

Remediation of toxic metals in restored and abandoned mine sites

Record number : OPR-429

Overview

RESEARCH DIRECTION

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Engineering

INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie chimique et de
génie biotechnologique
Département de génie civil et de génie du
bâtiment

LEVEL(S)

2e cycle
3e cycle

LOCATION(S)

Campus principal

Project Description

Mine tailings and waste rock, rich in acid-generating sulfides, heavy metals, and other contaminants, have polluted hundreds of thousands of acres of lakes and reservoirs and tens of thousands of miles of streams and rivers in North America alone. Water pollution from these sites often requires management for decades to centuries after mine closure. However, no reliable single technology exists to prevent the mobilization of contaminants within the complex environmental reality. This project uses an innovative systems approach to assess the dominant biological and chemical processes on metal contaminant speciation in order to develop robust remediation strategies. Special focus will be placed on investigating the speciation and spatial distribution of redox-active contaminants (e.g., As, U, Cr, Sb) in order to predict the ultimate transport and toxicity of these contaminants. This project will combine field sampling and the development of laboratory experiments in order to develop management strategies of both restored and abandoned mine sites. This project will integrate aspects of environmental engineering, geochemistry, mineralogy, geomicrobiology, hydrogeology and geospatial analyses according to the candidates skills and interests.

Discipline(s) by sector

Sciences naturelles et génie

Génie chimique, Génie civil

Funding offered

Yes

The last update was on 12 March 2024. The University reserves the right to modify its projects without notice.