

Uranium Services

Leading-Edge Innovation, Quality and Experience

The Saskatchewan Research Council (SRC) is a trusted service provider for the uranium industry with over sixty decades of technical expertise and advanced laboratory services to support exploration, minerals processing and environmental management.

From trusted uranium assay results to large-scale radioactive site remediation projects, SRC helps clients safely, sustainably and efficiently explore, develop and remediate uranium resources projects.

Understanding Radioactivity in Uranium Mining

Radioactivity is a natural phenomenon that plays a central role in uranium exploration, extraction and processing. In uranium mining, the presence of naturally occurring radioactive materials (NORMs), such as uranium isotopes and their decay products, is both a valuable exploration tool and a factor requiring careful management.

Measuring the characteristic energy of gamma rays emitted by uranium's decay products allows for:

- Ore body identification through radiometric surveys and gamma logging
- Process monitoring during extraction and milling
- Worker and environmental safety assurance at mine and mill sites

SRC Geoanalytical Laboratories and SRC Environmental Analytical Laboratories are Canadian Nuclear Safety Commission (CNSC)-licensed facilities with radiation-trained staff and decades of experience, ensuring that radioactive samples and data are handled safely, efficiently and to the highest scientific standards.



A technologist performing sample preparation at SRC Geoanalytical Laboratories

SRC's decades of experience, CNSC-licensed laboratories and multi-disciplinary expertise make us a trusted service provider in every stage of the uranium lifecycle, from exploration and analysis to closure and remediation.

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Geochemistry and Mineralogy

Since 1973, SRC Geoanalytical Laboratories has provided high-quality analytical services to the uranium exploration and mining industry. As part of these services, SRC operates a dedicated, stand-alone uranium analysis laboratory licensed by the CNSC to safely receive, process and archive radioactive samples.

The laboratory offers an ISO/IEC 17025:2017 accredited method for determining U_3O_8 weight percentage in geological samples—a method developed by SRC to deliver accurate and reliable assay results for the uranium industry. SRC Geoanalytical Laboratories is one of only a few in the world capable of providing this level of specialized uranium analysis.

- Uranium Analysis / Radioactive Sample Preparation Facility
- Rare Earth Element Analysis
- XRD and XRF Facility
- Electron Microprobe and QEMSCAN® Facility

Processing Technology Development Testing and Troubleshooting

Hydrometallurgy

Since the 1950s, SRC has supported uranium mining clients with mineral processing and hydrometallurgical process testing and development. Our facilities test the performance of all stages of uranium processing and metallurgical testwork, from bench to pilot-scale testing. We have tested and developed processes for all conventional and novel uranium processing technologies from solvent extraction to in-situ leaching (ISL).

Early-stage testing helps an operation determine the technical and economic feasibility of a deposit, while full-scale pilot testing at SRC can replicate the entire process, including tailings and effluent treatment. Effluent treatment often involves removing contaminants through chemical, physical or biological processes. SRC's teams are set up to assist companies to develop and test these.

Our mineral processing team offers:

- Process Testing - Bench, Pilot and Field
- Process and Equipment Evaluation
- Process Design - Flowsheet Development
- Optimization and Troubleshooting of Plants and Process Challenges
- Specialized Testing for In-Situ Recovery for Uranium Applications

Preconcentration and sensor-based sorting

SRC tests the amenability to and application of sensor-based sorting technologies for uranium mining, from radiometric to X-ray transmission (XRT) sorting. This work, done at our Minerals Liberation Sorting Centre, helps identify the optimal sorting solutions for specific ore types and process flows that reduce downstream processing.

Multiphase flow testing

At its Pipe Flow Technology Centre™, SRC offers services to characterize and model slurry and other multiphase flows—measuring properties such as density, flow and rheology (fluid mechanics)—for process control, reagent dosage optimization and slurry equipment troubleshooting.



Uranium solvent extraction processing pilot equipment running a test at SRC

Environmental Analysis and Radiochemistry

SRC Environmental Analytical Laboratories provides specialized radiochemical and environmental analyses for uranium mining. Environmental sample analysis is conducted for both special assessments and routine monitoring programs.



A technologist performing radon emanation rate analysis at SRC Environmental Analytical Laboratories

These uranium analytical services support the industry in meeting regulatory and environmental responsibilities through:

- Environmental monitoring
- Leachability studies
- Kd (diffusion coefficient) studies
- Acid/base accounting
- Radon emanation rate testing
- Radiation safety services
- Umpire services

SRC has also supported numerous environmental protection and impact assessment studies, including investigations into hydrocarbon and radionuclide contamination in surface materials (soil and water) and their effects on surrounding ecosystems.

Closure and Remediation

SRC is managing Project CLEANS — the remediation of 37 abandoned uranium mine and mill sites in northern Saskatchewan. This includes risk assessments of remote legacy sites, development of closure plans, permitting, decommissioning and reclamation, ecological revegetation and restoration activities and long-term environmental monitoring.

SRC's expertise spans the full closure cycle, from environmental assessments and closure plan design through to implementation, reclamation and post-closure monitoring. Innovative reclamation approaches, including radiation scanning, and community engagement practices have made SRC's uranium remediation work a benchmark for sustainable closure.

Recognition for Project CLEANS:

- Project Management Institute (PMI) North Sask Chapter Project of the Year for the Lorado Remediation Project
- Association of Professional Engineers & Geoscientists of Saskatchewan (APEGS) Environmental Excellence Award



SRC conducts radiological surveys to assess gamma radiation exposure risks