

Factors Affecting Trichloroethylene (TCE) Recovery from SEAMIST Pads

S A Martins [Environmental Sciences Division (ESD)], G L McQueen [Environmental Restoration Division (ERD)], R E Martinelli and M C Jovanovich (ESD), Lawrence National Laboratory (LLNL), Livermore, CA 94551; 510-423-2058

Contamination of the vadose zone by volatile organic compounds (VOC) is a problem at the Lawrence Livermore National Laboratory (LLNL). As part of an ongoing monitoring program, VOCs in both soil-air and soil-water are monitored to observe migration patterns and to assess the effects of remediation efforts. Both SEAMIST gas and liquid sampling systems have been purchased w be used in this effort.

SEAMIST is a flexible removable, PVC-coated nylon membrane tube that is used to seal the sides of a borehole and to which sampling devices or other types of instrumentation may be attached. Two basic types of sampling devices available are the gas-port units and the absorbent-pad units. This paper will describe our efforts to determine the recovery rates of TCE from SEAMIST pads over different ranges of sample volume, sample concentration and duration of pad exposure to air.

Results of this study suggest that recovery of TCE from SEAMIST pads is affected by neither sample concentration nor sample volume. A 30% loss of TCE from the pads is experienced when these pads are transferred to the soil-analysis vials used in analysis of VOCs. This rate of loss did not seem to be affected by exposure to air for periods between 0 and 128 seconds. The conclusion drawn from these studies is that reasonable good estimates of TCE concentrations in soil pore-water may be obtained using the SEAMIST system providing that adequate control procedures are used.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.