

INDIAN POINT NUCLEAR SITE OVERVIEW CURRENT HEALTH AND SAFETY RISKS DURING DECOMMISSIONING

Radioactive effluents were regularly released into the Hudson River while Indian Point's reactors were running. There is no way to operate a nuclear plant without radioactive emissions. However the effects of such releases were never duly considered from a medical perspective. It was only required that they be "below regulatory concern" according to standards set by the Nuclear Regulatory Commission (NRC) in the 1970s.

The plant is no longer operating and, over the past half-century since it was licensed, there have been substantial developments in the medical and environmental sciences. We now understand more about the link between exposure to radioactive contaminants and the adverse effects on human health and our ecosystems. Research shows that exposure to the radiation is associated with cancer, miscarriages, genetic defects and other significant health effects. We need a different plan. What was done in the past is no longer acceptable.

- **Holtec International, the corporation that took control of a \$2.4 billion trust fund**, promising to decommission and clean up the contaminated nuclear site, has stated that it plans to discharge wastewater from the highly radioactive fuel pools at Indian Point into the Hudson River as early as this August or even sooner. The rationale appears to be cost savings for the company.
- **The Hudson River is a tidal estuary**, flowing in each direction, from New York Harbor to the Federal Dam at Troy, and is the primary water source for seven municipalities and the backup water supply for other communities along the river. It is also a popular destination for fishing, swimming, boating and tourism, playing a significant role in the regional economy.
- **Tritium is radioactive hydrogen** which is concentrated in the Indian Point fuel pool water where the highly radioactive used fuel rods have been stored for decades. Tritium cannot be filtered out of the water. If it is ingested or inhaled, it can lodge in cells and damage DNA. The estimates regarding "acceptable" or ALARA ("As Low As Reasonably Achievable") levels do not take into account the effect of **ingesting or inhaling** tritium or other radionuclides. (See Health Experts' Statements below)
- **In addition to tritium, the fuel pool water has been heavily contaminated** with chemicals such as boron and many highly radioactive elements emitted by the fuel rods and broken pieces from the rods. The radioactive stew includes cesium-137 and strontium-90, isotopes that will remain harmful for centuries. The health impacts from exposure to long-lived radionuclides, including through inhalation or ingestion, are cumulative and significant. These exposures increase the risk of cancers and harm to pregnant women and their developing fetuses. What radionuclides and other contaminants are in the mixture that Holtec plans to dump in the River? This question remains unanswered.
- **The outdated NRC regulations do not recognize the unique vulnerability of developing fetuses, children and women.** They do not take into account the cumulative harmful impacts from potential multiple ongoing exposures to communities that draw their water from the Hudson, consuming it on a daily basis and also using it for

cooking, bathing and showering. Bioaccumulation in fish and wildlife along with exposure to boaters, swimmers and children who play along the shore are also not considered. The ebb and flow of currents in the Hudson River would increase the contamination of certain areas, potentially those closer to shore.

- **According to the National Academy of Sciences, there is no safe dose of radiation.** In a 2022 report, the National Academy voiced the urgent need for a coordinated multidisciplinary approach and noted that research in low dose and low dose rate radiation in the United States has been limited, fragmented and poorly funded. While cancer is a well recognized risk, the Academy pointed to increasing evidence of the association between low dose exposure and non-cancer health outcomes such as immune dysfunction and neurological disorders.
- **The public must be fully informed** about the treatment and disposal methods as well as the potential public health and environmental risks associated with releases from the site.
- **What to do with the contaminated wastewater?** There are no easy answers here. But there is no valid reason to rush a discharge into the Hudson. The least harmful, most prudent way forward is storage onsite along with the high level radioactive waste until the tritium can decay or new scientific methods of removal are developed.

Monitoring of air and water at Indian Point:

- **Continuous independent monitoring is needed.** Monitoring must be conducted in real-time using state-of-the-art radiation technology by an independent expert during all phases of the work. This is especially critical during deconstruction of buildings that housed radioactive material that can contaminate the air in and around the elementary school which sits just 4,000 feet from the site. Surface wipe testing, soil monitoring and water testing should also be conducted. The findings should be made publicly available online and easily accessible to everyone.
- **Ensure transparency.** Holtec's violations of regulations must be disclosed and explained in a timely manner by the New York Decommissioning Oversight Board at its public meetings with opportunity for public input. For example, months went by before the public was informed that Holtec had received a violation in Nov. 2022 from the Nuclear Regulatory Commission for improperly implementing precautions to avoid the venting of radioactive demolition dust. Effective remediation must be determined, implemented and enforced.

Emergency Preparedness and Response Plan:

- **Uniquely hazardous site.** Indian Point is the only nuclear site in the nation which has the co-hazard of nuclear waste and multiple high pressure gas transmission pipelines. While the reactors are now closed, unresolved risks persist from Enbridge's three large diameter, high pressure Algonquin gas transmission pipelines that traverse the site. These risks are exacerbated by heavy decommissioning operations near or in pipeline Right-of-Ways, which can compromise pipeline integrity. Other serious risks include human error, extreme weather, and security threats, especially cybersecurity risks.

Subsidence issues also pose a significant risk. In December 2022, a 10 foot wide, 30 foot deep sinkhole was detected by a local resident along the Algonquin pipeline right-of-way in nearby Yorktown, exposing the 42 inch diameter high pressure gas transmission pipeline.

- **An Emergency Disaster Preparedness expert is imperative in order to initiate a plan with FEMA, federal, state, and municipal agencies.**
- **Communities require protection.** The communities surrounding Indian Point and the dangerous co-location of Enbridge's Algonquin gas transmission pipelines need an Emergency Preparedness Disaster Response Plan for a potential CO-INCIDENT that addresses both nuclear and gas transmission pipeline incidents. Our frontline environmental justice community has a large at-risk population with specific and varied communication needs.
- **Currently there are contradictory emergency instructions** for accidents resulting from Indian Point decommissioning operations (evacuate, turn on communications for instructions) and ruptures of the co-located large diameter, high pressure gas transmission pipelines at the site (shelter-in-place, don't use cell phones or turn on car engines due to gas and vapor ignition risk).

Statements from Health Experts

- **Dr. Helen Caldicott**, acclaimed author, Nobel laureate and co-founder of Physicians for Social Responsibility: "Physicists talk convincingly about 'permissible doses' of radiation. They consistently ignore internal emitters — radioactive elements from nuclear power plants that are ingested or inhaled into the body, giving very high doses to small volumes of cells. They focus instead on external radiation sources outside the body. Doctors know that there is no such thing as a safe dose of radiation, and that harmful impacts are cumulative. Children are ten to twenty times more vulnerable to the deleterious effects of radiation than adults and little girls twice that of boys."
- **Dr. Kathy Nolan**, pediatrician, bioethicist, President of Physicians for Social Responsibility of New York, co-founder of Concerned Health Professionals of New York and Ulster County legislator: "Exposure to even very low levels of radiation is more dangerous than previously estimated, especially for women, children, and during prenatal life. Developing embryos, fetuses, and children have immature and rapidly growing organ systems, making them exquisitely sensitive to environmental exposures. Proportionally, they also receive greater doses of contaminants found in air, water, and food compared with adults, putting them at much greater risk from exposure to even tiny amounts of radioactive contaminants. There is no safe dose of radiation during prenatal and perinatal life, and cumulative harmful effects would result from multiple, ongoing exposures."
- **Mary Olson**, biologist and founder of Gender and Radiation Impact Project: "Radioactive hydrogen is called tritium, and can be bound with oxygen to form H₂O, a water molecule—which inside the human body can go anywhere that water goes. This means the most protected areas—the brain—the spinal cord—and across the placenta into the developing embryo and fetus of pregnancy can be exposed to the beta radiation tritium emits. The International Commission on Radiological Protection (ICRP) acknowledges

that fetal tissue concentrates tritium at a rate double that of maternal tissue, no doubt due to its faster growth rate."

Sources

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