nants are air stripping or adsorption on granular activated carbon. Both have disadvantages: with air stripping, the off-gases may have to be treated prior to discharge and granular activated carbon must periodically be thermally reactivated.

The process being researched is a combination of oxidation and ultraviolet (UV) irradiation. The oxidant to be investigated is hydrogen peroxide (H_2O_2). The general concept is that because H_2O_2 is easy to feed, because UV technology is improving, and because the waters to be treated are low in TOC, the likelihood of unknown oxidant by-products being produced is small, as is the likelihood of fouling of the UV Lamps, and because no waste streams are produced, this would be an attractive treatment possibility for small utilities.

Thus far, benzene, 1,2-dichloroethane, 1,1-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, carbon tetrachloride, and 1,4-dichlorobenzene have been tested at high concentrations in head-space free Teflon® bags in the dark. In addition, benzene, 1,1,1-trichloroethane, trichloroethylene, and carbon tetrachloride have been tested in the presence of UV irradiation with H_2O_2, and the results compared as follows:

Compound	Total conversion (mg/L/hour)		Factor of improvement with UV irradiation
	dark reaction	UV irradiation	
Trichloroethylene	0.03	30	1000
Benzene	0.12	60	500
1,1,1-Trichloroethane	0.11	13	120
Carbon Tetrachloride	0.02	5	250

Batch test studies will be completed for several other compounds in future research and all the compounds will also be tested under flow-through conditions.

INCORPORATING CHEMICAL AND PHYSICAL MECHANISMS INTO LEACHING MODELS FOR SOLIDIFIED HAZARDOUS WASTES

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Abstract

Solidification is an important process for managing the disposal of hazardous wastes and will continue to be so until waste minimization and waste recovery processes are greatly improved. Solidification processes will continue to be needed because many wastes cannot be destroyed, and the mobility of hazardous components must be minimized before they are disposed in landfills. Although it is generally recognized that both chemical and physical processes are important in contaminant immobilization, most models used to describe leaching of contaminants from solidified wastes do not describe their effects separately. This paper describes how models for leaching can be developed that can separate the effects of chemical and physical immobilization processes. Analytical and numerical solutions are presented for a variety of systems, including those in which chemical reactions do not occur, in which linear sorption occurs, and in which nonlinear sorption occurs.