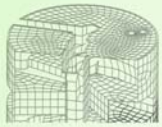
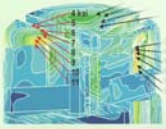
OAK RIDGE NATIONAL LABORATORY FACT SHEET
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY



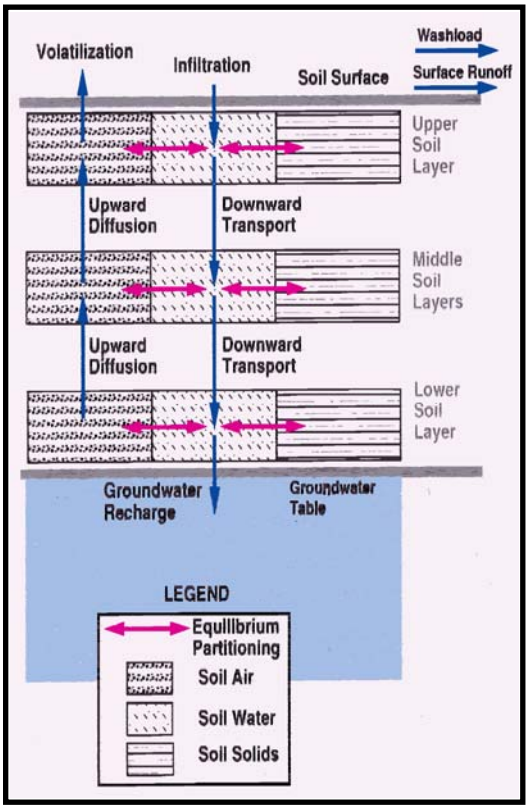


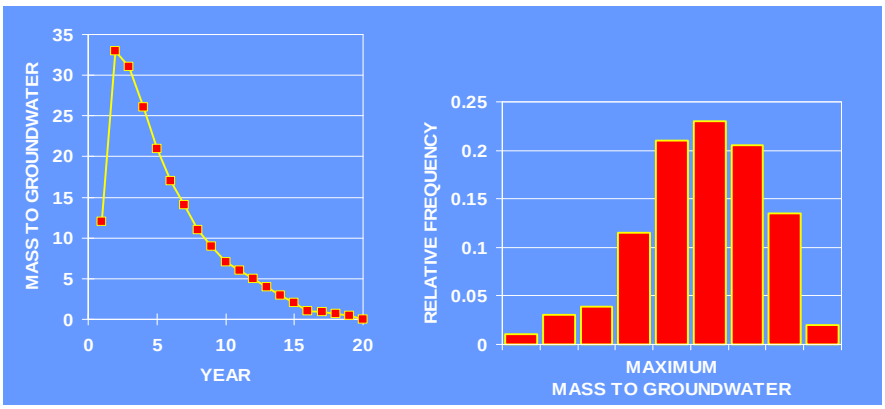
Modeling and Simulation Group

Pollutant Fate and Transport in Soil

Seasonal Soil Compartment Model Code (SESOIL)

The Modeling and Simulation Group (MSG) has extensively modified the Seasonal Soil (***SESOIL***) compartment model originally developed by Arthur D. Little, Inc. ***SESOIL*** is a one-dimensional vertical transport code for the vadose soil zone. It is an integrated screening level compartment model designed to perform long-term time varying simulations of pollutant transport and transformations in soil. As shown in the right-hand figure, the ***SESOIL*** computational domain is a user-defined compartment extending from the surface through the vadose zone to the groundwater table**.** The code will simultaneously model water transport, sediment transport, and pollutant fate. ***SESOIL*** can simulate pollutant releases to the soil from a variety of sources including landfills, accidental leaks, agricultural applications, leaking underground storage tanks, and deposition from the atmosphere. MSG has conducted a wide range of studies using ***SESOIL*** including coal liquefaction, incineration of hazardous waste, transport of benzene to groundwater, defining soil cleanup levels in California, soil sensitivity characterization for the Wisconsin Department of Natural Resources, and determining preliminary site-remediation goals for the Portsmouth Gaseous Diffusion Plant in Ohio. ***SESOIL'S*** robust analysis capabilities make it the ideal hazard analysis software tool for an extremely broad range of R&D, industrial, homeland defense, and military applications. We welcome the opportunity to discuss your potential applications and ways ***SESOIL*** can contribute to a solution.





Typical Deterministic Result **Typical Probabilistic Result**

MSG collaborated with Science Applications, Inc. to couple SESOIL with the PRISM probabilistic-driver routine to determine groundwater contamination as part of the site-remediation effort at DOE's Portsmouth Gaseous Diffusion Plant

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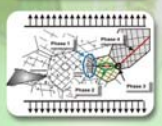

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