The U.S. Department of Energy and contractor CH2M HILL Plateau Remediation Company manage the Waste Encapsulation and Storage Facility at the Hanford Site in southeast Washington state.

**Background**

The Waste Encapsulation and Storage Facility (WESF) provides safe and compliant underwater storage for 1,936 highly radioactive capsules containing the elements cesium and strontium.

In the 1970s, radioactive isotopes of the chemical elements cesium and strontium were removed from waste tanks at Hanford to reduce the temperature of the waste inside the tanks. Both elements were ultimately placed in sturdy, stainless steel containers at WESF for safe storage and monitoring.

**Mission**

The U.S. Department of Energy (DOE) and CH2M HILL Plateau Remediation Company (CH2M) are committed to safely storing the capsules until they can be removed for interim and final placement. Safe, compliant and monitored storage is critical due to the high levels of radioactivity and heat that the capsules generate.

While the capsules are currently in a safe configuration, WESF is an aging facility, and DOE is evaluating alternatives for placing the capsules in dry storage. Dry storage would eliminate the possibility of a release of radioactive material in the unlikely event of a major earthquake that might result in loss of pool storage water and overheating and breach of one or more capsules.

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**Progress**

Since 2008, CH2M has safely and compliantly managed WESF and storage of the capsules. In 2012, CH2M engineers assessed the heat given off by the capsules and the potential impact on the structural integrity of the pool. CH2M evaluated how a new capsule configuration could allow the greatest response time possible in the unlikely event of a loss of cooling water that could possibly cause failure of either the pool structure or capsules.

During the assessment, engineers calculated the wattage output of more than 800 capsules to determine the best way to rearrange them in order to balance the heat load. Work began in February of 2012 and was completed in June of that year, four months earlier than planned. This was the first time a major relocation of the capsules was undertaken in about 20 years.

**Radioactive Decay**

A radioactive half-life is the amount of time that it takes for the radioactivity of a material to decrease by half. The half-life of both cesium and strontium is about 30 years, meaning it will take 30 years to have half as much radioactive material as we do today.

**Future**

Long-term plans for WESF include continued preparations for transfer of the capsules to dry storage. Transferring the capsules to dry storage will enable deactivation of the facility and reduction of hazards at the Hanford Site.