The following in an article in the August 2, 2001 issue of USC Times.

Engineer testing pollutant-destroying effects of common compound

BY CHRIS HORN

An engineering faculty member is testing a common compound that could prove effective as an environmental coating for destroying harmful pollutants on indoor and outdoor surfaces.

Adrienne Cooper, an assistant professor in the Department of Civil and Environmental Engineering, is studying the oxidizing effects of titanium dioxide (TiO_2) on organic chemicals and other contaminants. TiO_2 is the most common white pigment in the world, used in paint, ink, paper, and in food and cosmetics to give opacity and brightness.

The substance also has powerful germ-killing and pollutant destroying properties.

"We've been conducting experiments with TiO_2 as a photocatalyst for detoxification of gold mining waste and have found that it works moderately well," Cooper said. "We think it holds even more promise as an environmental surface coating."

When TiO_2 is exposed to sunlight and water, OH-, a very strong oxidant, is produced. These OH- free radicals bond with organic compounds and oxidize them completely.

"Substances as powerful as cyanide have been oxidized with this process," Cooper said.

TiO_2 conceivably could be used as a coating for swimming pools and parking lots where its exposure to sunlight and water would release a constant stream of free radicals to disinfect and detoxify harmful substances.

"You can imagine oil, grease, and gas dripped onto a parking lot, mixed with rainwater, and detoxified by the TiO_2," Cooper said. "It could prevent non-point source pollution."

Cooper also envisions TiO_2 being used to coat interior walls where its disinfectant properties would be beneficial.

Cooper, who earned her Ph.D. in environmental engineering from the University of Florida, joined USC three years ago and recently received a National Science Foundation CAREER Award, which will provide $75,000 per year in academic support for five years.