


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of:	Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)
	ASLBP #: 07-858-03-LR-BD01
	Docket #: 05000247 05000286
	Exhibit #: ENT000367-00-BD01
	Admitted: 10/15/2012
	Rejected:
Other:	Identified: 10/15/2012 Withdrawn: Stricken:

ENT000367
Submitted: March 29, 2012

STUDY OF HUDSON RIVER FINFISH, SHELLFISH AND SEDIMENT TO ASSESS THE LONG-TERM ENVIRONMENTAL IMPACTS OF LIQUID RADIOLOGICAL RELEASES FROM INDIAN POINT ON THE HUDSON RIVER BIOTA

Background from the Hudson River Keeper

This proposal seeks to assist the Hudson River Keeper in assessing the potential environmental impacts of unmonitored liquid radiological releases from the Indian Point nuclear power plant on Hudson River biota. There has been no comprehensive study assessing whether such impacts are occurring in the vicinity of Indian Point since the plant began operating in 1972. Indian Point has purportedly been leaking tritium, strontium-90, cesium-137 and other radionuclides into the groundwater onsite. The contaminated groundwater is assumed to be hydrologically connected to the Hudson River, due to the topography of the site and the groundwater flow assessments that have been conducted since the leaks were discovered. The bioaccumulation of strontium-90 in fish and shellfish is of particular concern due to the fact that strontium-90 mimics calcium when ingested, concentrating in bones and teeth. NRC officials have indicated that the strontium-90 leak could have been ongoing since the mid 1980s.

In January 2007 the Nuclear Regulatory Commission (NRC) reported that samples of Hudson River fish and shellfish taken by Entergy showed slightly elevated levels of strontium-90 in their flesh. Entergy, the owner and operator of Indian Point, is required to collect fish samples twice a year in the vicinity of the plant and have the flesh sampled for certain radionuclides, under the requirements of the NRC's Radiological Environmental Sampling Program (REMP). However, the NRC stopped requiring analysis for strontium-90 in the early 1980s. Entergy voluntarily agreed to resume this analysis for fish and shellfish in 2006, but they are still not required to analyze the fish bones, only the flesh. In addition, the scope of Entergy's sampling program under the REMF is severely limited; in November 2006 they collected twelve individual fish samples, including one blue crab, and no hardshell clams or mussels. They are only required to collect samples in Spring and Fall each year, and there is no minimum number of samples required.

Riverkeeper is concerned that the strontium-90 leak in particular may have long-term impacts on certain Hudson River fish and shellfish and potential public health impacts if these same fish are ingested. For example, hardshell clams are a major food source for threatened Shortnose Sturgeon and Atlantic Sturgeon that overwinter in Haverstraw Bay. If there is an uptake of strontium-90 in their shells, Riverkeeper is concerned it could bioaccumulate in sturgeon, potentially affecting their reproductive health or life span.

A study that focused on an environmental survey and sampling of fish and shellfish in the Hudson near Indian Point would fill a gap in our knowledge regarding whether Indian Point's radiological discharges result in environmental impacts to the Hudson.

Approach

We propose to conduct a baseline study which assesses the potential for radiological contamination of fish, shellfish, and sediment in the Hudson River in the vicinity of the Indian Point Nuclear Powerplant. If elevated levels are detected, follow-up studies could be performed.

The Riverkeeper is interested in sediment. As such, ten sediment grabs will be performed near the site as well as up-river and down river. Each grab will be stored in a plastic, 1-gallon Ziploc bag. The Riverkeeper and his boat captain will obtain the sediment samples. Gobler can provide a sediment grab if one is needed.

After collection, all samples will be oven dried. Sediment samples will be analyzed in the lab of Dr. Kirk Cochran at Stony Brook University's School of Marine and Atmospheric Sciences. Fish and shellfish samples will be shipped to the laboratory of Dr. Bernd Kahn, Director of the Environmental Resources Center (GTRI) at Georgia Technical University. Data will be analyzed by means of a One-Way ANOVA or appropriate non-parametric tests. Multiple comparison tests of means will be conducted as a follow-up analysis.

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