## Down-Blending as an Alternative to Transport

From the US Federal Register, February 22, 2016.
https://www.federalregister.gov/documents/2016/02/22/2016-03572/proposed-subsequent-arrangement

"The purpose of the down-blending of the HEU is to achieve permanent threat reduction by eliminating HEU from Indonesia. PT INUKI will down-blend the HEU contained in 514 bottles of irradiated HEU targets in liquid form and 14 containers of un-irradiated liquid HEU used in the plating process for medical isotope production, on-site at the Pusat Penelitian Ilmu Pengetahuan dan Teknologi facility in Serpong. The quantity of uranium will increase from 1.3 kg to 6.72 kg while the U-235 enrichment will decrease from 93 percent to 18 percent. The down-blend operation is scheduled to last for approximately three months."

## Niagara Regional Council resolution of June 11,2015.

"That Regional Council *EXPRESS* opposition in principle to any shipment of radioactive liquid waste over public roads and bridge, or on any navigable waterways, or by air, recognizing that such waste can be, has been and should be solidified so that it is far less accessible to the environment and living things, and,

That Regional Council *URGE* the governments of Canada and the United States to halt the shipment of high-level radioactive liquid waste from Chalk river Laboratories to the Savannah river, pending the outcome of full public consultations on the advisability and the potential adverse impacts of the proposed shipments , as well as the alternative procedures to achieve the stated objectives for such shipments."

## Radioactivity of the Liquid Waste in the FISST Tank

From CNSC's December 2014 "Technical Assessment Report: NAC-LWT Package Design for Transport of Highly Enriched Uranyl Nitrate Liquid"

**Table 2: Concentration of radionuclides in the solution (actinides, gamma emitters and their daughter products)**

| Isotope | Activity (Bq/L) | Isotope | Activity (Bq/L) | Isotope | Activity (Bq/L) |
|---|---|---|---|---|---|
| Nb-95 | 6.63E9 | Ba-137m | 70.19E9 | Eu-155 | 1.95E8 |
| Nb-95m | 25.35E9 | Cs-137 | 70.19E9 | U-234 | 2.84E7 |
| Zr-95 | 25.35E9 | Ba-140 | 58.50E9 | U-235 | 5.59E5 |
| Rh-103m | 18.13E9 | La-140 | 58.50E9 | U-236 | 3.66E5 |
| Ru-103 | 18.13E9 | Ce-141 | 42.88E9 | U-238 | 5.59E3 |
| Rh-106 | 5.46E8 | Ce-144 | 8.19E9 | Np-237 | 4.51E3 |
| Ru-106 | 5.46E8 | Pr-144 | 8.19E9 | Pu-239 | 1.3E6 |
| I-131 | 19.50E9 | Pr-144m | 8.19E9 | Pu-240 | 8.99E4 |
| Xe-131m | 19.50E9 | Nd-147 | 15.80E9 | | |
| Te-132 | 10.33E9 | Eu-154 | 8.4E7 | | |

The total radioactivity in this table (which is incomplete) is 17,000 times greater than the radioactivity of all the uranium isotopes combined. It is misleading to call this liquid "Highly Enriched Uranyl Nitrate".

## *Background information on the transport of highly radioactive liquid waste*

2016 Law suit filed in US Federal Court by seven plaintiffs on August 12, 2016, calling for an injunction against the proposed shipments.
http://ccnr.org/lawsuit_2016.pdf

2016 Recent reports in the media on the proposed shipments compiled by Kevin Kamps of Beyond Nuclear, in Takoma Park Maryland
http://tinyurl.com/zo2fss8

2016 A map of one of several possible routes for the proposed shipments (courtesy of Beyond Nuclear)
http://tinyurl.com/zc9lpgm

2015 Comments by CCNR on the CNSC Technical Report of December 2014
http://ccnr.org/CCNR_CNSC_HEUNL_2015.pdf

2011 "A FISST Full of Trouble" by Ian McCleod of the Ottawa Citizen with a 2013 background commentary by Gordon Edwards
http://ccnr.org/FISST.pdf

2013 Background info on proposed shipments by Gordon Edwards and Anna Tilman
http://ccnr.org/backgrounder_CRL_SRS_2013.pdf

2013 Resolution opposing the transport of highly radioactive liquid waste
http://ccnr.org/resolution_CRL_SRS_2013.pdf

2013 Endorsers of the 2013 resolution opposing the proposed shipments
http://ccnr.org/Endorsing_Groups.pdf

2011 Chalk River: Canada's Nuclear Sacrifice Area, by Gordon Edwards
http://ccnr.org/crl_sacrifice.pdf