Indian Point Contaminates the Hudson River With Uncontrollable Radioactive Flow

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By Roger Witherspoon

For more than a decade, it has been impossible for operators of the Indian Point nuclear power plant to stop highly radioactive reactor and spent fuel pool coolant from leaking into the groundwater and migrating to the Hudson River.

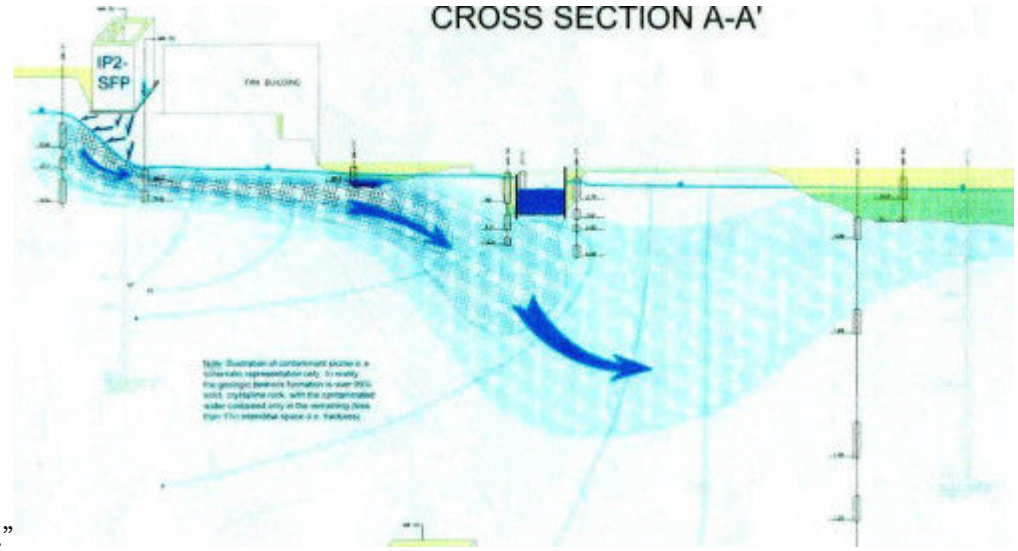
And despite assurances from Entergy that this time will be different, there is no indication that the company has developed the ability to prevent the latest uncontrolled leaks from following the underground waterway into the Hudson. And because the river is a tidal estuary flowing as much as 20 miles above and below the nuclear site, radioactive contaminants may be sucked into the drinking water systems of several river towns.

While Entergy focuses attention on tritium, a radioactive form of water and the predominant contaminant leaking from the plant's cooling system, the actual leak contains a basket of radioactive elements, including Strontium-90, Cesium-137, Cobalt-60, and Nickel-63 according to an assessment by the New York Department of State as part of its Coastal Zone Management Assessment. (http://bit.ly/1Kf8iOY)

The Coastal Zone Assessment, released November, 2015, expressed concern about the periodic leaks into the Hudson River because it serves as a direct water source for Poughkeepsie, Wappingers Falls, Highland, Port Ewen, East Fishkill, Hyde Park, and the Village of Rhinebeck. It is also a backup water source for some 9 million residents of New

York City and Westchester County.

“Tritium,” explained David Lochbaum, nuclear safety expert at the Union of Concerned Scientists, “is just the first item reported. It tends to be the leading edge of any spill since it is the lightest and most mobile of the radioactive contaminants. The other isotopes slow down as they go through the soil. That other stuff is on its way, however. Tritium just wins the



race.”

Indeed, ongoing monitoring by the NY State Department of Health (http://on.ny.gov/1WhlQu7) has found detectable deposits of a broad variety of radioactive isotopes above and below the Indian Point discharge site into the fast-moving Hudson River tidal estuary that the Native Americans referred to as “the river that runs both ways.”

Indian Point schematics provided by the NRC show the site of the leak or leaks is roughly 69 feet above the Hudson River at the beginning of a groundwater flow that widens to about 80 feet as it rushes downward, pools above the bedrock and then flows inexorably into the Hudson River. (http://bit.ly/1QaQ7WT) Once the contaminants enter that groundwater flow there is no system at Indian Point to remove them. Entergy representatives declined to comment on planned and unplanned radioactive discharges into the environment.

The sequence of events leading to leaks of radioactive liquids from Indian Point 2 is the subject of an intense investigation by federal and state officials. The Nuclear Regulatory Commission dispatched a radiation specialist to Indian Point Thursday to work with the three, on-site, resident inspectors to determine how the leak occurred and whether or not it can be stopped. There are more than three miles of inaccessible piping under the 239-acre

site, and the inability of Entergy to properly assess possible corrosion within the pipes has been a key part of the ongoing challenge to the plants' licenses by Attorney General Eric Schneiderman. And Gov. Andrew Cuomo has ordered the state Departments of Health, Environmental Conservation, and Public Service to coordinate investigations into maintenance issues at Indian Point.

In the past, the Coastal Zone Management report states, "radioactive releases have been detected at the Indian Point facility from cracks in two different spent fuel pools. Leaks of radioactive liquids from the Indian Point 2 spent fuel pools have reached the Hudson River and have been detected in the groundwater beneath the Indian Point facility."

Entergy has sought to assure the public that there is no possible danger from the leaking liquids. In their initial announcement that high levels of tritium had been found in three monitoring wells near Indian Point 2, the company insisted that there was nothing to worry about.

"While elevated tritium in the ground onsite is not in accordance with our standards, there is no health or safety consequence to the public, and releases are more than a thousand times below federal permissible limits," the company statement said." The tritium did not affect any source of drinking water onsite or offsite."

That blanket assertion of safety may not be true.

The leaks were first detected Friday in three monitoring wells (30, 31, and 32) between the spent fuel building, the reactor containment building, and the Reserve Water Storage Tank (RWST), a 350,000-gallon stainless steel structure that plays a critical role in the reactor's operation. (http://bit.ly/1KJFA90).

The operating reactor core contains water with boron, which serves to moderate the fission reactions and help make them more controllable. Some of the water in that fission environment becomes radioactive tritium. In order to monitor fluctuations within the highly pressurized reactor, there is a steady stream of this coolant which is siphoned off for both analysis – to determine if there is an appropriate amount of boron in the mix – and to detect particles, which indicates cracks in some of the fuel rods.

"The movement of the fluid is not always a closed loop," explained Lochbaum. "There are occasional balance issues. When the reactor changes power levels the water heats up and expands or cools and contracts. The system is used to supply water or take water out."

Lochbaum said there is a wide array of pipes leading to the storage tank, "and both tanks

and pipes have leaked in the past, which is why they have monitoring wells."

The tank is also used to supply coolant during refueling outages. The water in the tank fills the well holding the reactor, so the top can be removed under several feet of coolant and workers can safely access the fuel rods.

Initial reports from Entergy to the NRC and to Gov. Cuomo's office were that the tritium readings were as high as 8 million picocuries per liter – far above the 20,000 picocuries per liter limit that the federal Environmental Protection Agency has set for drinking water.

A picocurie is a molecular level measurement that is just one trillionth of a Curie. But radiation and other contaminants in the environment are frequently measured in scales of one part per billion, because at that level there can be significant damage to a person's cell structure or DNA. The NRC and Entergy consider the periodic spills to be safe because the Hudson River is not considered drinking water and, therefore, EPA safe limits do not apply. The fact that several river towns do use the Hudson as a primary water source is discounted because the radioactive flow is diluted by the rest of the water in the River.

But that ignores the fact that radioactive particles do not dissolve or lose their potency even if they are harder to encounter. The State Coastal Management review, to some degree, shares that view.

The possibility that people will come into contact with the radioactive material, even in small quantities, prompted Paul Gallay, director of the environmental group Riverkeeper, to call for closing the plants pending an investigation of the latest accident.

"The NRC says there is no safe level of tritium contamination," said Gallay. "When tritium is released in concentrations as high as 400 times the standard for drinking water, it is not out of the realm of possibility that people recreating in the Hudson River will come into contact with that material, or consume fish that ingested some of this material. There is certainly a risk to the environment."

Entergy has a State Pollutant Discharge Elimination System (SPDES) permit which entitles Indian Point to regularly pour radioactive contaminants into the groundwater, the Hudson River, and the air. In 2013 Indian Point released 1,300 Curies of radioactive material into the Hudson and the Buchanan air. That is trillions of times more radioactive material, released legally, than is being released accidentally now. DEC officials would not immediately release discharge figures for 2014 and 2015, or discuss possible impacts on the municipal water systems utilizing the Hudson River.

Susan Shapiro of the Indian Point Safe Energy Coalition, a civic group seeking to close the

plants, said the NRC should penalize Entergy for exceeding its operating license and state discharge permit with the accidental releases of additional radioactive material into the groundwater.

“If you have a mom and pop gas station and they have an underground leak,” Shapiro said, “they would be immediately shut down until the leak is plugged. In New York State, all groundwater has to be potable and contamination is not permitted.

“But Entergy is getting away with contaminating our groundwater just because they are under the auspices of a government agency that doesn’t feel as strongly about our water. For me, that is shocking.”