

*Quotations from*

***Official Environmental Assessment Documents***

*about*

***Radioactive Steam Generators***

**Bruce Power is a privately owned company. It leases eight nuclear power reactors from Ontario Power Generation, a company that is wholly owned by the Government of Ontario.**

**In 2005, Bruce Power submitted an Environmental Impact Statement to the federal nuclear regulatory agency, the Canadian Nuclear Safety Commission (CNSC), detailing its plans to “refurbish” two of the Bruce nuclear reactors, at a cost of more than five billion dollars.**

**In it Bruce Power describes the 16 used steam generators that have been replaced as “radioactive waste” and asserted that these bulky pieces of contaminated equipment will be stored on-site as radwaste.**

**But Bruce Power now plans to send the 16 steam generators, about 1700 metric tones altogether, to Sweden, where the radiation-laced metal will be melted down and about 90 percent of it will be sold as scrap metal for unrestricted use. The remaining 10 percent will be returned to Bruce Power for long-term radwaste management.**

**A large and growing public opposition to this plan is based on two main concerns: that nuclear reactors wastes not be allowed to be transported on the Great Lakes and St. Lawrence River, and that radioactive wastes not be disseminated into consumer products.**

**Gordon Edwards, Ph.D., President,  
Canadian Coalition for Nuclear Responsibility  
August 2010**

The initials “CNSC” and “BPE” A refer to the following documents respectively.

**Canadian Nuclear Safety Commission Screening Report on  
Environmental Assessment of the Bruce A Refurbishment**

March 2006

Available at <http://www.brucepower.com/uc/GetDocument.aspx?docid=2226>

**Bruce Power Environmental Assessment Study Report,  
Bruce A Refurbishment – Volume 1: Main Report**

December 2005

Available at <http://www.brucepower.com/uc/GetDocument.aspx?docid=2199>

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**Point #1: The steam generators are a form of radioactive waste.**

**CNSC Page 24**

*Both phases of the Project will produce radioactive waste. For the purposes of the assessment, “low level waste (LLW)” consists of industrial items that have become slightly contaminated with radioactivity and are of no further use, but also include the steam generators, feeder pipes and insulation wastes.*

**BPEA Page 3-31**

As noted, *refurbishment activities are expected to generate LLW [low level waste] and ILW [intermediate level waste] including pressure tubes and calandria tubes, the old steam generators and miscellaneous components.*

**BPEA Page 3-29**

The *steam generator replacement will generate LLW [low level waste] and ILW [intermediate level waste], including the steam generators themselves....*

**CNSC Page 101**

**Issue:** At what point during the refurbishment will the steam generators be removed?

**Response:** *The steam generators* will be removed about halfway through the refurbishment activities. These *are considered low level waste.*

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**Point #2: The steam generators are to be stored on-site at WWMF.**

**NOTE: The exact same wording appears in both of the documents cited above....**

**BPEA** Page 3-17  
*[box 2 in middle column]*

**CNSC** Page 25  
*[box 2 in right column]*

The **steam generators will be processed and prepared** to meet OPG's requirements **for acceptance at the WWMF.**

**BPEA** Page 3-17  
*[box 4 in middle column]*

**CNSC** Page 25  
*[box 4 in right column]*

The **steam generators will be sealed and transferred to the WWMF....**

**BPEA** Pages 3-28 & 3-29

Following removal, the **steam generators will be temporarily stored on-site**, prepared to ensure that they meet OPG's requirements for acceptance at the WWMF, lifted onto transporters with a temporary gantry system **and then transferred to the OPG's WWMF....**

**BPEA** page 3-30

**Waste Handling:** This includes **preparation of removed steam generators for transportation . . . loading of old steam generators onto multi-wheeled transporters; and transportation of steam generators to OPG's WWMF. There will be 16 old steam generators in total from Units 1 and 2 refurbishment and another 16 from Units 3 and 4 refurbishment. These will be transported and stored at the WWMF following removal....**

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**Point #3: The steam generators are potential sources of exposure.**

From **CNSC** Page 31

Radiological Malfunctions and Accidents, which are **events that involve radioactive components** (i.e. processing, handling and storing nuclear wastes; **removal and preparation of steam generators for transportation**) and the **potential for release of radioactivity.**

**BPEA Page 3-37**

**Accident Scenario:** *A transportation-related accident during the transfer of . . . the old steam generators* between Bruce A and the WWMF may occur *leading to a radiological contamination that could reach on-site workers and members of the public.... Materials present as a gas or as very fine powders are more likely to escape....*

**BPEA Page 3-38**

**Screening of Postulated Radiological Malfunctions and Accidents**

*Steam generators will not be moved* over sensitive buildings/equipment. *Activities will not be carried out during inclement weather (i.e. gusty wind conditions)....* Although *the steam generator is a potential source for release of some radioactivity* due to a seal rupture, several factors limit the amount of radioactivity that would be released. Since there will be no volume reduction step, *the majority of radioactivity will remain in a tightly sealed adherent film, which is spread out over the internal surfaces.* Therefore, the size of the steam generator will limit the amount of radioactivity that would be released if a seal fails.

**CNSC Page 101**

**Issue:** How will you minimize the amount of *contamination released to the environment when the steam generators are removed?*

**Response:** ... the removal of steam generators will be *completely segregated from the ongoing operations.....*

**BPEA Page 3-18**  
*[box 3 in middle column]*

**CNSC Page 25**  
*[box 6 in right column]*

Based on the screening of possible conventional malfunction and accident scenarios, it was determined that two events are credible, namely a *steam generator drop* and a refurbishment waste container drop, both during loading/uploading operations.... *Other postulated potential accidents are found to have very limited potential to result in radiological consequences....*

*[from CNSC page 32 : containers “are designed to survive a 4 metre drop with minimal loss of contents”]*

*[from CNSC page 65 : these are the ONLY two malfunctions or accident scenarios “involving nuclear materials” that are credible during the refurbishment phase]*

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## Point #4: The metal in steam generators cannot be recycled.

**BPEA** Page 3-17

**Non-radioactive wastes will be re-used or recycled** to the degree possible.... The **steam generators will be sealed and transferred to the WWMF.**

**BPEA** Page 4-55

**Radioactive wastes from Bruce A are transferred to WWMF..... All non-radioactive, non-hazardous solid waste is transported to the on-site conventional waste landfill for disposal or off-site for recycling, processing and/or disposal** at facilities licensed to handle such materials.

**CNSC** Page 75

Some of the waste is directly recyclable; however, the largest waste quantities are associated with the pressure-tube/calandria-tube replacement and **steam generator replacement, since the replaced components cannot be recycled and must be disposed of at the WWMF....**

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*Statement:*

*July 25 2010*

*I have examined the above-cited documents by searching for each and every occurrence of the phrase "steam generator.*

*Nowhere in these documents is there the slightest indication that the old steam generators will ever be transported off-site. On the contrary, both Bruce Power and the Canadian Nuclear Safety Commission repeatedly state that the old steam generators are a form of radioactive waste, which will be transported to the Western Waste Management Facility, on-site.*

*Nowhere in these documents is there the slightest indication that the contaminated metal of the old steam generators will be considered suitable for recycling as scrap metal intended for unrestricted use.*



*Gordon Edwards, Ph.D., President,  
Canadian Coalition for Nuclear Responsibility.*