

# **SIMULATION OF TECHNETIUM-99 MIGRATION AT THE HANFORD BC CRIBS SITE USING HPC**

**Vicky Freedman**, PNNL, 509-372-4067, [vicky.freedman@pnnl.gov](mailto:vicky.freedman@pnnl.gov)

## **1. Vicky Freedman, PNNL**

At the BC Cribs site at Hanford in southeastern Washington State, innovative remedial technologies are being explored to address recalcitrant contamination in the deep (~100 m) vadose zone. To identify the effectiveness of the technologies, the impacts of a “no-action” alternative must first be explored. Because only sparse information is available for the geologic conceptual model and the physical and chemical properties of the sediments, there is considerable uncertainty in subsurface transport predictions. Uncertainties also exist due to the long time frames over which contaminant transport predictions must be made (e.g., 10,000 years or more). Hence, high performance computing (HPC) is needed to fully address conceptual model uncertainty and quantify risk. In this work, the application of HPC to the BC Cribs site is investigated with respect to the potential for technetium-99 migration to the water table. The ASCEM (Advanced Simulation Capability for Environmental Management) Toolset, a state-of-the-art scientific tool and approach for understanding and predicting contaminant fate and transport in natural and engineered systems, is used to carry out the analysis.