



**Nuclear** science has important applications in everything from treating cancerous tumours to running giant space stations. Now, the government of Saskatchewan has announced an ambitious new project designed to put the province at the forefront of nuclear research.

On March 2, Premier Brad Wall declared that \$30 million will be spent over seven years to build a nuclear research centre at the University of Saskatchewan in Saskatoon. The centre will focus its efforts on medicine, but it will also explore other uses of nuclear technology.

“It’s been a long time coming, but it is good news,” said one editorial writer. “The province is making a . . . commitment to establish a centre of excellence.”

## URANIUM ADVANTAGE

Saskatchewan has a definite advantage when it comes to nuclear research. Nuclear science depends in part on uranium, a silvery-white metal of very high density. The substance is naturally radioactive – that is, it emits energy in the form of rays or waves. This energy is used as a nuclear fuel.

Uranium is one of the most common elements found on Earth. But uranium **ore** that is concentrated enough to be useful to science is relatively rare. The largest such deposits are found in Australia, Kazakhstan and Canada. Our country has nine percent of the world’s deposits. The largest of these deposits is found in Saskatchewan. In fact, uranium mines in the 100,000-square-kilometre Athabasca

Basin of northern Saskatchewan are responsible for about 20 percent of the world’s supply of the element.

## WHAT IS NUCLEAR MEDICINE?

How does nuclear science apply to medicine? It does so in two ways. On TV, you may have watched doctors ordering body scans to make diagnoses. You may also have seen patients having radiation therapy for cancer. In both instances, hospitals are using nuclear medicine.

Here’s how the scans help. The human body is **opaque**. In the past, that meant surgeons usually had to operate to find out what was wrong with a patient if the problem was internal. Today, doctors can use machines powered by radioactive substances to take images of a person’s insides. These devices include X-ray machines, MRI scanners, PET scanners and CAT scanners.

As for treating disease, radiation that targets cancer cells can injure or destroy these cells by damaging their genetic material. Although radiation strikes both cancer cells and normal cells, often the normal cells repair themselves.

Both forms of nuclear medicine may involve the use of medical isotopes. These are tiny radioactive particles that can be injected into the body. Not only have they become the standard treatment for some cancers, they have also been used to dramatically improve medical imaging.

## SASKATCHEWAN’S HISTORIC ROLE

This won’t be the first time Saskatchewan aims to be at the **vanguard** of nuclear medicine. In 1951, Saskatoon’s University Hospital was one of two facilities in the country treating patients with a radioactive isotope called cobalt-60. Canada introduced this form of treatment to the world and with its use, the cure rate for cervical cancer soon climbed from 25 percent to 75 percent.

“Today we are taking another important step in re-capturing that international leadership position in nuclear medicine,” Premier Wall said when he announced the new centre.

University of Saskatchewan President Peter MacKinnon, on hand to welcome the news of the new facility, was equally **optimistic**.

“We will be very well positioned to improve health care through better diagnostic imaging,” he said.

The centre will also work to develop advanced materials for the construction and aerospace industries, among other research projects. As well, it has a **mandate** to find ways to improve the safety of workers in uranium mines. ★

## DEFINITIONS

**MANDATE:** an instruction, command or direction  
**NUCLEAR:** relating to atoms or atomic activity  
**OPAQUE:** impenetrable; can’t be seen through

**OPTIMISTIC:** believing in a favourable outcome  
**ORE:** a naturally occurring mineral  
**VANGUARD:** the leading position



**ON THE LINES**

Answer the following in complete sentences:

1. In which countries are the world's largest deposits of uranium found?

---

---

2. What is the importance of uranium to nuclear science?

---

---

3. What kind of centre did Saskatchewan Premier Brad Wall announce is coming to the province?

---

---

4. Name one advantage Saskatchewan has over other provinces when it comes to this centre.

---

---

5. Describe two ways in which nuclear science contributes to medicine.

---

---

---

6. What medical treatment put Saskatchewan at the vanguard of cancer care in 1951?

---

---

7. Name two kinds of projects apart from medical research that this centre will undertake.

---

---

---