

Peterborough: Tritium in the Twilight Zone

September 8, 2012

A Twilight Zone Fable

- (1) Picture, if you will, a small-town sheriff who sits dozing in his office for 18 years, ignoring alarms and wake-up calls, yet bragging that he will “never compromise public safety”.
- (2) Imagine that same sheriff posting a speed limit of 34 million kilometres per hour, then claiming that no one in his town is ever guilty of speeding -- because no one can possibly exceed that limit.
- (3) Now imagine that same individual freeing dangerous offenders, already safely secured in locked cells, letting them out through the back door at night so they can go about their nefarious business unobstructed.

Strange events? Not really.
You have just entered the Tritium Twilight Zone!

Radioactive Pollution in Peterborough

The people of Peterborough are experiencing an analogous series of Alice-in-Wonderland occurrences, where the role of sheriff is played by the Canadian Nuclear Safety Commission (CNSC).

This story deals with releases of radioactive tritium into the Peterborough environment. The source of the pollution is a factory at the Peterborough Airport called SSI (Shield Source Incorporated).

SSI manufactures glass tubes filled with radioactive tritium gas to make them glow in the dark. Tritium -- an unwanted radiotoxic byproduct of Ontario's electricity-producing nuclear reactors -- is notoriously difficult to contain. For over 20 years SSI has been releasing, on average, more than a trillion becquerels of tritium into the environment every day. (A Becquerel is a unit of radioactivity; it indicates that one radioactive disintegration is taking place every second.)

The Fable Illustrated with Facts

(1) On August 24 2012, SSI issued a report (“Root Cause Investigation, Tritium Stack Emissions Reporting Discrepancies”) revealing that for the last 18 years, the amount of tritium released annually has been 5 to 10 times greater than the amount reported to the nuclear regulator, CNSC. Indeed, yearly emissions of this radiotoxic gas from the SSI facility have been greater than those from any nuclear reactor in Canada – in 2011, about 1500 trillion becquerels per year. That's much higher than the very lax emissions standard of 500 trillion becquerels per year specified in SSI's current CNSC licence.

Over the years, there were several indications that SSI's releases were higher than announced, but the numbers or the equipment were always "fixed" to hide the discrepancy. For two decades CNSC failed to verify the validity of SSI's reported emissions -- and misled the public about this. The CNSC's "record of decision" from its 2009 public hearing on SSI says "CNSC staff stated that it conducts its own verifications to ensure that the monitoring data is reliable and that the monitoring program in place is acceptable."

Protecting people and the environment from radioactive pollution is CNSC's mandate, and CNSC claims to "never compromise safety". But the record shows that CNSC has been asleep on the job for 18 years.

(2) After SSI's very large accidental release of 150 trillion becquerels of tritium gas in just a few minutes in February 2010, CNSC staff reported that this was "far below the licence release limits of 34 million TBq/year." How could CNSC possibly make this statement, when the release limit is 500 trillion becquerels?

Conveniently, the CNSC has included TWO release limits in SSI's current licence -- the 500 trillion becquerel limit calculated by the CNSC itself, and a 34 MILLION trillion Becquerel "derived" limit calculated by SSI (which by the way was the ONLY limit prior to 2009). The far higher limit allows the CNSC to claim that SSI's radioactive gas releases -- whether "routine" or accidental -- are of no concern.

But that is 10,000 times higher than the yearly tritium releases from any nuclear reactor in Canada -- a "limit" so enormous that it would be impossible for any facility to exceed.

Setting such a limit for tritium is like setting a speed limit of 34 million kilometres per hour for cars, knowing that no vehicle will ever go that fast.

CNSC vows to keep radiation exposures and radioactive releases "As Low As Reasonably Achievable" -- it's called the "ALARA" principle. But the pre-2009 Peterborough experience shows that CNSC prefers to follow the 'Tritium LITE' principle -- by setting a tritium "Limit Impossible To Exceed". (No polluter can exceed the speed of LITE!) And CNSC seems to be following another unspoken rule, the ALANN principle: radioactive pollution is permissible "As Long As Nobody Notices".

(3) SSI buys its radioactive tritium from Darlington's Tritium Removal Facility (TRF), which Ontario Power Generation (OPG) built in 1990 to isolate, sequester -- and, in effect, imprison this radioactive pollutant in order to prevent it from further contaminating workers, the public or the environment.

This tritium is man-made. CANDU reactors use non-radioactive heavy water as moderator and coolant. But as the plants age there is a steady build-up of

radioactive tritium within the heavy water – and as tritium concentrations go up, so do tritium exposures to workers and to the environment. So OPG periodically removes tritium from heavy water and stores it as radioactive waste in the TRF.

“To help keep workers safe, and to minimize the amount of tritium going into the environment, a tritium removal facility was opened at the Darlington site in 1990. This plant extracts tritium from heavy water used in OPG’s nuclear reactors. The tritium is safely stored in stainless steel containers within a concrete vault.”

<http://www.opg.com/power/nuclear/darlington/>

However, CNSC gives SSI a licence to UNDO what the TRF does! SSI is allowed to liberate tritium from OPG’s carefully engineered vault at TRF and spread that radioactive waste material far and wide, fabricating radioactive signs that are sent all over the world – many of them ending up in landfills -- while spilling huge quantities of tritium into the Peterborough environment.

We believe such counterproductive activity is irresponsible. It should not be permitted, let alone licensed. Tritium light manufacturing and SSI should be shut down permanently.

Conclusion

The Peterborough experience with tritium highlights a chronic lack of political oversight and public accountability in the nuclear field in Canada. It reveals that CNSC is inadequate as a protector of people and the environment. And it underscores the need for a National Inquiry into the Future of Nuclear Power in Canada, as recommended by 65 organizations across Canada.

For more information on tritium pollution: <http://ccnr.org>

For the SSI Tritium Releases Report: <http://tinyurl.com/9d2e874>

For more on the proposed Inquiry: http://ccnr.org/Media_Release_11_03_31.pdf

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Tritium operations at SSI have been suspended since April 2012, when it was first revealed that radioactive emissions were vastly underestimated for the years 2010 and 2011 -- so much so that SSI was operating in clear violation of its CNSC licence during those two years.
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