
3.0 Vadose Zone

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Radioactive and hazardous wastes in the soil column from past intentional liquid waste disposals, unplanned leaks, solid waste burial grounds, and underground tanks at the Hanford Site are potential sources of continuing and future vadose zone and groundwater contamination. Subsurface source characterization and vadose zone monitoring, soil-vapor monitoring, sediment sampling and characterization, and vadose zone remediation were conducted in fiscal year 1999 to better understand and alleviate the spread of subsurface contamination. This chapter summarizes major findings from these efforts, focused primarily on vadose zone soil contamination associated with reactor operations, past single-shell tank leaks, and liquid disposal to ground as a result of spent fuel processing.

An overview of the major soil column sources of groundwater contamination is provided in PNNL-13080. This section discusses vadose zone contamination that could impact groundwater in the future. Much of the evidence for continuing impact on groundwater from vadose zone contamination is discussed in Section 2.0. An overall evaluation depends, to a large degree, on a synthesis of vadose zone and groundwater monitoring and characterization data to present a comprehensive picture of contaminant fate and transport. Significant fiscal year 1999 vadose zone results are summarized here but the bulk of the data synthesis on impact to groundwater is presented and discussed in Section 2.0.