



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHRIS CHRISTIE
Governor

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

DIRECTIVE AND NOTICE TO INSURERS

EA ID #: PEA100001

Site Name: Oyster Creek Nuclear Generating Station
Respondent: Exelon Generation Co., LLC
Location: Forked River, New Jersey

Identifying #: 005313

This Directive and Notice to Insurers is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "the Department" or "NJDEP") by N.J.S.A. 13:1D-1 et seq. and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. This Directive and Notice to Insurers is issued in order to notify the above-captioned Respondent that the Department, pursuant to the Spill Compensation and Control Act, has determined that it is necessary to cleanup and remove discharges, and in order to notify the Respondent that the Department believes them to be responsible for the hazardous substances that were discharged and/or the remediation of the discharges.

FINDINGS

1. The Oyster Creek Nuclear Generating Station (Oyster Creek) is located on U.S. Route 9 south in Forked River, Lacey Township, Ocean County, known as lot 1, 2, 17, and 20 and block 100 on the tax maps of Ocean County (hereinafter "the Site"). The Site, and all other areas to which any hazardous substances discharged on the Site have migrated, are collectively referenced hereinafter as "the Contaminated Site." The facility has been in operation since April 9, 1969.
2. Oyster Creek is owned and operated by Exelon Generation Co., LLC (hereinafter "Exelon") which was re-licensed to operate the facility by the Nuclear Regulatory Agency (NRC) on April 9, 2009. The license will expire on April 9, 2029.

3. On April 15, 2009, Exelon notified the New Jersey Department of Environmental Protection (DEP), Bureau of Nuclear Engineering (BNE) and also reported to the DEP Hotline regarding the discovery of tritium on site. This was also reported to the NRC (<http://www.nrc.gov/reading-rm/doc-collections/event-status/event/2009/20090416en.html>) as event number 44993.
4. Tritium is a radionuclide isotope of hydrogen. Tritium is a hazardous substance under the New Jersey Spill Compensation and Control Act, N.J.S.A. 58:10-23.11b, and its implementing regulations, N.J.A.C. 7:1E Appendix A.
5. The DEP's drinking water, surface water, and ground water standard for tritium is 20,000 picoCuries per liter (pCi/L). The federal Environmental Protection Agency drinking water standard is also set at 20,000 pCi/L.
6. Exelon reported that on April 15, 2009, plant staff were working in a concrete vault on the facility's emergency service water cabling and discovered water in the vault. The water was tested onsite. The analysis indicated 102,000 pCi/L of tritium. The water was pumped from the vault and placed into 55 gallon drums. An investigation into the source of the leak began.
7. On April 16, 2009, BNE requested split samples of all ground water, surface water, and soil samples.
8. On April 18, 2009, Exelon left a voicemail with BNE staff at approximately 7:30 p.m. saying that sampling of some additional onsite wells produced results of less than 2,000 pCi/L.
9. On or about April 21, 2009, DEP issued two emergency monitoring permits to Exelon so that they could install additional onsite monitoring wells in the Cape May Aquifer. Exelon set up a special team to conduct a root cause investigation into what led to the elevated tritium readings and to determine what corrective actions were needed.
10. On or about April 21, 2009, Exelon installed new well W-50.
11. On April 22, 2009, under the observation of a BNE inspector, Exelon installed new well W-51 adjacent to the Condensate Storage Tank. At the same time, BNE requested that Exelon provide sufficient water samples in order for DEP's contract laboratory to perform an independent gamma isotopic analysis.
12. On April 22, 2009, Exelon reported that onsite well W-50 had been installed and screened for tritium onsite with a resulting measurement of 5,000,000 pCi/L. DEP's split sample, analyzed at DEP's contract laboratory, measured 2,280,000 pCi/L.
13. On or about April 22, 2009, BNE and the DEP's Geological Survey discussed with Exelon the location for new wells and provided recommendations for new well locations that would access the Cohansey Aquifer, a deeper aquifer that provides drinking water to many homes in southern New Jersey.

14. On April 23, 2009, BNE was notified by Exelon that onsite well W-51 had an initial screening result of 5,000,000 pCi/L tritium that could be as high as 6,000,000 pCi/L. Exelon advised BNE that it planned to install two additional new wells that would access the Cape May aquifer in order to bound the plume, based on accessibility.
15. On April 24, 2009, DEP was notified by Exelon that a second sampling and onsite analysis of well MW-15K-1A indicated a result of 2-3,000,000 pCi/L tritium. In addition, 1,000,000 pCi/L tritium was found in a puddle in a newly excavated pit adjacent to the turbine building.
16. On or about April 24, 2009, Exelon installed two new wells (W-52 and W-53), both 20 feet deep and screened in the Cape May aquifer. Well W-52 had no detectable tritium. Well-53 showed results about 1,200 pCi/L. Another well (W-54) was in the process of being installed. The BNE requested soil boring samples from all new wells installed in the area.
17. On April 25, 2009, Exelon obtained results from well W-54 that showed 7,950 pCi/L tritium in the well. DEP asked Exelon if it would be increasing the frequency of sampling in the intake to daily sampling as DEP had previously discussed with Exelon, and when Exelon planned to make these results public.
18. Also on April 25, 2009, Exelon plant workers discovered a leak in the 8-inch stainless steel line (CS-25), also called the condensate reject line. The size of the hole was measured at 5/8 of an inch.
19. On May 26, 2009, Exelon completed installation of a 4-inch casing well (W-55) to be utilized for pumping the contaminated water out of the aquifer, monitoring, and potential treatment or disposal. This well is located within the Cape May aquifer north of the concrete conduit near existing well MW-50.
20. Also on May 26, 2009, initial onsite Exelon laboratory test results showed 1,260,000 pCi/L from well W-55. Groundwater was to be pumped into a portable Frac tank.
21. On June 3, 2009, several wells on the west side of the intake/discharge canal were sampled even though hydrology shows that the flow of groundwater is east towards the canal. All screened results from these samples were less than 2,000 pCi/L.
22. On June 12, 2009, one surface water sample collected by Exelon from the intake canal indicated 16,600 pCi/L of tritium. This result was not reported to BNE but was discovered by BNE staff during an onsite inspection on June 14, 2009. BNE was not able to independently verify this result because the testing laboratory that performed the analysis for Exelon consumed the entire sample. A sample taken several hours later on June 14, 2009 by Exelon with DEP observing at the same location indicated non-detectable tritium.

23. All other surface water samples taken from the intake and discharge canals on site from April through current time have indicated no detectable levels of tritium.
24. On August 17, 2009, Exelon provided additional well sampling results to BNE. There were significant drops in all on-site Cape May aquifer wells except W-55 (200,000 pCi/L) and W-54 (5,000 pCi/L). At the request of DEP, well W-55 was sampled at three depths. The highest level was at the deepest depth, 240,000 pCi/L. This indicated that the tritium was flowing deep.
25. On August 25, 2009, another tritium leak was reported by Exelon. During an investigation into tritium inside the turbine building, the area outside the turbine building was excavated. The excavation reached the area where a pipe penetrated the building at which place a leak was discovered on the outside of the turbine building at the location of the pipe penetration. A report was made to the DEP Hotline. The leak was about 8-12 gallons per minute.
26. Exelon excavated the soil in that leak area and found water containing 10,000,000 pCi/L in the trench. Some of the trenched water was captured in drums.
27. On August 26, 2009, the leak to the environment was stopped at 11:42 p.m. Exelon's initial worst case estimate was that 25,000 gallons was released with a concentration of 2 pCi/L. Much of the tritium-contaminated water leaked to the turbine building and into a sump. Only some portion of the water leaked to outside of the building wall.
28. On August 27, 2009, BNE received information from Exelon indicating that it would be installing two monitoring wells into the Cohansey Aquifer the following week. The location of the new wells was decided by Exelon representatives without input from DEP. Exelon also advised BNE that it hoped to submit a remedial investigation report to DEP that same week for BNE's review. Exelon advised that additional data from the two new wells was needed to complete a remedial investigation workplan.
29. On September 3, 2009, the drilling and installation of the first Cohansey aquifer well was completed. This well was designated W-57I and is located near the northeast corner of the intake structure.
30. On September 11, 2009, the results of the first water sample from the first of two new monitoring wells in the Cohansey aquifer showed a tritium concentration of 1,050,000 pCi/L. No clay layer was found when the well was drilled.
31. On September 14, 2009, the second new Cohansey well designated W-56I was installed and an initial sample result taken. The initial Exelon onsite lab screening result was 327,000 pCi/L.
32. On September 19, 2009, Exelon's onsite results for a sample from Cohansey well W-56I indicated an increase in tritium activity to 950,000 pCi/L.

33. On September 24, 2009, DEP managers, along with representatives from the Division of Law met with upper management of Exelon to discuss next steps in addressing the tritium leak. At that meeting, DEP asked Exelon to do the following: a) within one year, move all pipes with the potential to contain radioactive material either above ground or place them in vaults so that leaks can be detected; b) add monitoring wells that can sample the Cohansey Aquifer in the plume path; c) get their laboratory certified for tritium so that claims of "lab error" are avoided; and d) perform some pumping of the aquifer so tritium can be removed and not flow into the canal.
34. On November 19, 2009, DEP sent a letter to Exelon confirming the above-referenced requests for additional action to address the tritium leak as first expressed in the September 24, 2009 meeting.
35. On December 16, 2009, DEP received a reply from Exelon saying that it would commit to moving all underground piping containing tritium either above ground or in vaults but they would not commit to obtaining certification for their laboratories. Additionally, Exelon did not agree to placement of all additional monitoring wells requested by DEP which would provide valuable data about groundwater flow under the site. This led to another meeting in February 2010 at which little progress was made in obtaining Exelon's agreement to the additional measures.
36. After internal discussions and review of all available data, DEP has determined that the tritium discharged from the Oyster Creek facility in April 2009 is moving into the Cohansey aquifer at unacceptably high levels and must be stopped. The data show a decrease in tritium contamination in the Cape May aquifer but an increase in tritium contamination in the Cohansey aquifer. The concentration of tritium in well W-56I has increased to over 1,000,000 pCi/L. DEP has further determined that Exelon has not taken sufficiently appropriate and timely action to address the tritium leak and its impacts on the groundwater of the State.
37. Based on DEP's review of groundwater elevation and tritium sampling results, DEP has further determined that additional monitoring wells are needed in order to better define the groundwater flow paths and the potential for migration of tritium.
38. Exelon is responsible for the hazardous substances that were discharged at the Site and/or for the remediation of the hazardous substances which were discharged to the lands and waters of the state.
39. Pursuant to N.J.S.A. 58:10-23.11g.c., Exelon is strictly liable, without regard to fault, for all cleanup and removal costs.
40. Pursuant to N.J.S.A. 58:10-23.11f., whenever any hazardous substance is discharged, the DEP may, in its discretion, act to clean up and remove or arrange for the cleanup and removal of such discharge, or may direct any person in any way responsible for the hazardous substance to clean up and remove, or arrange for the cleanup and removal of the discharge.

DIRECTIVE

41. The Department hereby directs Exelon to clean up and remove the discharge of tritium at its Oyster Creek Nuclear Generating Station pursuant to N.J.A.C. 7:26C-2.3(a), including taking the following actions:

- A. Install additional ground water monitoring wells as specified by the Department in a plan that shall be provided to Exelon by the Department. These additional ground water wells are necessary for the Department to investigate and determine the full extent of the tritium contamination. Installation of the wells shall be completed by Exelon in accordance with timeframes directed by the Department.
- B. Exelon shall sample the ground water at a frequency that will be specified in the Department's ground water monitoring plan and shall provide all results of such sampling to the Department on a timely basis, but no less frequently than monthly. Exelon shall further timely provide the Department with splits of all ground water samples. These requirements are in addition to Exelon's existing obligations to conduct sampling at specified frequencies.
- C. Exelon shall, pursuant to the Department's Technical Requirements for Site Remediation, N.J.A.C. 7:26E and in accordance with a schedule approved by the Department:
 - i. Fully delineate the vertical and horizontal extent of tritium in all environmental media, including soil, surface water, and ground water;
 - ii. Implement all necessary remedial actions that the Department approves for the tritium discharged at the Site; and
 - iii. Take all other actions that the Department determines are necessary to protect the public health and safety and the environment from the discharges at the Site.

42. Exelon must reply to the Department, pursuant to N.J.A.C. 7:26C-9.11(f), regarding its decision to comply with this Directive and Notice to Insurers within seven (7) calendar days after Exelon's receipt of this Directive and Notice to Insurers.

NOTICE

43. If Exelon fails to respond or comply with this Directive and Notice to Insurers, the Department may conduct the remediation using public funds.

44. Failure to comply with this Directive and Notice to Insurers will increase Exelon's potential liability to the Department in an amount equal to three (3) times the cost of arranging for the cleanup and removal of the discharge and may cause a lien to be placed on Exelon's real and personal property pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11f., including a first priority lien on the property subject of the discharge.

45. Pursuant to N.J.S.A. 58:10-23.11u, the Department may issue an order to require compliance with the Spill Compensation and Control Act and/or assess penalties. Failure by Exelon to comply with this Directive may result in the issuance of an order and/or the assessment of penalties of up to \$50,000 per day and each day of violation constitutes an additional, separate and distinct violation of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq.

RESERVATION OF RIGHTS

46. The Department reserves the right to direct Exelon to take or arrange for the taking of any and all additional remediation which the Department determines to be necessary to protect the public health and safety or the environment and to seek full reimbursement and treble damages for all costs incurred in taking such additional remediation.

47. Exelon is advised that the discharges referenced in this Directive and Notice to Insurers may also constitute violations of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and that Exelon may, therefore, be subject to the penalties prescribed for violations of these Acts. The Department reserves all rights and remedies under those Acts as well as any other rights and remedies under any applicable law.

NOTICE TO INSURERS

48. BE ON NOTICE THAT, pursuant to N.J.S.A. 58:10-23.11s., any claims for costs of cleanup or civil penalties by the State and any claim for damages by any injured person, may be brought directly against the bond, insurer or any other person providing evidence of financial responsibility. Exelon is therefore urged to contact such insurers and notify them of the issuance of this Directive and Notice to Insurers.

Date: 5/7/10


Irene Kropp
Deputy Commissioner

