

The MAPLE Project: A Safe Viable Way to Produce Medical Isotopes

The Government of Canada has put forth various arguments for why the MAPLE reactors should not be started. A number of organizations and experts disagree with the Government's position and believe that the MAPLE reactors are safe, that the reactors work, and that any technical challenges can be overcome to bring the MAPLEs into service. This would establish a secure, stable supply of medical isotopes for patients in Canada and around the world.

The MAPLEs are Safe

- In a Viewpoint article that appeared in the **October 2, 2008** edition of *Nuclear Engineering International*, Dr. Harold Smith, ex-Manager, MAPLE Nuclear Commissioning, stated that the "MAPLE reactor is probably the safest reactor design in existence since it actually has three shutdown systems... The MAPLE reactor operated like a dream and was/is fully capable of meeting all objectives."
- On **June 11, 2009**, during the Standing Committee on Natural Resources hearings, Mr. John Waddington, a nuclear safety expert who served on the Canadian Nuclear Safety Commission until 2000, stated that "the MAPLE reactors were safe throughout their operating history in terms of the commissioning tests. If they were not, they would not have been licensed, and they would not have been allowed to operate."

The MAPLEs Work & Technical Challenges Can Be Overcome

- The National Academy of Science Committee, in its **January, 2009** report, *Medical Isotope Production without Highly Enriched Uranium*, stated – "AECL could probably contract with another organization to fix the MAPLE Reactors...if it does not have the necessary in-house technical expertise or resources to do the work itself."
- On **June 18, 2009**, at the Standing Committee on Natural Resources Jean Koclas, Professor, Nuclear Engineering Institute, Engineering Physics Department, École polytechnique Montréal, stated that the "the MAPLE reactor project should be reinstated and that sole technical difficulty be tackled by a group of people involving not only (Atomic Energy of Canada) AECL, but people from outside this company. It is my opinion that this country should put some of its resources into solving this problem."

- On **June 18, 2009**, at the Standing Committee on Natural Resources in Ottawa, Dr. Harold Smith, ex-Manager, MAPLE Nuclear Commissioning, HIZ and Associates Inc., testified that “I and my team took both MAPLE 1 and MAPLE 2 to criticality. We measured the positive (power coefficient of reactivity) PCR, I understand from the newspapers that there has been a team of experts who claim that MAPLE would never be functional. I now ask the rhetorical question – who are these people? If anybody qualifies as an expert on MAPLE, I think I'm it. Nobody has asked me or anybody else involved in the project what we think... There are two MAPLE reactors, each with the capacity to deliver more than the current world requirement (for medical isotopes). Positive PCR requires a relatively simple engineering fix to restrain the bowing of the elements and to reduce the PCR to approximately zero. I thank you for your attention, and I hope this doesn't turn into another Avro Arrow.”
- On **June 18, 2009**, in an Opinion article in *The Toronto Star* that appeared under the headline *Loss of Isotope Supply Will Hurt In Long Run*, Jatin Nathwani, Ontario Research Chair in Public Policy for Sustainable Energy Management, Executive Director, Waterloo Institute for Sustainable Energy, University of Waterloo, writes that “in light of our current difficulties (the global medical isotope shortage caused by the shutdown of the National Research Universal Reactor [NRU]), it makes sense to revisit the decision to cancel the already-built MAPLE reactors... Repairs to the NRU reactor, when completed, can only be viewed as short-term relief. It is an old reactor and reliance on it for too long would not be appropriate. A parallel path, followed with urgency, can bring the MAPLEs to an operating state over the next six to 18 months. Such a strategy offers the best prospect for putting Canada on a firm footing for assurance of supply.”
- On **June 11, 2009**, at the Standing Committee on Natural Resources hearing in Ottawa, Jill Chitra, an engineer and Vice-President, Strategic Technologies at MDS Nordion stated that the MAPLE reactors indeed work. “From 2000 to 2008, the MAPLE reactors were tested numerous times at various power levels, up to 80% power. Targets were inserted in the reactor for a number of those tests, and isotopes were created. When targets are inserted in the reactor and it operates at power, isotopes – Moly-99 – is created. Those targets could have been removed and processed, and (if they were), you'd have had medical isotopes for sale.” Independent expert John Waddington confirmed to the committee that they “had an accurate answer from Ms. Chitra” regarding the creation of isotopes in the MAPLE reactors.



The MAPLEs Can Be Brought Into Service at a Reasonable Cost

- The National Academy of Science Committee, in its **January, 2009** report, Medical Isotope Production without Highly Enriched Uranium, stated – “The Committee assumes that the worst-case scenario for fixing the MAPLE reactors involves the replacement of the reactor cores. The cost of such replacements would likely be small (tens of millions of dollars) in comparison to the cost of building a new reactor (hundreds of millions of dollars) or refurbishing the (National Research Universal) NRU (also hundreds of millions of dollars according to a representative of Natural Resources Canada).

MDS Nordion

- MDS Nordion is a global leader in providing medical isotopes for molecular and diagnostic imaging, radiotherapeutics and sterilization technologies.
- Customers count on MDS Nordion to supply isotopes for cardiac imaging, targeted cancer treatments and sterilization of medical products. In addition, customers look to MDS Nordion for unique collaborations to bring novel molecular imaging agents and radiotherapeutics to market. Over the past two years MDS Nordion has attracted more than \$20 million in R&D to Ottawa and Canada through its various collaborations.
- Customers for MDS Nordion’s medical isotopes are radiopharmaceutical manufacturers. They manufacture radiopharmaceuticals for distribution to hospitals and radio-pharmacies in Canada and worldwide.

MDS Inc.

- MDS Inc. is a global life sciences company that provides products and services for the development of drugs and to diagnosis and treatment of disease. Headquartered in Mississauga, Ontario, the Company employs approximately 4,200 people including about 1,500 people in Canada.
- In 2008, MDS conducted \$156 million-worth of research and development in Canada. MDS spent 66% of its global product development investment in Ontario, although the Ontario market represents less than 5% of MDS global revenue. In 2008, the Company launched 16 new products and services.