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PHOTOCATALYTIC DESTRUCTION OF CHLORINATED SOLVENTS WITH SOLAR ENERGY*

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ABSTRACT

Sandia National Laboratories and the Solar Energy Research Institute are developing a photocatalytic process to destroy organic contaminants in water. Tests with common water pollutants are being conducted at Sandia's Solar Thermal Test Facility using a near commercial-scale single-axis tracking parabolic trough system with glass pipe mounted at its focus. Experiments at this scale provide verification of laboratory studies and allow examination of design and operation issues at a real-life scale. The catalyst, titanium dioxide (TiO_2), is a harmless material found in paint, cosmetics and toothpaste. Experiments were conducted to determine the effect of key process parameters on destruction rates of two chlorinated organic compounds which are common water pollutants: trichloroethylene and trichloroethane. In this paper, we summarize the engineering-scale results of these experiments and analyses.

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