



## **Oral Presentation**

## **Exposé oral**

### **Submission from Nordion**

### **Mémoire de Nordion**

In the Matter of

À l'égard de

#### **Bruce Power Inc. – Bruce A and B Nuclear Generating Station**

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#### **Bruce Power Inc. - Centrale nucléaire de Bruce A et Bruce B**

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Request for a ten-year renewal of its Nuclear Power Reactor Operating Licence for the Bruce A and B Nuclear Generating Station

Demande de renouvellement, pour une période de dix ans, de son permis d'exploitation d'un réacteur nucléaire de puissance à la centrale nucléaire de Bruce A et Bruce B

**Commission Public Hearing – Part 2**

**Audience publique de la Commission –  
Partie 2**

**May 28-31, 2018**

**28-31 mai 2018**



Submission for Request to Intervene  
CNSC Public Hearing on Bruce Power application for operating license renewal

Nordion is a provider of radioisotopes for the prevention, diagnosis and treatment of disease. One of our primary products is Cobalt-60, which is produced in power reactors. In Ontario, both the Pickering B and Bruce B reactors produce Cobalt-60. Today, Bruce Power is the largest producer of Cobalt-60 in the world, currently accounting for approximately 30% of the global supply of Cobalt-60. When the Pickering B reactors are shut down permanently in the 2024 timeframe, there will be an even greater reliance on Bruce Power.

Cobalt-60 is used primarily for the sterilization of single use medical devices, such as drapes, gowns, syringes, catheters, sutures, gloves, IV equipment, orthopedic implants, wound care products, endoscopic devices, and many more. More than 40% of single use medical devices produced globally use Cobalt-60 as a method of sterilization. If you or someone you know has spent any time in a doctor's office, clinic, or hospital and undergone any kind of diagnostic or surgical procedure or medical treatment, chances are very good that you have been touched – literally – by products that were sterilized with Cobalt-60. In fact, some products can only be sterilized with Cobalt-60, due to their design or the materials that are used.

Sterilization with Cobalt-60, known as “gamma processing”, is a simple, safe, reliable and cost effective method that has more than 50 years of history. The Bruce Nuclear Generating Station, and subsequently Bruce Power, has been a significant contributor to that history since 1983. In fact, Cobalt-60 produced at Bruce makes up almost half of the installed base globally. That is enough Cobalt to sterilize about 200 million cubic feet or almost 7 million cubic metres of single use medical devices annually. To put that in perspective, that would equate to roughly 100 billion syringes or 10 billion surgical gloves sterilized every year. As you can imagine, this has had and continues to have a profound positive impact on the lives of many millions of patients around the world.

Gamma processing is also used to reduce pathogens such as *E.Coli* and *Salmonella* in meat, poultry, shellfish and spices in a growing number of countries. Potatoes, onions and grains can be treated with gamma to inhibit sprouting, eliminate spoilage organisms and extend shelf life, substantially reducing post-harvest losses and ensuring that more food makes its way from field to fork.

Continuing on the subject of food, Cobalt-60 is used to control insect populations and improve crop yields through something called Sterile Insect Technique, which has recently been applied to the outbreak of Zika virus. It is also used to eliminate pests in fruits and vegetables prior to export, reducing the possibility of infestation in the importing country. In some cases, such as Indian mangoes being exported to the U.S., irradiation is the only approved treatment.

All of my comments to this point about Bruce Power's role in global healthcare have been in the context of preventing disease. In 2014, Bruce Power and Nordion embarked on an ambitious project to produce a different kind of Cobalt that actually treats disease. High Specific Activity or medical Cobalt, is used primarily for the treatment of cancer through External Beam Therapy. You may have heard of a gammknife, which is a particular kind of external beam device that uses an array of Cobalt-60 sources to treat head and neck cancers and other diseases, particularly inoperable ones.

Back to 2014. With the closure of the NRU reactor at Chalk River imminent, the global supply of medical Cobalt was in jeopardy. Nordion brought this challenge to Bruce Power, who immediately committed

the resources to find a solution. Nordion and Bruce Power worked together closely for the next two years to develop a new target design and proceed through all of the engineering, safety and regulatory gates. I'm proud to say the resulting program will more than fill the gap left by NRU.

Today, Cobalt-60 from Bruce Power is processed by Nordion into sealed sources at our facility in Ottawa and then shipped to more than 120 gamma processing facilities in over 40 countries around the world. Not only does this directly support more than 300 high-skill jobs including scientists, engineers and technicians in Ontario, it drives significant exports. The unique combination of capabilities and capacity positions Canada as a global leader in the gamma processing industry. Bruce Power and the Bruce Nuclear Generating Station have been, and continue to be, critical to maintaining this leadership.

There are a limited number of reactors around the world that can produce Cobalt-60. Moreover, development of a new source of Cobalt-60 production takes many years, is capital intensive and can involve foreign governments and reactor operators whose commercial and operational philosophies are not as well aligned as those of a Canadian operator. Furthermore, having a partner like Bruce Power who is geographically close to our production facility and can produce Cobalt-60 in multiple units drives efficiencies that could be found in few other places. Transportation of radioactive material is, as you can imagine, costly and complex. Having a Canadian reactor, operating under the same world class regulatory regime as we do provides confidence in safety and security, as evidenced by an impeccable transportation record.

On the subject of safety, one of the reasons the partnership between Nordion and Bruce Power has been so successful is our shared safety culture. Although routine harvest and shipping operations have been occurring for decades, both organizations continuously seek enhancements and improvements to the process, and in the instances where safety issues are raised by either Nordion or Bruce Power, both parties have engaged swiftly and effectively to address them.

Recently, Bruce Power has also actively participated in a collaboration with OPG and Nordion to share best practices in safety and operations as they relate to the production of Cobalt-60. This ongoing exchange of information and experience will ultimately improve the processes at both Bruce and Pickering and provide important guidance for the eventual production at other CANDUs.

In closing, we fully support Bruce Power's application for a 10-year license renewal. I hope I have impressed upon you the important contribution that Bruce Power and Bruce Nuclear Generating Station have made to the health and wellbeing of people in the community, province, country and around the world every day through the safe production of Cobalt-60, and that you give the ongoing need for this critical resource due consideration in your decision.