



## Medical Isotopes and MDS Nordion

### Backgrounder

#### Understanding Medical Isotopes

- Nuclear medicine is one of the most powerful analytical tools available to physicians and patients today because of its ability to provide dynamic views of organ structure and function.
- Medical isotopes, a critical component of global nuclear medicine, are very small quantities of radioactive substance used in safe, cost-effective imaging and treatment of disease.
- Once processed into radiopharmaceuticals, medical isotopes are used to better diagnose and treat a multitude of diseases including cardiac and neurological conditions, in addition to several types of cancers.
- Canadian-produced medical isotopes are responsible for supplying 30 - 40 per cent of the world's medical isotopes, involving some 50,000 procedures per day worldwide, 5,000 of those in Canada.
- A continuous and reliable supply of medical isotopes is essential, as they have a short shelf life and therefore cannot be inventoried.

#### Integrated Supply Chain

- Before it can be used in patient procedures, the materials used in nuclear medicine are developed through a four step supply chain process:
  1. **Reactors** – irradiate uranium compounds and process into radio-chemicals
  2. **Suppliers** – process radio-chemicals into medical isotopes, which are Active Pharmaceutical Ingredients, which are then supplied to radiopharmaceutical manufacturers
  3. **Radiopharmaceutical manufacturers** – manufacture radiopharmaceuticals and distribute them to hospitals and radio-pharmacies worldwide
  4. **Hospitals and/or central radio-pharmacies** – distribute and administer radiopharmaceuticals within their networks as needed by patients



### MDS Nordion

- MDS Nordion provides innovative technologies for medical imaging and is a leading processor of medical isotopes, which it carries out at its facility in Ottawa.
- Customers for MDS Nordion's medical isotopes are radiopharmaceutical manufacturers. They manufacture radiopharmaceuticals for distribution to hospitals and radio-pharmacies in Canada and worldwide.
- In Canada, MDS Nordion obtains its medical isotopes primarily through Atomic Energy of Canada Ltd. (AECL), which owns and manages the National Research Universal reactor (NRU) that has been in service since 1957.
- MDS Nordion was acquired in a government privatization in 1991, with secure long term supply a key component of the transaction.
- To address long term supply security, in 1996, MDS Nordion and AECL entered a contractual agreement that committed AECL to construct and deliver two new nuclear reactors and a processing facility (known as the MAPLE project). The MAPLE project was intended to replace the NRU reactor and current processing facility and provide long-term security of medical isotope supply for patients around the world.
- On May 16, 2008, AECL and the Government of Canada announced the discontinuation of the MAPLE project without consulting or notifying MDS.