

MITE PROGRAM

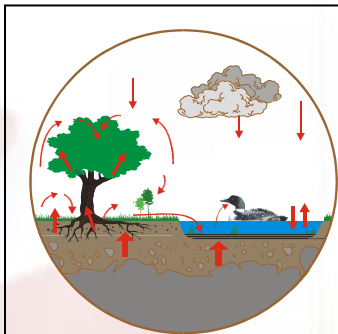
Metals in the Environment

2002-2006



Vision Statement

To provide the geoscience knowledge necessary to assess and support the management of risk posed by metals in the environment to ecosystem and human health.



Historical Perspective

Source Apportionment

- **Conventional (environmental) wisdom**
 - ambient metal concentrations in remote areas significantly elevated due to long range atmospheric transport from anthropogenic sources
- **Geoscience view**
 - Natural sources not adequately understood



Globe & Mail, Nov. 1994

GSC MITE is Born



- **As of 1996, GSC did not have a formal MITE research *program*. Literature review had been largely funded externally (MAC and ICME)**
- **Parliamentary Committee Report provided incentive for ESS/GSC senior management to give go ahead to new program and re-allocate funds in spring 1997**
 - **\$500K O&M, \$1500K Salary/year for 5 years**
 - **Bob Garrett took on leadership**

2002

Basic Issue- *for Canadian public.*

Clean Environment

What needs to be done to safeguard Canadians from toxic substances and environmental contaminants?



METALS IN THE ENVIRONMENT

Logic Model



ACTIVITIES

Research into geochemical processes affecting metal distribution and bio-availability

Research into methods for determining and distinguishing natural vs. anthropogenic metals

OUTPUTS LEVEL 1

Plot transect for tri-national soil survey complete

National scale geochemical maps and interpretation guidelines

Field study established on abandoned mines.

Mercury monitoring network around point sources.

Studies on heavy metals in arctic food chains.

Multi-media studies for source validation.

OUTPUTS LEVEL 2

Proof of concept and proposal.

Geochemical basis and guidelines for map interpretation.

Characterization of metal dispersal around sources.

Characterization of source of Hg, Pb, Cd in arctic food chains

Basis and guidelines to determine natural from anthropogenic sources.

North American soil monitoring system*

SHORT TERM OUTCOMES

Decision makers aware of significance of geochemical processes in controlling metal bioavailability

Decision makers aware of significance of source apportionment of metals in mitigation options.

INTERMEDIATE TERM OUTCOMES

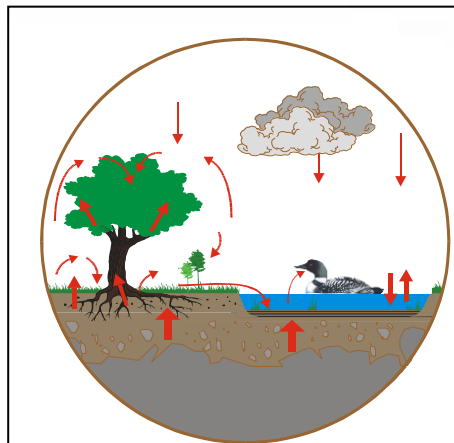
Guidelines and policies on human and ecosystem health.

Identification of ecosystems and human communities at risk from metals toxicity

LONG TERM OUTCOMES

Mitigation of risks posed to human and ecosystem health by metals in the environment

Project 1: Sources, Fates and Transfer



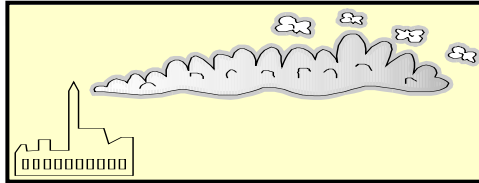
Objective: To increase our predictive capability in making decisions related to the occurrence and impact of “unclean environments”. We will characterize the geochemical environment at the earth’s surface to understand processes which contribute to the bioavailability of metals

Project 2: Source Apportionment



Objective: To increase our predictive capability in making decisions related to emission controls, risk management, policy development, and environmental responsibility in sustainable development. Information is necessary to identify source: anthropogenic vs natural.

Project 3: Emission and deposition of elements as related to the Geogenic and anthropogenic sources



Objective: To increase our predictive capability in making decisions related to emission controls, risk management, policy development, and environmental responsibility in sustainable development.



Outputs*:

- **Peer reviewed papers: 36**
- **Conference proceeding papers: 8**
- **Reports: 9**
- **Theses supervised: 20**
- **Conference presentations: 36**
- **Manuals: 1**
- **Assessment reports: 8**



As of June 2006

MITE

Field Locations



Environment Program



Program

Budget

MITE I Program- 1997-2002

Can society continue to extract and use metals sustainably?

5-yr 500K O&M 1.5 M Salary

MITE II Program- 2002-2006

Mitigation of risks posed to human and ecosystem health by metals in the environment

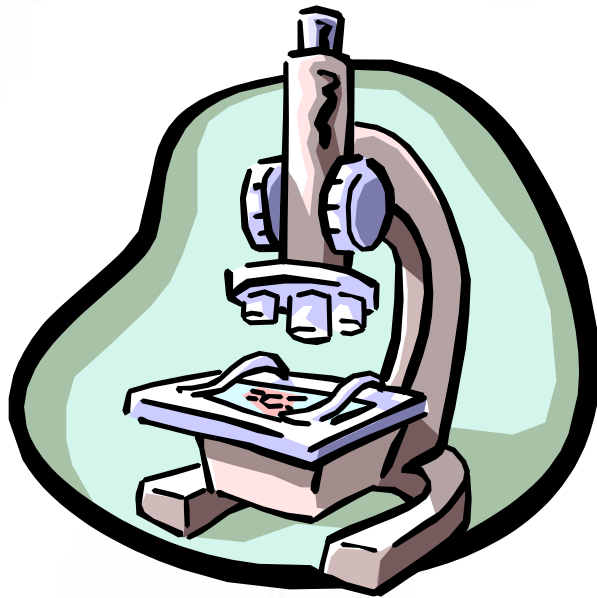
3-yr 290K O&M 1.1 M Salary

Environment and Health Program- 2006-2010

I Reduced risk to the environment and human health from potentially hazardous substances in soils and water.

li: Canada's performance reports on the health of the environment are recognized as scientifically sound and demonstrate positive progress.

3-yr 870K O&M 2.4 M Salary



Thank you

Andrew Rencz

Program Manager, MITE