NRC·CNRC

ACID ROCK DRAINAGE AND METAL LEACHING

Seeking collaborators

BACKGROUND

In 2016, the National Research Council of Canada's (NRC) Energy, Mining and Environment Research Centre began tackling the problem of acid rock drainage and metal leaching (ARD-ML) prediction to establish a Canadian research hub that acts as a centre for ARD-ML data analysis and for scaling up testing in the field.

COLLABORATORS NEEDED

To make this a reality, your expertise is needed in any of these areas:

- Knowledge of specific mine sites and its waste management
- Samples of mine waste rocks, tailings, and mine drainage
- ARD-ML mine-site monitoring data such as drainage chemistry, O_2 and CO_2 concentrations, temperature, mineralogical and biological data
- ARD-ML related lab testing data
- Mine-site pilot-scale ARD-ML related testing data
- Mine waste physical and geochemical data

COLLABORATION BENEFITS

As a collaborator, there are many ways you can benefit:

- Access to knowledge generated through regular team meetings and reports
- Input on ARD-ML problems that your mine sites may be experiencing
- Ability to connect with key ARD-ML players at workshops
- Recognition of your contribution in publications of research findings

CURRENT COLLABORATIONS

Ongoing collaborative research projects include:

- Pile-scale models and machine learning to predict ARD-ML from waste rock piles and co-disposal of mine wastes
- Machine learning enabled prediction of ARD-ML from mine sites
- Electrochemical mechanisms of metal sulfide oxidation
- Development and validation of ARD-ML testing methods and reference material
- Theories for scaling up ARD-ML lab-testing to full-scale
- Characterization of dry-stack tailings properties
- Roles of microbes in ARD-ML
- Understanding of ARD-ML processes via data analysis
- Correlation between selenium, waste and tailings leaching

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PUBLICATIONS

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3. L. Ma, C. Huang, Z-S (Simon) Liu, K. A. Morin, M. Aziz, and C. Meints, **A full-scale case study on the leaching process of acid rock drainage in waste rock piles and the net infiltration through cover systems**, *Water, Air, & Soil Pollution*, Volume 231, Article number 305, 2020.
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9. Z-S (Simon) Liu, C. Huang, L. Ma, E. Dy, Z. Xie, K. Tufa, E. Fisher, J. Zhou, K. Morin, M. Aziz, C. Meints, M. O'Kane, and L. Tallon, **Rate-control quotient of mineral dissolution from waste rock dumps**, *41st BC Mine Reclamation Symposium*, September 2018.
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