land and Air Protection, the Environmental Assessment Office, Natural Resources Canada, the Mining Association of British Columbia, the Coal Association of Canada, University of British Columbia, and Thompson Rivers University. The Committee meets four or five times a year to discuss matters of joint concern and interest, exchange experiences, plan activities, and prioritize research needs.

In addition to the annual symposium dealing with the entire spectrum of reclamation issues, the TRCR also sponsors symposia and studies focusing on single issues such as resloping waste dumps, material handling and costs, heap leaching, rock drains, environmental management of cyanide in mining, molybdenum and the environment, and metal uptake by vegetation.

Twenty-nine years ago, the Committee presented a large jade trophy, now called the Jake McDonald Mine Reclamation Award, to recognize outstanding achievement in mine reclamation in British Columbia. In addition to this major award, citations are given to recognize merit in categories of exploration, metal mines, coal mines, placer operations, and sand and gravel pits.