

USNRC RIC 2017

## Groundwater Contamination at Operating and Decommissioning Nuclear Power Plant Sites

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### Groundwater contamination at nuclear power plant sites

- Residual radioactivity was found in the subsurface at NPP sites undergoing decommissioning
- Discovery of abnormal liquid releases to the subsurface at operating NPP sites

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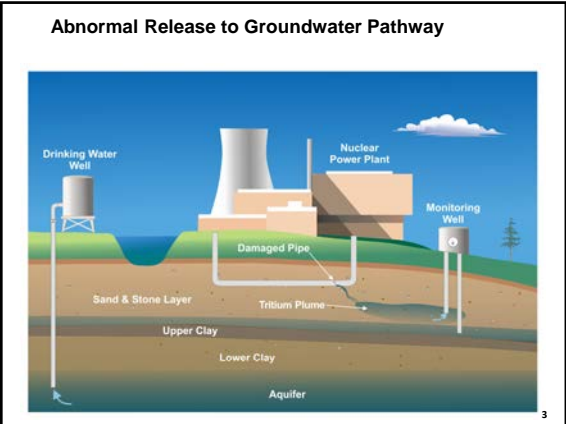
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**NRC and Industry Response**

- 2006 - NRC *Liquid Radioactive Release Lessons Learned Task Force Report*
- 2007 - NEI *Industry Ground Water Protection Initiative Final Guidance Document NEI-07-07*
- 2010 - NRC *Groundwater Task Force Final Report*
- 2011 - EPRI *Guidance - Groundwater and Soil Remediation Guidelines for Nuclear Power Plants*

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**NRC and Industry Response, cont'd**

- 2012 - NRC Regulations
  - 10 CFR 20.1406(c), "Minimization of Contamination" (licensees shall minimize the introduction of residual radioactivity into the subsurface)
  - 10 CFR 20.1501(a), "Surveys and Monitoring" (to require surveys of subsurface residual radioactivity)
  - 10 CFR 20.1501(b), "Surveys and Monitoring" (to maintain records of surveys of subsurface residual radioactivity in accordance with 10 CFR 50.75(g))
- 2012 - NRC guidance, RG 4.22, "Decommissioning Planning During Operations"
- 2017(tentative) - NRC guidance, RG 4.25, "Assessment of Abnormal Radionuclide Discharges in Ground Water to the Unrestricted Area at Nuclear Power Plant Sites"

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**Links to references -**

- **Radionuclides in Groundwater** – <https://www.nrc.gov/reactors/operating/ops-experience/tritium/rn-groundwater.html>
- **Backgrounder on Tritium, Radiation Protection Limits, and Drinking Water Standards** – <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/tritium-radiation-fs.html>
- **Groundwater Contamination (Tritium) at Nuclear Plants** - <https://www.nrc.gov/reactors/operating/ops-experience/gndwtr-contam-tritium.html>
- **Plant Sites with Licensed Radioactive Material in Groundwater** – <https://www.nrc.gov/reactors/operating/ops-experience/tritium/sites-gndwtr-contam.html>
- **List of Leaks and Spills At U.S. Commercial Nuclear Power Plants, January 2017** - <https://www.nrc.gov/docs/ML1703/ML17030A025.pdf>
- **Radioactive Effluent and Environmental Reports** – <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html>
- **Event Notification Reports** – <https://www.nrc.gov/reading-rm/doc-collections/event-status/event/>

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Links to references, cont'd -

- NRC Liquid Radioactive Release Lessons Learned Task Force Final Report, September 2006 - <https://www.nrc.gov/docs/ML0626/ML062650312.pdf>
- NEI Industry Groundwater Protection Initiative NEI-07-07, August 2007 - <https://www.nrc.gov/docs/ML0726/ML072610036.pdf>
- NRC Groundwater Contamination Task Force Report, June 2010 - <https://www.nrc.gov/docs/ML1016/ML101690435.pdf>
- EPRI Groundwater and Soil Remediation Guidelines for Nuclear Power Plants, July 2011 - <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=0000000001029464>
- NRC Regulatory Guide 4.22, June 2008 - <https://www.nrc.gov/docs/ML0805/ML080500187.pdf>
- NRC Draft Regulatory Guide DG-4025 - <https://www.nrc.gov/docs/ML1523/ML15237A388.pdf>

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