



Hot Topics

Important issues for Entergy's customers, employees, investors and other stakeholders.

Entergy Addresses Vermont Yankee Tritium Controversies

What is Tritium?

Tritium is a radioactive form of hydrogen that is produced naturally in the upper atmosphere. It also is produced commercially for various uses and is a byproduct of nuclear power generation. The U.S. Nuclear Regulatory Commission limit for the maximum release of tritium in water is well within safety ranges. No public health or safety risk has resulted from tritium releases at commercial nuclear power plants.

What is the Issue?

In early January 2010, as part of an industrywide program to monitor tritium, Vermont Yankee's environmental monitoring team detected a small amount of tritium in a sample taken from a monitoring well at the plant.

The existence of the tritium in the monitoring well was not considered a threat to public health because it was not found in drinking water or in Connecticut River water, but it was large enough to require Entergy to file a report with the Nuclear Regulatory Commission about how the company planned to handle the problem.

However, in conjunction with public oversight of environmental issues at Vermont Yankee, Entergy officials provided conflicting information to state officials about the existence of underground pipes and other structures that could contain radioactive nuclides such as tritium. A report by a state contractor Dec. 22, 2008, indicated there were no underground pipes carrying radioactive nuclides. However, attached to that report was a 14-page document provided by Entergy in 2008 that clearly indicated there were such pipes.

In January 2009, in response to a state request for more information about Vermont Yankee, the company inaccurately indicated that no such pipes existed at the plant. Finally, in May 2009, an Entergy executive testified in a hearing on the state's report that he didn't think Vermont Yankee had any such pipes.

How Did Entergy Address the Issue?

Entergy cooperated with all state and federal inquiries that the relevant agencies conducted in relation to the leak. Additionally, the company retained an outside law firm to conduct a thorough, independent investigation pertaining to the company's communications with the Vermont Department of Public Service.

The executive who provided inaccurate and incomplete information was placed on administrative leave pending the outcome of the full investigation.

Entergy installed additional testing wells at Vermont Yankee to monitor tritium and increased the frequency of testing in order to conclusively determine the source of the tritium so that a remediation plan

could be proposed to the U.S. Nuclear Regulatory Commission. The company also dispatched a project team of more than 20 highly skilled professionals to Vermont Yankee to ensure a fast, comprehensive assessment of the tritium situation and identify the source of the elevated tritium concentrations in the monitoring wells.

The company assigned a high-level team dedicated to addressing concerns of Vermont public officials and residents about elevated tritium levels in monitoring wells, as well as the controversy over information provided by company officials.

The team worked with public, business, labor and civic leaders in Vermont. Two Entergy officials with long experience in Vermont have expanded roles on the team. They are Brian Cosgrove, who is managing relations with state government, and Larry Smith, who is coordinating communications and media relations. Among the other members of the team are Arthur Wiese, Entergy's vice president for corporate communications; Kenneth Theobalds, vice president for government relations for Entergy's Northeastern nuclear operations; James Steets, vice president for Northeastern nuclear communications; and Allison Graves, director of federal energy policy.

The work of the specialized team dedicated to the company's interaction with the Vermont officials ran concurrent with Entergy's investigation to identify the source of the elevated tritium concentrations in monitoring wells. That investigation was overseen by Entergy Nuclear senior management, including Michael Balduzzi, senior vice president and chief operating officer, and Timothy Mitchell, senior vice president for engineering and technical services.

Conclusion

Entergy announced in June 2010 that the company completed a root cause analysis of the Vermont Yankee tritium leak and found that the leak was primarily the result of an earlier design deficiency and inadequate inspection of an underground area of the plant that could not be accessed. The 74-page root cause analysis also listed several concurrent contributing causes of the leak.

Specifically, the plant's advanced off-gas pipe tunnel was not accessible for inspection which prevented staff from identifying the two leaking AOG pipes and that the tunnel drain line was blocked with construction-related material left in the tunnel after work there in 1972. The blockage prevented the tritiated water from passing through the drain line and into a tank. Subsequently, design and construction in 1978 of an unrelated pipe connected to the tunnel created a pathway into the ground. The leakage from the two AOG pipes into the tunnel was caused by internal corrosion.

The root cause analysis also found that Entergy Vermont Yankee did not fully implement groundwater protection measures recommended in a voluntary industry initiative. The analysis faulted an inadequate commitment by management to implement the initiative, which created a lack of clearly defined organizational roles, responsibilities and program definition. The analysis concluded that the groundwater protection initiative, if fully implemented, may have prevented or led to more timely identification of the tritium leakage to the groundwater. The self-critical root cause analysis was performed by a multi-disciplinary team lead by members of the Vermont Yankee Chemistry Department.

The leak itself was stopped Feb. 15, 2010. At no time did the tritium leak present a threat to public health and safety, and there has been no detectable tritium levels found in any drinking water well samples or in Connecticut River water.

Vermont Yankee has implemented a groundwater remediation plan that involves pumping the water to the surface for filtering and storage for use in the plant. That process has been successful in steadily reducing the concentration of tritium in the site's groundwater. Other radionuclides, including cesium, strontium, cobalt, zinc and manganese, normally produced during plant operation were identified in soil at low levels in very close proximity to the leak site. The removal of that soil is essentially complete. Vermont Yankee expects that there will be no additional cost to eventual decommissioning of the plant due to the leakage.

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