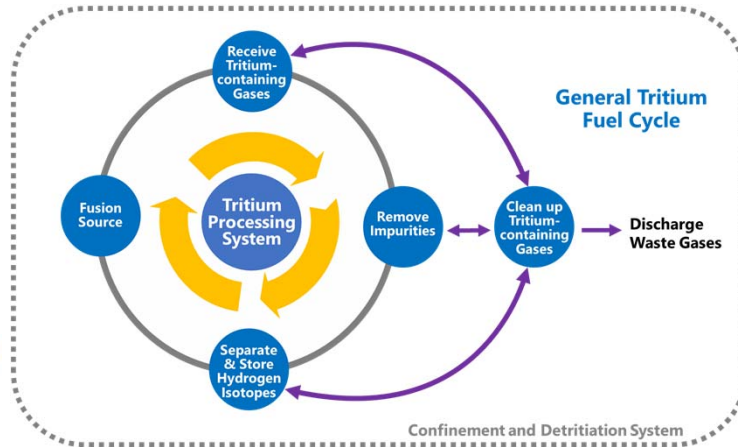




SRNL Leadership Advancing Innovative Tritium Technology

Tritium processing technology development is aimed at improving efficiency, decreasing operational costs, replacing aging technologies, reducing radiological footprint and tritium inventory, and allowing for more flexible operations to meet current and future demands.



Tritium Fuel Cycle: Similar for All Uses

Tritium Processing R&D

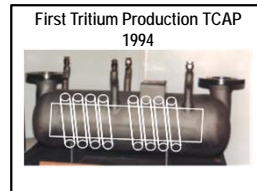
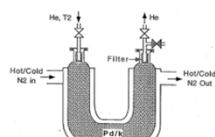
- Impurity Removal
 - Hydrogen separation from impurities
 - ³He cleanup
- Hydrogen Isotope Separation
 - Thermal Cycling Absorption Process (TCAP)
- Hydrogen Storage
 - Metal hydride beds
 - vessel designs
- Waste Gas/Tritiated Water Processing
 - Glovebox atmosphere detritiation
 - Tritium recovery

Secondary systems

- Secondary Confinement
- Analytical Systems
- Pumping (Evacuation/Circulation)
- Tritium Accountancy and Tracking



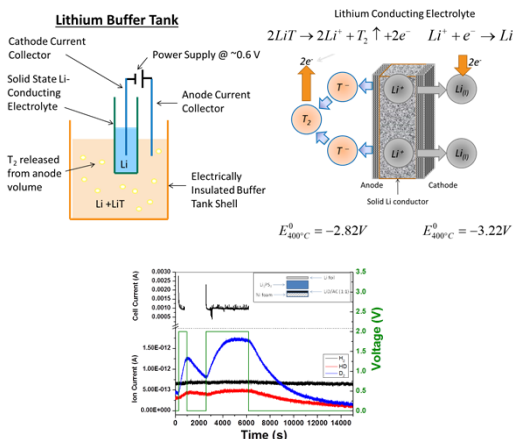
Process intensification/ Isotope separation



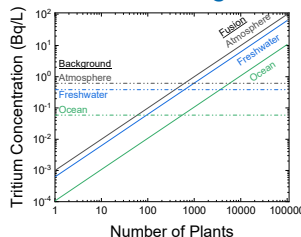
CTC-TCAP (1/10th current footprint)



Direct LiT Electrolysis



Global Environmental Modeling



As few as 5 fusion plants could increase tritium levels by 1% over background levels

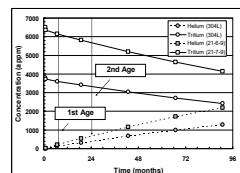
Advancing the Understanding of Tritium Effects on Materials

Tritium embrittlement discovered at SRL in 1979.

Tritium Charging



Build in ³He



Characterization

