

Fundamentals of Environmental Risk Assessment

December 1–2, 2014, Sudbury, Ontario



A world-class course based on the Sudbury story

The Sudbury region has a long, rich history in mining and metal processing, with a parallel history of both environmental degradation and environmental rehabilitation and recovery. For almost a decade, it was the subject of one of the world's largest environmental risk assessments.

This two-day intensive course will teach participants the fundamentals of environmental risk assessment, using world-class expertise and examples borrowed from the Sudbury story and from elsewhere around the world. It will provide participants with a detailed introduction to the principles of both human health and ecological risk assessments with a focus on metal and chemical stressors. The course will cover the scientific background as well as the regulatory environment behind risk assessments, and will teach participants how to evaluate, communicate and manage these risks. Examples will focus on the mining industry in Ontario, but the course will be useful for small to large projects across resource-based industries and regulatory boundaries.

Who should attend?

This course will be of interest to professionals responsible for managing or communicating environmental risks, or wish to understand the science behind their assessment. Participants may include:

- environment professionals from the mining sector, including environmental coordinators, technical staff, mine development teams, tailings facility supervisors, mine managers and plant supervisors;
- environmental professionals from other resource-based industry sectors including forestry, transportation and energy development;
- decision-makers from regulatory agencies, First Nations organizations and municipalities who must review and evaluate environmental risks.

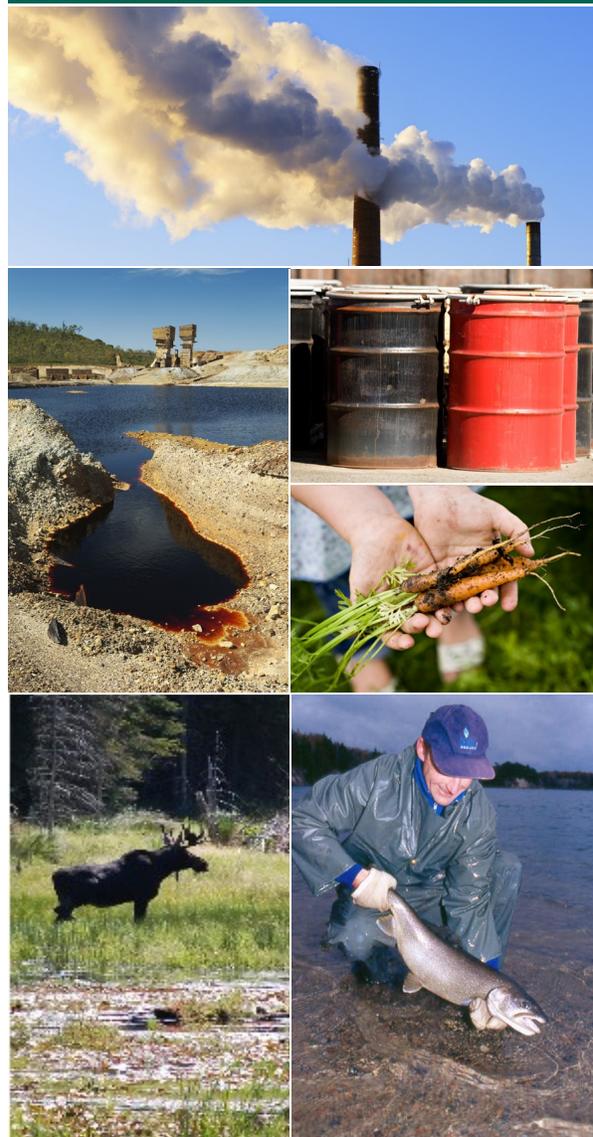
What will you get out of it?

By the end of the course, participants will:

- have a deeper understanding of concepts, terminology and approaches of environmental risk assessments, including both human health and ecological risk assessments.
- Be able to review risk assessment documents and prepare scope of work for risk assessments.
- be aware of the regulatory framework, within Canada and within Ontario.
- be able to develop the risk problem formulation which forms the blueprint for the detailed risk assessment,
- understand how to better communicate environmental risk.

Educator

*Christopher Wren, PhD,
LRG Environmental*





About Your Educator: **Christopher Wren, PhD**

Dr. Wren has been involved with environmental impact assessments and risk assessment for almost 25 years, with a focus on the mining sector. He directed the Sudbury Soils Study from 2003 to 2006, one of the largest human health and ecological risk assessments in Canada. In 2012, he edited a textbook *Risk Assessment and Environmental Management: A Case Study in Sudbury, Ontario*. He regularly lectures and provides training workshops to industry, university and government staff.

Course Outline

Introduction to Risk Assessment

- *Basic Concepts*
- *Regulatory framework and key guidance documents*

Case Study in Problem Formulation

- *Conceptual site model (HHRA and ERA)*
- *Selection of chemicals of concern*
- *Selection of valued ecosystem components*

Fundamental Concepts in Toxicology

- *Mammalian and avian toxicology*
- *Aquatic toxicology*

Human Health Risk Assessment

- *Threshold vs. non-threshold chemicals*
- *Exposure pathways, data collection and models*
- *Exposure models*

Ecological Risk Assessment

- *Receptors and valued ecosystem components*
- *Exposure pathways*
- *Selecting toxicity reference values*

Risk Communication

Risk Management

Lectures will use case studies to illustrate key concepts and demonstrate practical applications. The course will also include guest lectures to provide further examples of risk management and mine rehabilitation.

Course fee: \$1,500 (includes HST)

Includes

- A comprehensive set of course materials, including a copy of the book, *Risk Assessment and Environmental Management: A case Study in Sudbury, Ontario*. Maralthe Publishing, 450 pp.
- Lunch and refreshments served each day

The course is being held at the

Willet Green Miller Centre
Room #B4048 (4th floor)
933 Ramsey Lake Road
Sudbury, Ontario

Travel arrangements and accommodations are the participants responsibility. A list of hotels can be provided upon request.

TO REGISTER AND FOR FURTHER INFORMATION, PLEASE CONTACT:

Merel Hartog

Phone: 1-705-675-1151 ex. 5075
Fax: 1-705-675-4838
email: mhartog@mirarco.org

MIRARCO Mining Innovation
935 Ramsey Lake Road
Sudbury, Ontario, Canada P3E
2C6

WWW.MIRARCO.ORG

