

Canadian Coalition  
for Nuclear  
Responsibility



Regroupement pour  
la surveillance  
du nucléaire

September 30, 2016

The Right Honourable Justin Trudeau  
Prime Minister of Canada  
House of Commons  
Ottawa, ON K1A 0A6  
[justin.trudeau@parl.gc.ca](mailto:justin.trudeau@parl.gc.ca)

President Barack Obama  
United States of America  
White House, 1600 Pennsylvania Ave. N.W.  
Washington, DC 20500  
[president@whitehouse.gov](mailto:president@whitehouse.gov)

Dear Prime Minister Trudeau and President Obama:

***Re: Transport of Highly Radioactive Liquid Waste over Public Roads***

We are writing to you in connection with Canada's commitment to eliminate highly enriched uranium (HEU) from civilian nuclear facilities such as Chalk River as part of President Obama's 2009 initiative – a goal that we fully support and applaud as part of a global non-proliferation objective. However we do **not** support current plans to transport HEU in liquid form from Chalk River to the U.S. Department of Energy's Savannah River Site in South Carolina in 100-150 truckloads along public roads and bridges. Each such shipment will carry an inherently dangerous highly radioactive liquid solution containing dozens of nuclear fission waste byproduct materials in addition to the HEU.

**Duty to Act**

Under the 2012 *Great Lakes Water Quality Agreement* (GLWQA) which your two governments are the Parties to you committed to “eliminate or reduce, to the maximum extent practicable, environmental threats to the Waters of the Great Lakes” [Art. 2 1 (c)] and “to anticipate and prevent environmental problems, by implementing measures that are sufficiently protective to achieve the purpose of this Agreement” [Article 2 3].

The proposed series of transports of highly radioactive liquid waste over a period of years could have a potentially devastating impact on the *Great Lakes/St. Lawrence River* ecosystem. Depending on the routes chosen, there could be a spill or spills into a waterway flowing into the Great Lakes or the St. Lawrence River, or a spill into one of the rivers connecting the Lakes (St. Mary's River, St. Clair River, Detroit River or the Niagara River), or a spill directly into the St. Lawrence River itself.

The GLWQA stipulates that notification through the Great Lakes Executive Committee (GLEC) is required where planned activities concerning “storage and transfer of nuclear

waste” could lead to a pollution incident or could have significant cumulative impact on the Great Lakes.<sup>1</sup> Has such notification occurred through the Great Lakes Executive Committee? More importantly, has the Great Lakes Executive Committee been accurately apprised of the contents and potential hazards of these planned shipments?

In the absence of detailed and accurate notification, the GLEC cannot respond by providing meaningful advice to your governments and providing your governments with “perspectives and insights from federal agencies, state and provincial governments, tribal governments, First Nations, Métis, municipal governments, watershed management agencies, and local public agencies on issues relating to the implementation of the GLWQA,” in accordance with the terms of its mandate, which also allows for public input.

## **Misleading Description**

It has come to our attention that the radioactive liquid in question has been misleadingly described by the Canadian Nuclear Safety Commission (CNSC) as “Highly Enriched Uranyl Nitrate Liquid” (HEUNL). Such a description seriously misrepresents the extremely toxic and radiologically complex nature of this liquid waste. Highly enriched uranyl nitrate is a specific chemical compound<sup>2</sup> that is only one of dozens of compounds contained in the acidic liquid solution, which includes (among others) radioactive varieties of cesium, strontium, iodine, yttrium, rhodium, ruthenium, lanthanum, europium, niobium, praseodymium, zirconium, cerium, barium, xenon, and neodymium – each one having a much greater radioactivity than the highly enriched uranium itself. Indeed, the highly enriched uranyl nitrate portion represents less than one ten-thousandth of the total radioactive inventory contained in the liquid contents of the proposed shipments.<sup>3</sup>

Never before in North America has liquid waste of this nature, containing virtually the entire spectrum of fission products found in irradiated uranium, been transported over public roads. Moreover, liquid waste of a very similar nature left over from isotope production operations, also containing highly enriched uranyl nitrate liquid, has been routinely solidified on-site at Chalk River since 2003, ever since the Fissile Solution Storage Tank (FISST) was completely filled and could accommodate no more liquid.

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<sup>1</sup> GLWQA 2012, Article 6, Notification and Response (c) “the Parties shall notify each other, through the Great Lakes Executive Committee, of planned activities that could lead to a pollution incident or that could have a significant cumulative impact on the Waters of the Great Lakes, such as: (i) the storage and transfer of nuclear waste or radioactive materials...”.

<sup>2</sup> The chemical formula of uranyl nitrate is  $\text{UO}_2(\text{NO}_3)_2$  where the uranium (U) in this case is highly enriched (HEU).

<sup>3</sup> CNSC 2014, Technical Assessment Report: NAC-LWT Package Design for Transport of Highly Enriched Uranyl Nitrate Liquid, Table 2. Radioactivity of highly enriched uranyl nitrate per litre is 29.3 MegaBecquerels (2.93E+07 Bq), whereas total radioactivity per liter is 485,000 MegaBecquerels (4.85E+11 Bq). The ratio is 1 to 16,553. The total radioactivity is underestimated because only the principal gamma emitters and actinides are listed.

We therefore fail to understand or accept any justification for transporting this highly dangerous material in liquid form.

## **Failure to prepare an Environmental Impact Statement (EIS)**

We also fail to understand why this unprecedented transport of highly radioactive liquid waste has not been subjected to any public environmental assessment process in Canada or in the USA, involving the preparation of an Environmental Impact Statement (EIS) so that other government departments and the public can provide input on the potential environmental impacts, as well as on alternative waste management approaches that could make the transports unnecessary. Indeed, it appears to us that proper notification through the Great Lakes Executive Committee would only be meaningful if such an EIS were carried out in both countries so that the results of those assessments could be made available to the GLEC.

## **Alternatives are available**

As noted in a 2011 report prepared for the Canadian Minister of Natural Resources, the liquid waste in the FISST tank that is now planned to be shipped to South Carolina was originally intended to be down-blended in order to eliminate Highly Enriched Uranium (HEU) by converting it to Low Enriched Uranium (LEU). LEU is not nuclear-weapons-usable material and can therefore be solidified and stored on-site indefinitely, along with the solidified contents of some 20 other tanks of liquid nuclear waste at Chalk River.<sup>4</sup>

In February 2016, Indonesia was authorized by the US DOE to carry out such a down-blending of radioactive liquid containing weapons-grade highly enriched uranyl nitrate, thereby foregoing the need to transport the material to the USA. The Indonesian down-blending operation has already been completed, just a few months after permission was granted. The Indonesian weapons-grade HEU liquid was associated with the production of medical isotopes, as is the case with the Chalk River material.<sup>5</sup> Solidification of the liquid waste in the FISST tank at Chalk River is likewise a viable option, as previously mentioned, and can be used in conjunction with down-blending.

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<sup>4</sup> NRCan 2011, **Evaluation of the Nuclear Legacy Liabilities Program (NLLP) of the Energy Sector**, Section 1.52, "The purpose of the *Liquid Waste Transfer and Storage (LWTS)* Project at the Chalk River Laboratories was to provide a new storage facility for legacy radioactive waste contained in 21 aging tanks... The specific objectives of the LWTS Project were to design, licence, construct, and cold commission the equipment, materials and facilities necessary to...down-blend the contents of the Fissile Solution Storage Tank (FISST) to a Uranium-235 enrichment level low enough to minimize criticality and safeguard constraints...."

<sup>5</sup> US Federal Register, Feb 22 2016, DOE Proposed Subsequent Arrangement: "This subsequent arrangement concerns the alteration in form or content of 1.3 kg of U.S.-origin highly enriched uranium (HEU), 1.21 kg of which is in the isotope of U-235 (93 percent enrichment) and currently located at PT Industri Nuklir (PT INUKI) in Serpong, Indonesia, through down-blending to reduce its enrichment to less than 20 percent U-235. The purpose of the down-blending of the HEU is to achieve permanent threat reduction by eliminating HEU from Indonesia... The down-blend operation is scheduled to last for approximately three months."

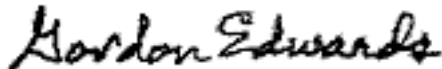
## Recommendations

We ask you, Mr. Prime Minister and Mr. President, to cancel or delay these planned shipments of liquid radioactive waste from Chalk River to the Savannah River Site until (1) a public environmental impact statement has been prepared in Canada and in the United States that includes a full examination of potential environmental impacts as well as viable alternatives to the planned transport, with the opportunity for public input; and (2) proper notification of the radioactive contents and potential impacts of the proposed shipments of highly radioactive liquid waste has been provided through the Great Lakes Executive Committee and communicated to all stakeholders, including the appropriate EIS documents.

We look forward to receiving your response within 30 days as to the status of either cancelling these unprecedented shipments of highly radioactive liquid wastes, or preparing environmental impact statements in both Canada and the USA that are independent, comprehensive and public, to address the unique hazards associated with these proposed transports.

If your office has any questions or comments with respect to any of the above, please feel free to contact the undersigned regarding radiological characteristics and hazards of the proposed shipments, or contact Christine Elwell, Sierra Club Ontario at [christine.elwell@sympatico.ca](mailto:christine.elwell@sympatico.ca) for considerations related to the *Great Lakes Water Quality Agreement*.

With respect,



Gordon Edwards, Ph.D., President,  
Canadian Coalition for Nuclear Responsibility,  
53 Dufferin, Hampstead QC, H3X 2X8  
[ccnr@web.ca](mailto:ccnr@web.ca) (514) 489 5118

c.c.

Gordon Walker, Commissioner, Canadian Chair  
International Joint Commission  
234 Laurier Avenue West, 22nd Floor  
Ottawa, ON K1P 6K6  
[walkerg@ottawa.ijc.org](mailto:walkerg@ottawa.ijc.org)

Lana Pollack, Commissioner, US Chair  
International Joint Commission  
2000 L Street, NW, Suite #615  
Washington, DC 20440  
[pollackl@washington.ijc.org](mailto:pollackl@washington.ijc.org)

**C.C.**

**Great Lakes Executive Committee  
Canadian Co-Chair  
Michael Goffin  
[michael.goffin@canada.ca](mailto:michael.goffin@canada.ca)**

**The Honourable Jim Carr  
Minister of Natural Resources  
House of Commons  
Ottawa ON K1A 0A6  
[Jim.carr@parl.gc.ca](mailto:Jim.carr@parl.gc.ca)**

**Ernest Moniz, Secretary  
U.S. Department of Energy  
1000 Independence Avenue S.W.  
Washington DC 20585  
[the.secretary@hq.doe.gov](mailto:the.secretary@hq.doe.gov)**

**The Honourable Catherine McKenna  
Minister of Environment and Climate Change  
House of Commons,  
Ottawa ON K1A 0A6  
[Catherine.McKenna@parl.gc.ca](mailto:Catherine.McKenna@parl.gc.ca)**

**Tim Eder, Executive Director  
Great Lakes Commission  
2805 S Industrial Hwy, Suite 100  
Ann Arbor MI 48104-6791  
[teder@glc.org](mailto:teder@glc.org)**

**Great Lakes Executive Committee  
U.S. Co-Chair  
Cameron Davis  
[davis.cameron@epa.gov](mailto:davis.cameron@epa.gov)**

**The Great Lakes Executive Committee  
Canadian Secretary  
[ec.aqegl-glwqa.ec@canada.ca](mailto:ec.aqegl-glwqa.ec@canada.ca)  
U.S. Secretary  
[glwqa@epa.gov](mailto:glwqa@epa.gov)**

**Monica C. Regalbuto, Assistant Secretary  
for Environmental Management  
U.S. Department of Energy  
Washington DC 20585  
[monica.regalbuto@em.doe.gov](mailto:monica.regalbuto@em.doe.gov)**

**Gina McCarthy, Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue N.W.  
Washington DC 20460  
[mccarthy.gina@epa.gov](mailto:mccarthy.gina@epa.gov)**

**Michael Binder, President  
Canadian Nuclear Safety Commission  
280 Slater Street  
Ottawa ON K1P 5S9  
[michael.binder@cnsccsn.gc.ca](mailto:michael.binder@cnsccsn.gc.ca)**

***THIS LETTER HAS BEEN ENDORSED BY THE FOLLOWING NON-GOVERNMENTAL ORGANIZATIONS :***

*Sierra Club Binational Great Lakes Committee  
Rochester NY and Toronto ON  
Lino Grima, Canadian Co-Chair [lino.grima@utoronto.ca](mailto:lino.grima@utoronto.ca),  
Wayne Howard, US Co-Chair [whoward@rochester.rr.com](mailto:whoward@rochester.rr.com)*

*Savannah River Site Watch  
Columbia South Carolina  
Tom Clements, Director  
[tomclements329@cs.com](mailto:tomclements329@cs.com)*

*Canadian Association of Physicians for the Environment  
Kingston Ontario  
Cathy Vakil M.D.  
[cathyvakil@gmail.com](mailto:cathyvakil@gmail.com)*

*The Provincial Council of Women of Ontario  
Ridgeville Ontario  
Mary Potter, President  
[jmpotter068@gmail.com](mailto:jmpotter068@gmail.com)*

*Le Conseil provincial des femmes du Québec  
Provincial Council of Women of Quebec  
Elizabeth Hutchinson, President  
[ealasaidd@rougenet.qc.ca](mailto:ealasaidd@rougenet.qc.ca)*

*Citizens' Network on Waste Management  
Kitchener Ontario  
Contact: John Jackson  
[jjackson@web.ca](mailto:jjackson@web.ca)*

*Great Lakes Environmental Alliance  
Port Huron Michigan  
Tanya Keefe, Board Chair  
[tanya\\_keefe@yahoo.com](mailto:tanya_keefe@yahoo.com)*

*Coalition for a Nuclear Free Great Lakes  
Monroe Michigan  
Michael J. Keegan, Chair  
[mkeeganj@comcast.net](mailto:mkeeganj@comcast.net)*

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Women's International League for Peace & Freedom  
Detroit Branch, Detroit Michigan  
Laura Dewey, Coordinator  
[wilpfdetroit@att.net](mailto:wilpfdetroit@att.net)

National Council of Women of Canada  
Ottawa, Ontario  
Karen Monnon Dempsey, President  
[pres@ncwcanada.com](mailto:pres@ncwcanada.com)

Fairmont, MN Peace Group  
Fairmont, Maine  
Contact: Judi Poulson  
[judpeace@gmail.com](mailto:judpeace@gmail.com)

Nuclear Information and Resource Service  
Takoma Park, Maryland  
Contact: Diane D'Arrigo  
[dianed@nirs.org](mailto:dianed@nirs.org)

Citizens for Alternatives to Chemical Contamination  
Lake, Michigan  
Wes Raymond, Administrator  
[wesraymond.cacc@outlook.com](mailto:wesraymond.cacc@outlook.com)

Lone Tree Council  
Bay City, Michigan  
Terry Miller, Chairman  
[terbar@charter.net](mailto:terbar@charter.net)

Toledo Coalition for Safe Energy  
Toledo, Ohio  
Terry Lodge, Convenor  
[tjlodge50@yahoo.com](mailto:tjlodge50@yahoo.com)

Nukewatch,  
Luck, Wisconsin  
John LaForge, Co-Director  
[nukewatch1@lakeland.ws](mailto:nukewatch1@lakeland.ws)

Straits Area Concerned Citizens for  
Peace, Justice and the Environment  
Cheboygan, Michigan  
Anabel Dwyer, David Dwyer  
[dwyer@msu.edu](mailto:dwyer@msu.edu)

Western New York Environmental Alliance  
Buffalo, New York  
Lynda Schneekloth, Advocacy Chair  
[lhs1@buffalo.edu](mailto:lhs1@buffalo.edu)

Ontario Clean Air Alliance  
Toronto, Ontario  
Angela Bischoff, Outreach Director  
[angela@cleanairalliance.org](mailto:angela@cleanairalliance.org)

Durham Nuclear Awareness  
Whitby, Ontario  
Janet McNeill, Coordinator  
[info@durhamnuclearawareness.com](mailto:info@durhamnuclearawareness.com)

Don't Waste Michigan  
Holland, Michigan,  
Contact: Alice Hirt  
[alicehirt@gmail.com](mailto:alicehirt@gmail.com)

Concerned Citizens of Renfrew County  
Pembroke Ontario,  
Contact: Ole Hendrickson,  
[ole@nrtco.net](mailto:ole@nrtco.net)

Environmentalists Inc.  
Columbus, North Carolina,  
Ruth Thomas, Co-Founder  
[et@prop1.org](mailto:et@prop1.org)

Nevada Nuclear Waste Task Force,  
Las Vegas, Nevada  
Judy Treichel, Executive Director  
[judyntwf@aol.com](mailto:judyntwf@aol.com)

Wisconsin Resources Protection Council,  
Tomahawk, Wisconsin  
Al Gedicks, Executive Secretary  
[agedicks@eagle.uwlax.edu](mailto:agedicks@eagle.uwlax.edu)

Northwatch  
North Bay, Ontario  
Contact: Brennain Lloyd  
[brennain@northwatch.org](mailto:brennain@northwatch.org)

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*The Watershed Sentinel Education Society  
Toronto Ontario & Comox British Columbia  
Contact: Anna Tilman  
[annatilman@sympatico.ca](mailto:annatilman@sympatico.ca)*

*Beyond Nuclear  
Takoma Park, Maryland  
Kevin Kamps, Radioactive Waste Watchdog  
[kevin@beyondnuclear.org](mailto:kevin@beyondnuclear.org)*

*Lake Ontario Waterkeeper  
Toronto, Ontario  
Mark Mattson, Waterkeeper  
[mark@waterkeeper.ca](mailto:mark@waterkeeper.ca)*

*Milwaukee Riverkeeper  
Milwaukee, Wisconsin  
Cheryl Nenn, Riverkeeper  
[cheryl\\_nenn@milwaukeekeeper.org](mailto:cheryl_nenn@milwaukeekeeper.org)*

*Lake Erie Waterkeeper  
Toledo, Ohio  
Sandy Blin, Executive Director & Waterkeeper  
[SandyLakeerie@aol.com](mailto:SandyLakeerie@aol.com)*

*Detroit Riverkeeper  
Taylor, Michigan  
Robert Burns, Friends of the Detroit River  
[Rlb315@comcast.net](mailto:Rlb315@comcast.net)*

*Yellow Dog Riverkeeper  
Big Bay, Michigan  
Chauncey J. Moran,  
[criverwalkerr@aol.com](mailto:criverwalkerr@aol.com)*

*Seneca Lake Guardian (a Waterkeeper Affiliate)  
Watkins Glen, New York  
Joseph Campbell  
[muchado2@gmail.com](mailto:muchado2@gmail.com)*

*Canadian Environmental Law Association  
Toronto, Ontario  
Theresa McClenaghan, Executive Director  
[theresa@cela.ca](mailto:theresa@cela.ca)*

*The Council of Canadians  
Ontario-Quebec-Nunavut Region  
Mark Calzavara, Regional Organizaer  
[mcalzavara@canadians.org](mailto:mcalzavara@canadians.org)*

*Ottawa Riverkeeper  
Ottawa, Ontario  
Meredith Brown, Riverkeeper  
[keeper@ottawariverkeeper.ca](mailto:keeper@ottawariverkeeper.ca)*

*Upper St. Lawrence Riverkeeper  
Clayton, New York  
Lee Willbanks, Executive Director  
"Save the River" [lee@savetheriver.org](mailto:lee@savetheriver.org)*

*Buffalo Niagara Riverkeeper  
Buffalo, New York  
Jill Jedlicka, Executive Director & Riverkeeper  
[Jedlicka@bnriverkeeper.org](mailto:Jedlicka@bnriverkeeper.org)*

*St. Clair Channelkeeper  
St. Clair Shores, Michigan  
Doug Martz, Channelkeeper  
[channelkeeper@wowway.com](mailto:channelkeeper@wowway.com)*

*Grand Traverse Baykeeper  
Traverse City, Michigan  
Christine Crissman  
[cchrissman@gtbay.org](mailto:cchrissman@gtbay.org)*

*Waterkeeper Alliance  
New York, New York  
Marc Yaggi, Executive Director  
[myaggi@waterkeeper.org](mailto:myaggi@waterkeeper.org)*