



Tank-Side Cesium Removal System enclosure with the bay doors open.



Inside the Tank-Side Cesium Removal System.



Spent ion exchange columns on the Tank-Side Cesium Removal System storage pad.

Background

The Tank-Side Cesium Removal (TSCR) System filters undissolved solid material and removes cesium from liquid waste. These materials account for 99.9% of the radioactivity in the waste stream. The system provides a low-activity waste stream that can be sent to Hanford’s Waste Treatment and Immobilization Plant’s (WTP) Low-Activity Waste Facility for vitrification (immobilization in glass). The system is located just outside Hanford’s AP Tank Farm, which stores the waste before and after TSCR treatment. The system is comprised of a main process enclosure, a control room, and ancillary enclosures containing support systems. The system uses three specialized filters called ion exchange columns to remove radioactive cesium from the waste stream. As part of the U.S. Department of Energy’s comprehensive Direct-Feed Low-Activity Waste Program, the TSCR System provides the following benefits:

- Treats liquid waste to provide low-activity waste feed for the WTP
- Creates space in double-shell waste-storage tanks, the first step to feeding waste to the WTP
- Supports phased mission progress and a scale-up of treatment capabilities
- Entails a small modular approach, resulting in lower costs

Phased Approach for Cesium Removals

- The TSCR demonstration project is a modular at-tank cesium-removal capability.
- The Advanced Modular Pretreatment System will address the need for a long-term cesium removal capability. This phase is planned to commence after the TSCR demonstration project has operated for sufficient time to inform a subsequent alternatives analysis.

The TSCR facility can be viewed using the self-guided [Hanford Virtual Tour](#).

