

Iodine conceptual models at the Hanford and Savannah River sites: Similarities and differences

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Isotopes of iodine (e.g., long-lived ¹²⁹I) were generated during weapons production at the US Department of Energy's Hanford and Savannah River sites. Conceptual models (CM) provide a focal point for scientific knowledge that can help inform remedial decisions. Different components of CM will be covered and similarities and contrasting behaviors of I will then be examined at these sites, which differ significantly due to differences in climate (arid vs. sub-tropical), inputs (waste stream chemistries), plume properties (large diluted vs. small concentrated plumes), I aqueous speciation (iodate vs. organo-I dominated), geochemistry (pH ~ 7.5 vs. ~ 4) and mineralogy (carbonate vs. Fe/Al oxide dominated).

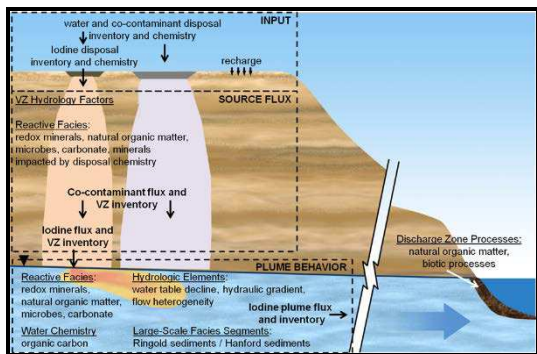


Figure 1: System-level, CM components at Hanford.

Data on site-specific adsorption, solid-phase incorporation and transformation of aqueous I species (i.e., iodate, iodide and organo-I) at smaller (nm/cm) scales, and the effects of various controlling factors on plume mobility at a larger (kilometer) scale, will then be presented. Well-developed, scientifically sound and robust conceptual models serve as a great source of information in support of remedial strategies and decisions at both Hanford and Savannah River sites, and/or other I contaminated sites around the globe.