CANMET
MINING AND
MINERAL
SCIENCES
LABORATORIES

METALS AND THE ENVIRONMENT

THE CHALLENGE

The responsible management of minerals, metals and their products ensures their safe and widespread use. Understanding how metals behave in the environment and assessing their impact is important to society in general, policymakers, the scientific community and the metal mining industry. Sound science is key to developing appropriate policies and approaches to metals issues, and for developing management capabilities required to protect the environment.

NRCAN CAN HELP

CANMET-MMSL has established a team of specialists in metallurgical processing, characterization of metal-bearing substances, geochemistry, environmental toxicology and life cycle assessment. This unique multi-disciplinary team enables CANMET-MMSL to play a leading role in developing and promoting a sound scientific foundation for environmental protection decisions in national and international policies, and protocols relating to metals and metal products.

OUR EXPERTISE

CANMET-MMSL has developed a range of expertise through its R&D activities:

- **Hazard identification of metal compounds**
  - Undertaking research that will be used to develop standards, protocols, guidelines and classification criteria
  - Integrating research results and bringing the latest findings forward in national and international multi-stakeholder initiatives
- **Environmental impact of metals and metal compounds**
  - Investigating transformation and bioavailability of metals and metal mixtures
  - Assessing acute toxicity and developing predictive models
  - Investigating chronic sublethal impacts of metals
- **Life cycle assessment (LCA) methodology and standards**
  - Promoting LCA as an important tool for the sustainable development of the metals industry
  - Participating in national and international committees that develop standards for life cycle assessment
  - Promoting the use of appropriate methodologies for recycling and for life cycle impact assessment of metals
- **Environmental impacts of mining effluents and emissions**
  - Providing secretariat and coordination of multi-partner research efforts
  - Characterizing smelter emissions

SUCCESSFUL PARTNERSHIPS

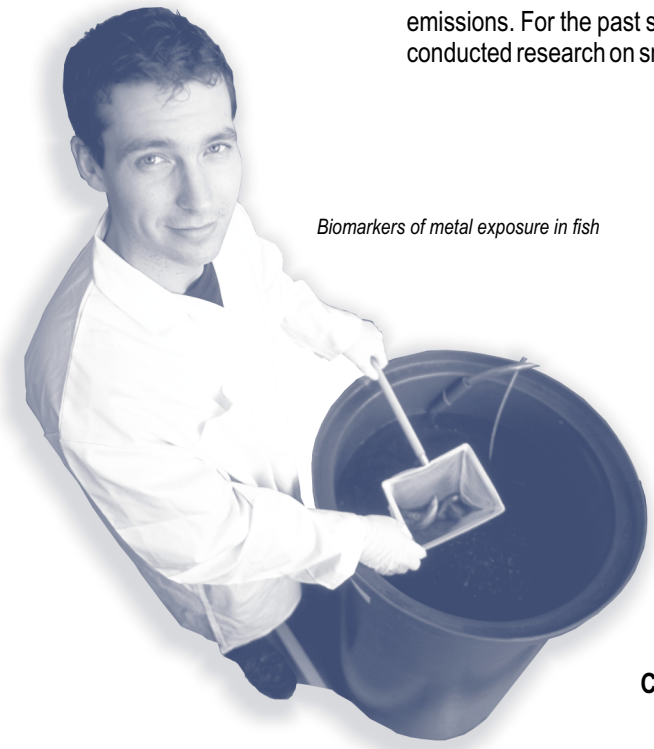
CANMET-MMSL works in partnership with other federal departments, provincial governments, universities, environmental non-governmental organizations, industry, domestic and international industry associations, and consultants. Examples of successful partnerships are:

- Targeted research and participation in Organization for Economic Cooperation and Development (OECD) Working Groups and Advisory Committees is being undertaken to ensure the application of sound science in the development of international standards, protocols and guidelines for appropriate hazard identification measures for metals. This work is being done within the context of global harmonization, as mandated by the United Nations.

- The need for life cycle assessment approaches in decision-making, and the illustration of limitations, barriers and opportunities for methodology development are being demonstrated. A key feature in this initiative was organizing the Eco-indicators for Products and Materials Workshop in 1997.

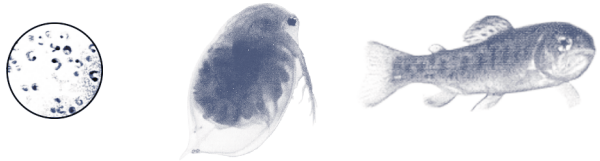
- CANMET-MMSL coordinates multi-stakeholder initiatives such as the Aquatic Effects Technology Evaluation (AETE) Program and the Toxicological Investigations of Mining Effluents (TIME) Network. These initiatives identify and evaluate methodologies and technologies for meeting the environmental protection requirements for mine effluents.

- CANMET-MMSL is undertaking a collaborative effort to develop appropriate management options for smelter emissions. For the past six years, CANMET-MMSL has provided scientific advice in this area and more recently conducted research on smelter and power plant emission characterization.



Biomarkers of metal exposure in fish

Research and testing at three trophic levels



CONTACT US

CANMET-MMSL's goal is to help find sound, science-based solutions to operational challenges.

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