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Tritium at Indian Point

By Marilyn Elie

Tritium is a naturally occurring radioactive isotope that is found in the upper reaches of the atmosphere and rarely occurs naturally on the surface of the Earth. It is produced as a byproduct in the normal operations of nuclear reactors. It has a half-life of 12 years. That means that half of it will decay in 12 years and the half left will still be fully active. https://g.co/kgs/gPTJbu.

Most of the tritium at Indian Point is in the water of the two 40 feet deep pools where the highly radioactive used fuel rods have always been stored. Tritium and many other radioactive isotopes are all part of the clean up of the property where the reactors once operated.

Tritium is a beta emitter. That means the weak radioactive emissions from tritium can be blocked by the skin. However, if it is inhaled or ingested it's emissions disrupt cell functions during the ten days it takes to be excreted from the body. Gordon Edwards, a noted Canadian scientist explains it this way.

"Each radioactive particle is like a tiny time bomb, that will eventually “explode” (the industry uses the word “disintegrate”). When an atom disintegrates it gives off projectiles that can damage living cells, causing them to develop into cancers later."

http://www.ccnr.org/fission_fusion_and_sustainability_2022.pdf.

What to do with this contaminated water is a choice that Holtec, the owner of the property, will face when all of the fuel rods are removed to dry cask storage sometime in 2023. Holtec claims that the radioactive tritium in the pools is below the annual regulatory amount for the standards set by the Nuclear Regulatory Commission and within their discharge permit. How much the releases will be diluted by the volume of water in the Hudson in a six hour period has been calculated by

David Lochbaum, the nuclear scientist that advises the Decommissioning Oversight Board. It was found to be acceptable according to industry standards.

While mathematically accurate these calculations do not reflect the vagaries of the ebb and flow of currents in the River. The question is not where the contaminated water is released, it is where it ends up.

Is it possible that currents would carry contaminated water to the same bays and shore lines as happened with PCB's years ago? If so, batch releases over time would seem to increase the contamination of certain areas, probably those closer to shore. Will batches be released at high tide and will communities and their water intake systems be notified when releases are scheduled? What about the effects on fish and other wildlife as well as on the people who eat fish from the River, those who are boating or swimming in the River and the children who play on the shore.

Irina Rypina, a Woods Hole researcher, has completed a study about discharging tritiated water from the Pilgrim Nuclear Power Plant into Cape Cod Bay. The Hudson River and Cape Cod Bay are two very different water bodies and are not easily compared. However, currents and other natural effects were taken into account in her study. The conclusion is that further research should be done.

“The wastewater transport studied here is just one part of the story,” said Rypina. The radioactive contaminants will need to be considered in a more complete assessment of potential releases from the Pilgrim nuclear plant, she said." A study like this for Indian Point would be very useful.

https://provincetownindependent.org/top-stories/2022/11/02/new-study-concludes-pilgrim-plumes-would-hit-outer-cape/

In addition to tritium the fuel pool water has been contaminated from exposure to highly radioactive elements from the fuel rods. It is critical to understand this mixture. When the fuel pool water is analyzed it is important to specify the depth from which the sample was taken. Highly radioactive particles from damaged fuel rods have settled to the bottom of the pools. What is the effective rate of the screening system for these particles which are high level radioactive waste and how will this waste be disposed of?

There are other options to releasing contaminated water into the Hudson River. All of these options are more expensive than discharging it into the Hudson River.

It can be evaporated, which takes a lot of electricity and releases tritium to the air.

It can be shipped off site which means a lot of truck traffic and environmental justice issues that come with contaminating another community.

It can also be stored on site and allowed to naturally decay along with other radioactive waste already stored there. Japan has held large tanks of irradiated water on site at Fukushima, so it can be done.

The Environmental Protection Agency has released a Cumulative Research Impacts study that talks about the necessity of "co-exposure to determinants of health" for communities.

Cumulative Impacts Research (Final Report_FINAL-EPA 600-R-22-014a.pdf. p.8, 20, 27).

It suggests that individual acts of pollution need to be taken in a larger context and community voices listened too.

Given all of the questions surrounding the disposal of this radioactive waste, the least harmful and most prudent way forward is a program of storage on site along with the high level radioactive fuel rods until the tritium can decay.

The Hudson River is a living ecosystem that has been repeatedly poisoned over the decades with industrial waste. It is time to stop.