To: The Canadian Nuclear Safety Commission (CNSC)

From: Anna Tilman, Watershed Sentinel Educational Society (WSES)

Re: Comments on the Transport of Highly Enriched Uranyl Nitrate Liquid (HEUNL) with reference to CNSC's Technical Assessment Report: "NAC-LWT Package Design for Transport of Highly Enriched Uranyl Nitrate Liquid" [referred to as "Report"][1]

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Introduction

Atomic Energy Canada Limited (AECL) is intending to truck 23,000 litres of highly radioactive liquid wastes containing an acidic and aqueous solution of fission products, transuranic actinides, and highly-enriched uranium (HEU), as well as other hazardous non-nuclear substances, from its Chalk River Laboratory (CRL) facility to the U.S. Department of Energy (DOE) Savannah River Site (SRS) in South Carolina, a distance of approximately 2000 kilometres.

This liquid HEU-bearing waste has resulted from using weapons-grade HEU in Chalk River's National Research Universal (NRU) reactor for decades to produce radioactive isotopes for medical diagnostic procedures.

From 1986-2003, this waste has been stored in a 24,000 litre tank known as the Fissile Solution Storage Tank (FISST) at Chalk River. Since 2003, at which time the FISST was reaching capacity and thus taken out of service, this waste has been solidified and stored at Waste Management Areas at Chalk River.

However, given the uniqueness and issues concerned with transporting this type of radioactive waste across the border for such a long distance, to date, there has been no process for public discourse on options to handle this waste, such as solidifying it and storing it on site, as has been done since 2003. The only form of public involvement that the CNSC has engaged in has been to invite comments on the Report dealing with packaging this waste.

Considering the level of concern that this plan to transport liquid radioactive waste has raised in communities on both sides of the border since it became known approximately two years ago, it is unacceptable that the CNSC has failed to engage in a fulsome public discussion of the shipment of this liquid radioactive waste. Packaging this waste is only one of a number of issues at the forefront of this proposal, and it is an issue based on the premise that shipment of this waste is the only means of handling it.

The following highlights some of the key issues as to the nature of the shipment and the Report itself:

Key Issues

- The shipment of highly radioactive liquid waste containing HEU on public roads is unprecedented in Canada, as far as we know.
- Given that the uranium in question in this waste is enriched to more than 90% of the explosive U-235 isotope, this waste is potentially weapons-grade material.

[1] [Report] http://nuclearsafety.gc.ca/eng/pdfs/chalk-river/HEU-Technical-Assessment-and-Environmental-Report_ENG.pdf

- Several truckloads would be needed to transport all this waste and that could take about four years. Trucks would travel through or near many communities in Canada and many more in the US and would need to cross numerous waterways, and agricultural areas.
- Transporting such a highly dangerous payload presents unprecedented risks: the safety of containment of the liquid itself, the hazards to workers, the potential for accidents enroute, theft, terrorism and other scenarios, including the potential to accidently triggering a self-sustaining chain reaction.
- Liquid waste is highly mobile and can leak into the environment in very large quantities, if a serious accident occurred. Cleaning it up would be very difficult, if not impossible.

With respect to the Report itself,

- As acknowledged in the Report, the external packaging to ship such waste has only been used in the past for solid irradiated nuclear fuel, never for high-level **liquid** radioactive waste. While the packaging is proposed to be modified by adding inner containers, the design details for these containers are not described in the Report due to "proprietary considerations."[2] How is the public expected to even comment on this matter?
- The Report fails to provide a complete list of substances (radioactive and non-radioactive) in this waste, and only provides a list of selected gamma-emitting radionuclides and their daughter products.[3]
- Accidents can and do happen in transport of dangerous goods. However, no detail is provided in the Report as to emergency and clean-up measures that would be needed in the event that there is a spill or other interference or interruption with shipping this waste.

Summary

The shipment of this liquid waste is purportedly being considered to fulfill non-proliferation requirements, by consolidating and repatriating US-origin HEU. But because this liquid waste is highly radioactive, the HEU it contains is much harder to make into nuclear weapons than the HEU being shipped to Chalk River in the first place. Hence, there is no non-proliferation urgency for these shipments.

Considering that this HEUNL need not be returned, that railroad and truck transport fail, many times catastrophically, returning to former solidification practices is clearly a better choice than risking the multiple transport of this waste through many communities. Any incident that resulted in human and environmental exposure to this material would be disastrous and unconscionable.

Shipping highly radioactive HEU-bearing waste in liquid form to the U.S. is unwarranted and sets a highly dangerous precedent. It could legitimize shipments of similar wastes on a global scale. The plan to ship this waste must be halted and a public decision-making process instituted to investigate this matter, for the safety and protection of the public good, and for international security.

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[2] The Report p.7
[3] Ibid Table 2 p.9