



Department of Health
Agency of Human Services



Strontium-90 Detected in Ground Water Monitoring Wells at Vermont Yankee



News Release: February 9, 2015

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BURLINGTON – Strontium-90 has been detected in samples of ground water collected in August 2014 from monitoring wells within the boundaries of Entergy Vermont Yankee Nuclear Power Station in Vernon. These detections were made as part of the Vermont Department of Health's routine environmental radiological surveillance program.

This is the first time Sr-90 has been found in ground water at Vermont Yankee. The water is not available for consumption, the levels detected are well below the EPA's safe drinking water threshold, and there is no immediate risk to health.

Sr-90 is a product of nuclear reactors and nuclear weapons, and does not occur naturally in the environment. It is found in low levels all around the world. Sr-90 gives off radiation and persists in the environment for a long time. It has a half-life of 29 years, which means this is the time it takes to decay to one-half of its original concentration. Ingesting Sr-90 at high enough levels is linked to bone cancer, cancer of soft tissue near the bone, and leukemia.

As a part of the state's routine environmental analysis, 21 samples from different ground water monitoring wells were collected during the first week of August. The Health Department sent these samples to its contract laboratory, which had recently entered into an agreement with the State to complete analysis for hard-to-detect radionuclides such as Sr-90. The new contract laboratory employs a well-established testing methodology that detects Sr-90 at a lower level of detection. On November 25, the laboratory reported to the Health Department that four of the samples had levels of Sr-90 above the lower limit of detection. In consultation with the Nuclear Regulatory Commission, to ensure that these new findings were accurate and not anomalous, the Health Department had portions of the same samples sent to Oak Ridge National Laboratory for independent analysis.

On Jan. 29, 2015, NRC and Oak Ridge verified the Health Department's findings. The highest concentration of Sr-90 in the samples by either lab was 3.5 pCi/L (picocuries per liter), which is below the EPA safe drinking water value of 8 pCi/L.

Until now, the only radionuclide measured in any of the groundwater monitoring wells at Vermont Yankee was tritium (hydrogen-3). Sr-90 was detected in soil collected near the source of the tritium leak in 2010. Sr-90 has also been detected in fish in the Connecticut River as well as in fish in other Vermont waters not connected to Vermont Yankee, but those detections are consistent with worldwide background levels.

These new findings of Sr-90 in ground water monitoring wells are an important indicator of what has leaked from the structures, systems and components at Vermont Yankee Nuclear Power Station. Although the specific source of the Sr-90 is unclear, it is likely that Sr-90 in ground water and soils at Entergy Vermont Yankee are the result of past leaks and fallout from air releases at the station during its years of operation.

The Health Department will continue its radiological surveillance program around Vermont Yankee throughout its decommissioning, and will continue to report on its findings.

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Rev. 2/11/15 to correct a nonsubstantive error.

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