

SRC Rare Earth Processing Facility Frequently Asked Questions

General

1. What exactly will the money the Government of Saskatchewan announced be used for?

In August 2020, the Government of Saskatchewan announced \$31 million in funding for a Rare Earth Processing Facility, to be owned and operated by the Saskatchewan Research Council (SRC). It will be the first-of-its-kind in Canada and will begin to establish a fully commercial Rare Earth Element (REE) technology hub in Saskatchewan, forming an industry model for future commercial REE initiatives and supply chain development.

A private sector landlord is handling the construction of the building, which will be leased to SRC. The funding will be used for specialized equipment and building requirements within that structure. SRC is contributing an additional \$4 million in Facility costs.

2. What exactly will be done at the Facility?

The Processing Facility will be a commercially operated facility that is able to process Monazite and, in the future, will also be capable of processing Uranium Raffinate concentrate, a rich source of REEs from Saskatchewan's uranium industry.

The conversion of REE ore to individual REE products is done in two main stages. The first is the concentration of mixed Rare Earth Carbonate from monazite sands feedstock. The second is the more complex separation stage that converts the mixed RE Oxides to separated Rare Earth Oxides, as the market requires. The products from both stages can be considered to be value added products. The Facility will handle both stages of the process.

3. What capabilities will the Facility have?

A key element of the Facility is a commercial processing plant, which will include concentration and separation stages and treat monazite sands at approximately 60 per cent concentration. Monazite is a source of mainly light REEs especially cerium, lanthanum, praseodymium and neodymium.

An intermediate concentrate of mixed Rare Earth Carbonates will be produced from the concentration plant and further processed in a separation plant to produce separated REOs.

4. What will be the treatment capacity of the plant?

The treatment capacity of the plant will be 3000 tonnes of monazite per year, producing a mixed rare earth carbonate product. Part of the mixed rare earth carbonate is to be fed to the separation plant to produce 500 tonnes of separated REO products (not including Cerium).

5. How big is the Facility?

The Facility will be approximately 69,000 square feet.

6. What rare earth services will SRC be offering?

We offer the following services through our existing service lines and facilities:

- Rare earth processing technology development and commercialization
- Radioactive tailings processing and treatment; recovery of thorium and uranium
- Validation and demonstration of rare earth processing technologies in bench, pilot and semi-commercial scale
- Rare earth production from monazite, bastnaesite, apatite and uranium processing waste

Once the facility is operational, we'll offer these services in the future:

- Potential toll separation of individual rare earth elements
- Potential toll processing of monazite

SRC plans to use this Facility as a starting point for the creation of an REE technology hub, which may include developing downstream and upstream aspects of the REE supply chain. Future development also includes new applications for lanthanum and cerium.

We are currently developing capabilities for:

- Downstream rare earth product development
- Production of ingots, magnets and alloys

7. Does SRC have any future plans for the Facility or the rare earth space?

SRC plans to use this Facility as a starting point for the creation of an REE technology hub, which will include developing downstream and upstream aspects of the REE supply chain. It will also include the development of additional midstream and downstream processing of different REE minerals and or research and development of new technologies with respect to rare earths processing and the production of rare earth metals and alloys.

8. What data and research can SRC provide behind the Facility?

SRC has a detailed Technical and Economic Business Case that evaluates the Engineering, Procurement, and Construction Management financials of the Facility and market economics of the REE feedstock and products of the facility.

9. Is there any new technology?

The processing of REEs from monazite is a known technology that SRC has been involved with developing over the last 10 years. Although it is a known technology, the operation of the plant requires is complex and requires specific experience and knowledge. In the future, there will be additional expertise

10. Why Saskatchewan?

Saskatchewan is a world-class mining jurisdiction that has a vibrant and sustainable uranium industry. This industry also produces a REE-rich solution waste stream (mainly heavy REEs) that can be an additional feed source for the plant, as markets require.

11. How can industry engage?

The SRC Rare Earth Processing Facility is positioned as a catalyst to stimulate the resource sector in Saskatchewan and across Canada, providing the early-stage supply chain needed to generate industry investment and growth. Our team of engineers and scientists can customize testing and design to meet the unique needs of REE mining and technology companies.

For more information, please contact SRC Business Development by [email](#) or phone at **1-306-933-5400**.

12. Do you have interest and/or commitment from industry in using SRC's process? Have any uranium companies in Saskatchewan signed on yet?

Yes, we have a lot of interest from the Canadian rare earth industry and Saskatchewan uranium industry. There are three rare earth element and uranium companies with Saskatchewan deposits that have put their support behind SRC's REE processing facility.

13. Are there environmental regulations/standards in place around this type of work and what are they?

There are strict environmental regulations and standards in place for waste management in Saskatchewan with respect to these types of ores. As a top mining jurisdiction, there are well documented controls in the province. SRC has always met and exceeded these requirements with respect to its waste management systems in place and will continue to do in this project following the most stringent operating standards.

14. What safeguards are in place to protect the environment?

SRC's Rare Earth Processing Facility will follow the most stringent operating standards. To minimize the risk for the environment the plant will be designed to have zero liquid discharge, which means that there will be no solution waste streams that are discharged into the environment. All solid waste will be handled and disposed of properly following regulations and procedures, as SRC and mining companies in Saskatchewan do currently.

Chemicals, including acids and alkalis, cannot be avoided in rare earth processing. This means that waste streams, including wastewater and residues, will be produced. However, it is not the waste streams that are the problem – the key is how they are handled. SRC plans to treat, re-use and recycle as much of the solution as possible. Our goal is to build processes to be environmentally sustainable with recycling in mind to minimize the environmental footprint of our operation. This means that all waste water will be treated and reused resulting in no liquid discharge from the Facility, all solid waste will be handled and disposed of properly following regulations and procedures, and although not much gas is generated by the Facility, all the necessary mitigation equipment will be installed to guarantee there are zero toxic emissions to the air.

15. What products will SRC produce?

Initially SRC will produce a Mixed rare earth carbonate from the concentration plant and Separated Rare Earth Oxides from the Separation Plant (Lanthium Oxide, Cerium Oxide, Praesodymium Oxide, Neodymium Oxide, a mixed REE oxide of the middle group of REEs

and a mixed group of REEs from the heavy group. SRC will produce refined metal ingots and potentially alloys and magnets in the future.

16. What experience does SRC have in this area?

SRC has decades of experience in concentration and separation technologies of REEs from various minerals, as well as operational experience. Jack Zhang and Baodong Zhao of SRC's Mining and Energy Division are co-authors of various papers and a book on rare earths separation. SRC has developed and piloted many REE concentration and separation processes for mining companies in Canada and across the world.

17. How many jobs will this create?

Our engineering estimates indicate that the REE facility will provide 50 full-time construction jobs. This does not include ancillary construction support jobs. It will also support 24 highly qualified personnel (HQP) full-time equivalent jobs in facility operations once commissioned.

Additionally, a fully functional REE industry in Saskatchewan and across Canada would create tens of thousands of jobs.

Procurement

18. What is the expected start date of construction?

Construction is expected to begin in the fall of 2020.

19. When is the Facility expected to be operational?

SRC expects the Facility will be operational sometime in the fall of 2022.

20. Where will the Facility be located?

The Facility will be built near SRC's other laboratories and facilities in the north industrial area of Saskatoon, Saskatchewan. A private sector landlord is handling the construction of the building, which will be leased to SRC.

21. Will SRC be looking to procure construction and/or other services throughout this project?

SRC is committed to fair and transparent procurement processes.

SRC will be looking to procure expertise for the construction, installation and commissioning of the Rare Earth Processing Facility. However, we are still in the design phase and working out the details of what will be required. As is standard practice for SRC, it is likely that we will be issuing a competitive award process for this work through SaskTenders once those details are worked out.

22. How do I submit a proposal? How do I get notified about proposals?

SRC Purchasing handles all requests for proposals, estimates and quotations to solicit bids for procurement contracts related to this Facility.

Available opportunities will be posted on **SaskTenders** (Organization Type: Crown Corporation > Saskatchewan Research Council). For more information, please contact SRC Purchasing by **email** or phone at **1-306-933-5400**.

23. What is SRC's commitment to local Saskatchewan-based service providers?

While SRC has obligations under the New West Partnership Trade Agreement and the Canadian Free Trade Agreement, evaluation criteria may include elements such as community benefits or local content, that is considered part of the best value equation.