

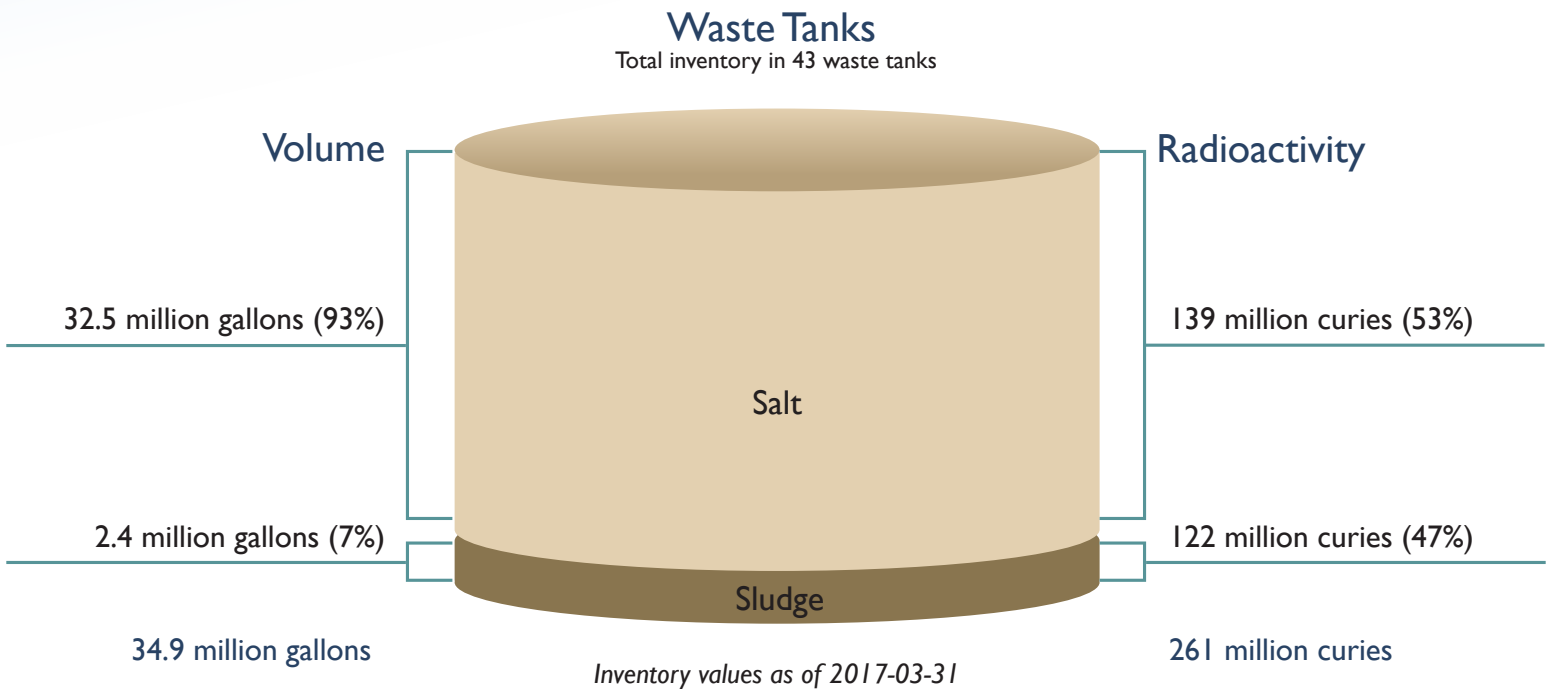


Radioactive Liquid Waste Tank Farms

The radioactive liquid waste from the Savannah River Site (SRS) chemical separations process is present in the Tank Farms in both solid and liquid forms. Over 150 million gallons of radioactive waste have been generated and concentrated by evaporation to a present volume of about 35 million gallons.

The waste is stored in 43 waste tanks in the Savannah River Site's F and H Areas. Eight tanks are closed, and other waste tanks are in various steps of the waste removal, cleaning and closure process. Waste from all of the tanks will be removed with first priority given to the Type I, II and IV tanks.

In storage tanks, the insoluble solids in the waste settle to the bottom. The insoluble solids are referred to as sludge. Liquid above the sludge, referred to as supernate, is concentrated by evaporation to reduce its volume. As the concentrated supernate cools, a portion crystallizes forming a solid salt cake. This concentration process not only reduces the volume, but also makes the waste less mobile.



Since 1954, SRS waste tanks have provided safe and environmentally sound storage for nuclear waste. These tanks include four designs.

- Types I and II, the oldest tanks, have partial height steel secondary containment pans within a concrete vault and forced cooling systems. Type I tanks are 75 feet in diameter with a maximum storage capacity of approximately 750,000 gallons. Type II tanks are 85 feet in diameter and have a maximum capacity of approximately 1 million gallons. Some of these tanks previously developed small hairline cracks that allowed leakage of small volumes of salt solution into secondary collection pans below the tanks. The cracks were induced by high nitrate concentration in the waste solutions and residual stresses near weld sites. Waste levels within those tanks have been lowered below known leak sites. No tanks have active leak sites.
- The type III/IIIA design has a maximum storage capacity of approximately 1.3 million gallons and is 33 feet high and 85 feet in diameter. Type III tanks have forced cooling systems inserted in risers while type IIIA tanks have cooling coils installed in the tanks during construction. Type III/IIIA tanks have full-height secondary containment, i.e., they are a tank within a tank. These tanks, built in the late 1960s and 1970s, have been successfully stress-relieved to prevent stress corrosion cracking. No cracks or leaks have occurred in any of the Type III/IIIA tanks.
- Type IV tanks have a single wall and do not have a forced cooling water system. Type IV tanks are designed for waste storage that does not require auxiliary cooling. This tank type has a steel liner encased in concrete and a domed roof. Each tank has a maximum capacity of approximately 1.3 million gallons and is 85 feet in diameter and 34 feet high.



SRR is the Liquid Waste contractor at SRS, which is owned by the U.S. Department of Energy. SRR is composed of a team of companies led by AECOM with partners Bechtel National, CH2M, and BWX Technologies, Inc.