# **Determination of Contaminant Flow Paths by Model Analysis. (S01-seaman091556-Oral)**

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### Abstract:

Sampling of the vadose zone has proven to be a difficult task, especially in the light of existing preferential flow paths. Therefore, it is important to know the flowpaths that are mainly sampled by a sampler before installation. Hence, emphasis was placed on contaminant sampling methods and the use of models to predict flowpaths and solute levels in field soils in this study. The sampling methods used were, suction cup lysimeters, vapor samplers and soil cores. Tritium composition of soil core samples was determined at random intervals near the sampling clusters. Soil profile tritium analysis and breakthrough curves were used to indicate the predominant flowpaths sampled by each technique. Tritium levels were predicted with three models:- a local mass balance of water and solutes transport model; the CDM-Hydrus-1D; and a Cornell preferential flow model. The models take into account the initial concentration of the applied tritium, precipitation, and measured evapotranspiration rates, as well as the physical, chemical, and hydrologic properties of the studied site. Comparison of the model predictions with actual field data demonstrated the impact of different sampling methods.

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