A Collaborative Industry-MDRU-UBC Research Project
Available for Sponsorship

Project Overview
This project will tackle some of the major challenges regarding tailings facing the mining industry. A think tank of industry engineers and geologists, academics, environmental operators and stakeholders have identified three key areas of focus for this project: Material Characterization, Tailings Maturation, and Incentives versus Risks.

By bringing together leaders in the industry with funding from multiple stakeholder groups we will address these topics in an integrated approach.

The Opportunity
Tailings, or the material generated from ore processing, are traditionally viewed as waste with no value. They are also considered to be one of the higher risk aspects of the mining process, particularly in the context of environmental sustainability. The management of tailings facilities concerns many different stakeholders, including technical, government, and education and training.

There are many challenges involved in tailings management, and recent events in Canada and Brazil have, in particular, brought some of these challenges to the forefront of the mining industry. The experts and professionals involved in this initiative agreed it is of paramount importance that more work is done to improve how tailings are viewed and managed by the industry, and how they are perceived by the general public perceives.

Project Team
Craig Hart
Director
MDRU

Dirk van Zyl
Mined Earth Structures
NBK Mining Engineering UBC

Greg Dipple
Geochemistry & Mineralogy
MDRU, UBC

Contact
For more information on this project, contact Craig Hart (chart@eos.ubc.ca)
Project Focus
Research will address three main project areas: Material Characterization, Tailings Maturation, and Incentives versus Risks. **Material Characterization** encompasses integrated mineralogical, physical and chemical properties of ore and waste rock from the exploration to production stage. A case study will be developed at a property where exploration is continuing but development is underway which would allow material characterization to be undertaken at all phases and identify gaps.

**Tailings Maturation** focuses on how tailings material ages, and the various technologies that can be utilized to aid and stabilize this process. These will include investigation into the use of tailings for carbon sequestration, the efficacy of microbes in tailings, and the possibility of tailings self-cementation. These and other processes involved in how tailings evolve over time are still poorly understood but are vital to ensuring the long-term stability of these materials.

**Incentives** to companies to undertake alternative protocols for handling tailing material and how to mitigate the risk is a topic of concern. The technical and legal guidelines that govern the operation of tailings facilities are rigorous, and any experimental work that deviates from these guidelines may be perceived as having significant risk.

The Opportunity
Investigation of these items will benefit and involve mining companies, mine engineering and environmental firms, analytical laboratories, and the financial sector. We are building a research consortium that draws on this breadth. It is anticipated that the application of research results by mining companies will be in a non-competitive framework, but this may not be the case for the other sectors.

Participation at two levels is sought. Project Sponsors ($25,000/yr) will be engaged across all research activities and will gain insight into how to incorporate carbon sequestration into their business operations. Project Partners ($50,000/yr) will benefit from focused site-specific research, in the case of mining companies, or from exclusivity partnerships in the case of the mine engineering, environmental, analytical, and financial sectors. Thus this project is limited to one member from each of those sectors should a Partner level member be identified.

Membership is on a first-come basis and the project will proceed as membership is confirmed.