

# Provincial Isotope Sector Briefing Saskatchewan



Image from the Fedoruk Centre

## Executive Summary



### Pioneer of Isotope Innovation

Since the 1950s, Saskatchewan has been a pioneer in nuclear science and isotope innovation. This legacy has continued with the establishment of the Sylvia Fedoruk Canadian Centre for Nuclear Innovation (Fedoruk Centre) and groundbreaking research at the University of Saskatchewan in nuclear medicine and cancer treatment.



### Isotope Production

The Fedoruk Centre operates the Saskatchewan Cyclotron Facility, which includes a 24 MeV cyclotron that provides a daily supply of diagnostic radiopharmaceuticals to hospitals, while supporting research into innovative nuclear imaging agents, cancer care, and more.

## Historical Leadership

### Introduction to Nuclear Medicine

Following the establishment of the Saskatchewan Cancer Commission (the first cancer control agency in Canada), Saskatchewan introduced the first radon plant in Western Canada to provide radium seeds for cancer treatment.



1930s

### World's leading experts

First patient receives cancer therapy using the betatron, on 29 March 1949 – beginning the world's first "concerted" clinical use of the betatron.



1949

### Innovation in Imaging

Installed the first whole-body rectilinear scanner in Canada, an imaging device which captures emissions from radiopharmaceuticals



1962

### World-class infrastructure

University of Saskatchewan selected to host the Canadian Light Source, Canada's only synchrotron



1990s

### Saskatchewan's Fight Against Cancer

In 2024, over 3000 patients received PET/CT scans using FDG made at Sask. facility. In the past 5 years, more than 100 researchers have been introduced to nuclear innovation by Fedoruk Centre grants.



2020s

1948



### World's first betatron

In August, University of Saskatchewan installs first betatron in Canada, located in Physics Annex—the world's first betatron used for a cancer treatment program.

1951



### Co-60 treatment

One of the world's first patient treated on 8 November 1951

1972



### Changing cancer treatment

New therapeutic radiology clinic opened at University Hospital – featuring a Betatron 42, the only installation of its kind in Canada.

2000- 2010s



### Emerging Isotope Hub

Sylvia Fedoruk Centre established in 2011. The Saskatchewan Cyclotron Facility opened in 2015. In 2016, the first cancer patient was scanned using FDG produced at the facility.

2025



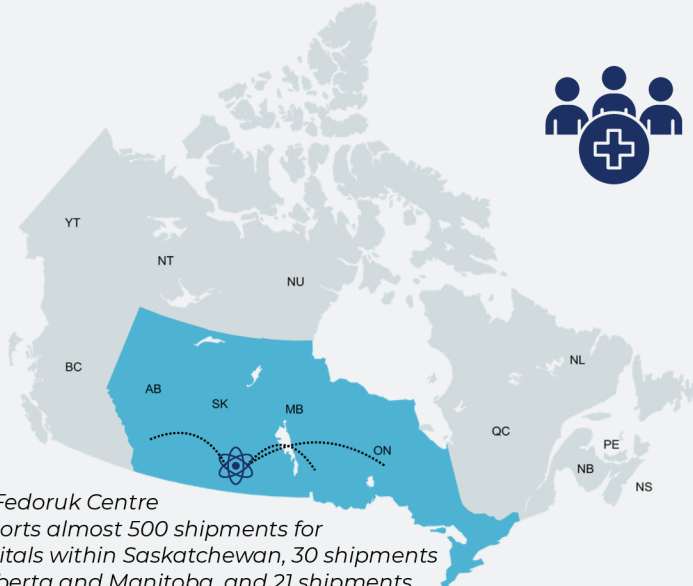
### Ecosystem Innovation

The Fedoruk Centre helped enable the first cyclotron Ra-226 targets for Ac-225

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## Isotope Infrastructure

The Fedoruk Centre is a leading isotope centre in Canada and provides services to public institutions across Canada and private companies in Saskatchewan and Ontario. The Saskatchewan Cyclotron Facility, which was established with funding from the federal government, owned by the University of Saskatchewan, and operated by the Fedoruk Centre, produces FDG used in several provinces.



The Fedoruk Centre supports almost 500 shipments for hospitals within Saskatchewan, 30 shipments to Alberta and Manitoba, and 21 shipments to the Western College of Veterinary Medicine.



**3800+**  
patients per year receive  
**PET-CT scans** to diagnose  
and treat cancer with F-18  
FDG from the Fedoruk  
Centre

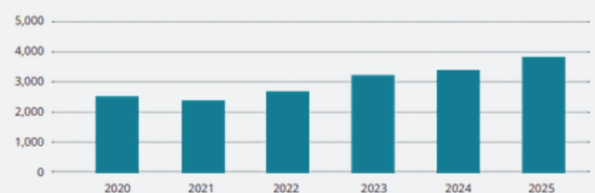


**1** **PET-CT department**  
located at the  
Royal University  
Hospital (RHU)



**6** **SPECT-CT units**  
with over **26,000**  
exams per year

Number of patient PET-CT scans at RUH with FDG produced by the Fedoruk Centre



## DID YOU KNOW?



Saskatchewan is home to Canada's only Synchrotron, which provides the **world's first and only private sector commercial supply of Copper-67** through Iotron Medical. Iotron Medical has plans to expand production further to support North American and global clinical trials.



The Fedoruk Centre, Canadian Nuclear Laboratories, and Advanced Cyclotron Systems Inc., were recognized by the CNIC as the 2024 **Ecosystem Innovation Award** recipient for their work in enabling the first cyclotron irradiation Ra-226 targets for the production of Ac-225 in Canada.

## Workforce Development and Education

The Fedoruk Centre and University of Saskatchewan provide several avenues to support workforce development:

- Providing first-class nuclear tools and materials to advance a wide range of research programs.
- Funding research projects to advance innovation and provide hands-on training for students, trainees, and post-docs.
- Serving as a facilitator in building research and educational capacity specifically focused on the deployment of nuclear power in Saskatchewan.
- Providing services for the public and policy-makers, facilitating partnerships and developing business to strengthen Saskatchewan's presence as a leader of nuclear innovation.

**\$8 million**

granted to **50+ nuclear research projects**

**100+**

**young researchers** have been introduced to nuclear innovation by Fedoruk Centre grants and access to the the Saskatchewan Cyclotron Facility in the past 5 years

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## Patient Access to Life-Changing Radiopharmaceuticals



As of June 2021, **Lutathera** became available in Saskatchewan for eligible patients.



In 2025, Saskatchewan became one of the first Canadian provinces to publicly reimburse **Pluvicto** for eligible patients.



**TheraSphere™ Y-90 Glass Microspheres** is approved for use for liver cancer.

## Clinical Trials & Innovation

The University of Saskatchewan and the Fedoruk Centre offer contract manufacturing support for pre-clinical and clinical trials through advanced labs and facilities. The Fedoruk Centre uses its cyclotron facility for isotope production to meet research needs beyond routine production.

**F-18**

**Cu-64**

**C-11**

**Zr-89**

Currently, eight radiochemical products are available in routine production. Facilities include research labs, cell culture labs, hot cells, small animal SPECT/CT and PET/CT imaging, radiation counters for alpha, beta and gamma emitters, and a nearby veterinary hospital. Additionally, the Fedoruk Centre holds a Drug Establishment License issued by Health Canada to produce fluorodeoxyglucose (FDG) as a marketed drug product.

Saskatchewan's Clinical Trial Support Unit (CTSU) is a centralized clinical research resource that standardizes clinical and administrative procedures for research. The CTSU is a joint initiative of the University of Saskatchewan, Saskatchewan Health Authority, Saskatchewan Cancer Agency, and the Saskatchewan Centre for Patient-Oriented Research.



UNIVERSITY OF  
SASKATCHEWAN

**CTSU**

Clinical Trial Support Unit


## Commercialization Success



In 2023, the Fedoruk Centre secured a contribution of \$410,650 for Commercializing Capabilities at the Saskatchewan Cyclotron Facility from the Regional Innovation Ecosystems (RIE) program of Prairies Economic Development Canada (Prairies Canada). This enables the production of F-18 PSMA, Ga-68 Chloride, and Sodium F-18.

## Leading Companies and Organizations

 **AtkinsRéalis**

 **Regina, Saskatoon**

World-class engineering services and nuclear organization. Atkins connects people, data and technology to transform the world's infrastructure and energy systems.

 **CALIAN**

 **Saskatoon**

The Calian team has been foundational in helping to share and deliver critical research projects which have led to the expansion of the Canadian isotope sector.

 **Cameco**

 **Saskatoon**

Cameco is one of the largest global providers of uranium fuel which is needed to power a safe and secure energy future.

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 **Saskatoon**

The Sylvia Fedoruk Canadian Centre for Nuclear Innovation was established in 2011 to help place Saskatchewan among global leaders of nuclear research, development and training.



 **Saskatoon**

Iotron Medical SK specializes in the production and processing of Cu-67 for medical and research applications.



 **Saskatoon**

Kinectrics develops innovative solutions for the global electricity and medical industries, helping to empower a sustainable future.



 **Saskatoon**

Established in 2004, TAM International offers full-service expertise in the global transportation of radioactive materials and other high consequence cargo.



 **Saskatoon**

The University of Saskatchewan is one of the top research-intensive, medical doctoral universities in Canada. USask is home to world-leading research in nuclear and isotopes.

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