

Exploring New Solutions for Dust Control in Potash Mining

Dust control is a critical challenge throughout all stages of potash mining operations in Saskatchewan — from extraction and processing to storage and transportation. Petroleum-based dedusting agents have long been used to limit dust formation, but there is growing interest in finding more environmentally friendly alternatives.

To support this goal, we are partnering with researchers from Canadian Light Source to explore how different dedusting agents interact with potash at the microscopic level. Using advanced X-ray and electron imaging techniques, this project will study how petroleum-based agents suppress dust, and whether non-petroleum-based options can provide similar or better performance.

The research will focus on how dedusting agents bind to potash particles and how environmental conditions like temperature and humidity impact that binding over time. By visualizing the 3D binding networks inside treated potash samples, we aim to understand why certain agents are effective — and to develop criteria for selecting future alternatives based on microstructural properties.

This innovative project represents a novel use of synchrotron-based imaging in potash research, offering new insights that can help the industry move toward greener, more cost-efficient dust control solutions.

Rethinking dust control for a cleaner future in potash mining.

We are advancing innovative imaging techniques to understand how dedusting agents interact with potash at the microscopic level — helping drive the development of more sustainable, effective dust control solutions.

Proponent: Canadian Light Source

Project Duration: January to December 2025

Project Cost: **\$41,464**

IMII Members Contribution: \$29,369

Canadian Light Source Contribution: \$12,095