



U.S. DEPARTMENT OF
ENERGY

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Heavy Water

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EM *Environmental Management*
safety ♦ performance ♦ cleanup ♦ closure

Heavy Water Background

- **Light water properties**
 - Composed of 2 atoms of hydrogen & 1 atom of oxygen (H_2O)
- **Heavy water properties**
 - Looks, feels & smells like light water
 - Composed of 2 atoms of deuterium instead of hydrogen (D_2O)
 - Heavy water is not considered radioactive
 - Found naturally in small quantities
 - 1 pound of heavy water can be found in every 3 tons of light water
 - Neutrons slow down in heavy water, which promotes fission
- **Majority of U.S. heavy water supply was made at SRS**
 - Needed for operation of 5 SRS production reactors
 - Used as primary coolant to remove fission heat from fuel elements & to assist in fission
 - Tritium in heavy water was a by-product from reactor operations
 - Today, no current need or production capability exist at SRS



Interim Storage of Heavy Water

Storage Location	Drums	Tanks	Gallons	Curies
K Area	1914	3	~162,000	1,405,000
L Area	4859	3	~331,000	1,500,000
C Area	0	2	~43,000	640,000



Disposition Path Options

- **Beneficial reuse option**
 - CANDU reactors
- **Treatment and Disposal option**
 - Ship to offsite treatment & disposal vendor
 - Ultimate disposal location to be determined



Summary

- Over 500,000 gallons of heavy water is stored at SRS without a DOE programmatic purpose
- Removal of heavy water will result in significant curie reduction
- Disposition paths are under evaluation but no decision has been made at this time

