From: Kevin Kamps, Beyond Nuclear

To: CNSC, via http://www.nuclearsafety.gc.ca/eng/commission/intervention/index.cfm, as well as to Louise Levert, Secretariat, Canadian Nuclear Safety Commission via email at interventions@cnsc-ccsn.gc.ca

Date: Sept. 13, 2010

Re: Public hearing comments by Kevin Kamps of Beyond Nuclear regarding the July 29, 2010 Ref. 2010-H-09 announcement by the Canadian Nuclear Safety Commission (CNSC) of a one-day public hearing to be held on September 29, 2010 to consider the application by Bruce Power Inc. (Bruce Power) for a transport licence for the shipment of 16 [radioactive] steam generators by ship through the Great Lakes and St. Lawrence Seaway to Sweden for recycling in the fall of 2010, from Bruce Power’s site located in Kincardine, Ontario.

Dear CNSC Commissioners,

Thank you for this opportunity to testify orally and submit additional written comments. My name is Kevin Kamps. I serve as Radioactive Waste Watchdog at Beyond Nuclear, headquartered in Takoma Park, Maryland, U.S.A. Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

I also serve as a board member of Don’t Waste Michigan, the state-wide anti-nuclear environmental coalition, and as a member of the Great Lakes United Nuclear-Free/Green Energy Task Force.

Bruce Power’s April 1, 2010 application to ship 16 intensely radioactive steam generators to Sweden for so-called “recycling” at first seemed like a bad April Fool’s Day joke, but CNSC staff’s conclusion that “there are no safety significant issues associated with the proposed shipment” shows this is no laughing matter. On the contrary, the shipment actually does involve radiological risks, as does the proposed, so-called “recycling” itself. Additionally, even without a radiological release, radioactive stigma risks pertain to the proposed shipments. Finally, the shipment could set the precedent for much more risky radioactive waste barge and ship transports to come on the Great Lakes. For all of these reasons, explained in more detail below, Beyond Nuclear finds this transport license application and so-called “recycling” proposal unacceptable, and opposes them in the strongest possible terms. We urge you to deny Bruce Power the transport license it has requested, as well as to prohibit the so-called “recycling” of radioactive materials originating in Canada.

Regarding the radiological risks posed by this shipment, the steam generators are severely contaminated with biologically hazardous radioactive isotopes. Dr. Gordon Edwards has prepared a partial listing of the radioactive contaminants contained in a single used steam generator from the Bruce nuclear power plant. He based his partial listing on information contained on page 50 of an Ontario Power Generation document entitled OPG’s Deep Geologic
According to this OPG document (see the last 2 lines), in each cubic metre there are over eight BILLION radioactive disintegrations taking place every second if we consider only the long-lived radioactive contaminants. Each disintegration releases an alpha ray, a beta ray, or a gamma ray; so there are more than eight billion of these rays emitted every second. That’s more than 28 trillion rays per hour – over 245 quintillion (245 000 000 000 000 000) rays per year!

There are five plutonium isotopes found in the steam generators. In each cubic metre there are about 580 million alpha rays given off each second from these five plutonium isotopes alone. One thousand years in the future, if the steam generators were just stored on-site as radioactive waste for that entire period, these plutonium isotopes would still be giving off about 30 million alpha particles per second, per cubic metre. 16 steam generators have a combined volume of about 6000 cubic metres, so multiply by this factor to get the total.

The U.S. National Academy of Science, in its BEIR VII Report (Biological Effects of Ionizing Radiation), published in 2005-2006, confirmed yet again that any exposure to ionizing radioactivity doses, no matter how small, carries a health risk. That is, there is no safe threshold of exposure to radiation below which the risk is zero. In addition, the risks are cumulative, with repeated exposures adding to risk over time. The release of hazardous radioactive substances from these steam generators into the environment, such as by breached steam generators during an accidental sinking of the transport vessel to the bottom of the Great Lakes, is a significant risk to human health and safety and the environment that Bruce Power and CNSC have downplayed and not adequately addressed.

Dr. Edward’s partial list of radioactive contaminants in the used steam generators includes 36 isotopes, some infamous for their biological hazards, such as: Carbon-14, hazardous for 57,000, which can displace natural carbon found throughout the human body; Cesium-137, a muscle-seeker, with a 300 year hazardous persistence; Plutonium-239, which can cause lung cancer in microscopic quantities if inhaled, hazardous for 240,000 years, and Plutonium-238, significantly more radioactive than Plutonium-239; Strontium-90, hazardous for 290 years, a bone-seeker; and various isotopes of uranium, the hazards of which include its toxic heavy metal properties, including, remarkably, hormone disruption as an estrogen mimic, with evidence of reproductive system hazards for mammals.

It’s difficult to understand how the CNSC staff can dismiss such radiologically hazardous and chemically toxic substances as low risk during ship transport on the Great Lakes. They attempt to do so by claiming that the radioactive contamination is somehow "locked" inside of the steam generators internally, somehow prevented from any possibility of getting out into the environment. But during an accidental sinking of the shipment, isn’t there at least some risk that the steam generators themselves would be damaged? Could they not be breached open? This of course would create a pathway for the hazardous radioactive substances listed above to escape into the waters of the Great Lakes. Certain of these radioactive substances are highly soluble in
water, such as Cesium-137 as but one example. For nearly 50 years, the nuclear establishment in the U.S. considered plutonium highly insoluble in water, but was forced to admit in the late 1990s that a certain valence state of plutonium is highly soluble in water. Adding significantly to the risk of the radioactive steam generators breaking open during an accidental sinking is the fact that they are not contained in any sort of radiological containment structure. The steam generators themselves would bear the full brunt of destructive forces resulting from an accidental sinking, with no added protection from a transport container.

Significantly, the steam generators each weigh around 100 tons. Such heavy weights would be very difficult to recover from the bottom of the Great Lakes after an accidental sinking. Depending on the location of the sunken shipment, specialized heavy lift cranes aboard ships would have to be located and deployed as quickly as possible to the accident site. But this could take a significant length of time to accomplish, given that it seems very little to no advance preparations have yet been made, either by Bruce Power or CNSC, to deal with such an accident scenario. The longer it would take to bring in strong enough mobile cranes to recover the sunken steam generators, the more radioactivity could leak into the environment from damaged steam generators. Also, the internals of damaged steam generators with breached exterior walls could present a direct radiological hazard, in the form of high gamma dose rates, to first responders and recovery workers themselves who would be sent in to deal with the emergency situation.

Even if no radioactivity were to escape into the environment during an accidental sinking, radioactive stigma impacts could still result. That is, media coverage and societal discussion of the sinking of a radioactive waste shipment in the Great Lakes could cause a spontaneous boycott of the Great Lakes economic products. This could negatively impact such economic sectors as Great Lakes tourism and recreation, drinking water supplies, fisheries, and even agriculture that depends on Great Lakes water for irrigation. Products originating in the Great Lakes could be avoided, for fear of radioactive contamination, even if no release occurs. Of course, if a radioactive release were to occur, the radioactive stigma impacts would be even more pronounced. That State of Nevada has undertaken a number of socio-scientific studies of radioactive stigma impacts associated with hypothetical high-level radioactive waste transport accidents bound for the proposed national dumpsite at Yucca Mountain, and found them to be significant.

A related issue is the negative impact of radioactive waste shipments on property values. In the “Komis case,” judge and jury in the State of New Mexico ruled over a decade ago that property values were negatively impacted just by the declaration of a radioactive waste transport route, even before the shipments began. An accidental sinking of this shipment of radioactive steam generators would add to such negative property value impacts. A radioactivity release would cause even worse declines in property values along the Great Lakes shorelines.

Another risk presented by this proposed shipment is that it could set a bad precedent for even more risky irradiated nuclear fuel and high-level radioactive waste shipments to come. The U.S. Department of Energy, as documented in its 2002 Final Environmental Impact Statement for a National Radioactive Waste Repository at Yucca Mountain, had proposed barge shipments of irradiated nuclear fuel on Lake Michigan, to connect two nuclear power plants in Wisconsin, and one in Michigan, which lacked direct rail access, with access to railheads for very heavy (over
100 ton) irradiated nuclear fuel transport containers. Even though that proposal pertained to Yucca Mountain, any away-from-reactor scheme, including centralized interim storage (such as “parking lot dumps” targeted at Native American reservations, or reprocessing facilities) could also involve the launching of high-level radioactive waste barges onto the Great Lakes. Beyond Nuclear strongly asserts that no radioactive wastes whatsoever should be permitted to travel on the Great Lakes, which represent a precious and irreplaceable natural resource, 20% of the world’s surface fresh water, and the heart and soul of a vast region of the North American continent, home to over 30 million residents in the U.S., Canada, and numerous First Nations, many of whom depend upon its waters for their drinking supply. Bruce Power’s proposal would set a very bad precedent, that could lead to much more risky high-level radioactive waste shipments in the future. The sinking of irradiated nuclear fuel in the Great Lakes includes the risk of accidental nuclear criticality within the waste packages themselves, if neutron-moderating water was able to interact with the fissile materials (Uranium-235 and Plutonium-239) still present in the irradiated nuclear fuel. Such a nuclear chain reaction on the bottom of the Great Lakes would make emergency response and recovery operations a potential suicide mission, and would greatly exacerbate radiological releases into the environment, as well as radioactive stigma impacts on the economy.

This shipment is proposed for no good reason whatsoever, in that the so-called “recycling” itself to be carried out in Sweden carries its very own risks. The “recycled” metal would still contain radioactive contamination. This radioactive metal could very well be “recycled” into consumer products that would come into intimate contact with vulnerable consumers in both the U.S. and Canada, as well as First Nations communities. Once the radioactive metal from the used steam generators would enter the normal metal recycling stream, there is no control whatsoever on what it could be used to make. This so-called “recycling” proposal seems to merely be an effort by Bruce Power to reduce its disposal costs for intensely radioactive waste it has generated. This is a poor reason to inflict the transport risks upon the residents of the Great Lakes, and to inflict the risk of radioactive “recycled” metal goods on unsuspecting consumers, potentially in the U.S., Canada, and North American First Nations communities.

For all of the reasons set forth above, Beyond Nuclear urges you to reject Bruce Power’s application for a transport license, and to ban the so-called “recycling” of Canadian-origin radioactive wastes into consumer items.

These public comments are sincerely and respectfully submitted by:

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