

Water Impacts of Indian Point Nuclear Power Plant

Cooling System

Indian Point uses once-through cooling systems, which are the most inefficient and have been phased out in newer power plants since the 1970s. The once-through systems continuously pump large volumes of water out of the river to cool water in the primary cooling loop through a heat exchanger, and then pump the then-hotter water back out into the river. Not much river water is lost in the process, but there is tremendous impact on the environment, nevertheless.

A 2011 [article](#) provides an overview of many of these issues:

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| Water Use | 2.5 billion gallons/day -- twice NYC's total daily consumption. |
| Fish-kill | Over 2 million fish -- and over 300 billion fish hatchlings -- are killed each year, along with eggs and larvae. |
| Thermal Pollution | Every two hours -- all day, every day -- Indian Point dumps as much heat as the Hiroshima bomb explosion into the river. |

Resources

Riverkeeper - [Indian Point's Effects on the Hudson River](#)

NIRS - [Licensed to Kill: How the nuclear power industry destroys endangered marine wildlife and ocean habitat to save money](#)

NYS DEC - [SPDES](#) and [Water Quality Certification](#) decisions

NYS DEC - [comments and legal briefs](#) on Indian Point relicensing

Fuel Pool Leaks

Indian Point Unit 1's spent fuel pool was known to be leaking since 1992, and leaks from the Unit 2 pool were discovered in 2005. Tests have revealed extensive radioactive contamination in groundwater, leaching into the river. The radioactive isotopes that have been identified include hydrogen-3 (tritium), strontium-90, cobalt-60, cesium-137, and nickel-63. Tritium contamination levels have been found as high as 300,000 picocuries per liter, more than ten times the EPA safe drinking water limit.

Resources

Beyond Nuclear - [Epidemic of Leaks from U.S. Nuclear Plants Includes Irradiated Fuel Pools](#)

NUCBIZ - [Timeline of Indian Point's Spent Fuel Pool leaks](#)

Lohud - [Indian Point Had a Smaller Leak in the Past](#)

North County News - [Indian Point Empties Leaky Fuel Pool](#)

Radioactive Waste Releases

Reactors routinely release radioactively contaminated water and gases as part of normal operation. Indian Point 2 & 3 primarily release tritium into the river, though they also have a



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record of releasing radioactive gases which are short-lived but decay into longer-lived radioisotopes that can end up settling into soil and water.

Tritium is a radioactive form of hydrogen that is usually released in the form of radioactive water molecules. Once ingested, tritium stays in the body for up to seven years, and has a wide range of health effects from cancer (carcinogenic), gene mutations (mutagenic), and *in utero* birth defects and miscarriages (teratogenic). Tritium is primarily responsible for an epidemic of cancers and Down syndrome around the Yankee Rowe reactor in western Massachusetts, and it has been the main radioisotope in leaks detected at Indian Point and dozens of other reactors.

Nuclear Accidents

Indian Point poses the single greatest safety risk of any nuclear plant in the country. It is rated the most vulnerable to earthquake damage, with two fault lines running near the site: the Ramapo fault line and the Stamford-Peekskill line. Indian Point is only rated to withstand a 6.1 quake within 50 miles, though earthquakes up to 7.1 are possible. Evacuation during an accident would be impossible: 17 million people live within the 50 mile radius of Indian Point, and a 2003 report commissioned by New York State confirmed that the existing emergency response plan is fatally flawed. The four counties included in the 10-mile evacuation plan, and New York State, have refused to certify the emergency plan since 2003.

A 1980 report commissioned by the Nuclear Regulatory Commission estimated that an accident at Indian Point could kill up to 50,000 people, cause 167,000 to be hospitalized, 14,000 cancer deaths, nearly \$1 trillion (2011 \$) in property damages. These numbers are probably underestimates now, with large increases in population and property values. A 2003 study of the consequences of a fuel pool accident reveal an even greater risk: if there were an accident in one of Indian Point's fuel pools, an area equivalent to 3/4 of New York State (~36,000 sq.mi.) could be rendered uninhabitable for decades.

Resources

MSNBC – [What are the odds? US nuke plants ranked by quake risk](#)

Environmental News Service – [Earthquake Zone Intersection Threatens Indian Point Nuclear Plant](#)

Riverkeeper - [Top Ten Reasons to Close Indian Point](#)

James Lee Witt Associates – Review of Emergency Preparedness of Areas Adjacent to Indian Point and Millstone
[Summary](#) and [Full Report](#)

Natural Resources Defense Council – [Report: Indian Point Accident Consequences](#)

Union of Concerned Scientists – [Report: Impacts of a Terrorist Attack at Indian Point](#)

Citizens Awareness Network – Robust Storage of Spent Nuclear Fuel: A Neglected Issue of Homeland Security
[Executive Summary](#) - [Full Report](#)



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