

Report as of FY2006 for 2006DE71B: "Enhanced Pollutant Biodegradation by Electrode Use"

Publications

- Water Resources Research Institute Reports:
 - Gao, B., and S. Dentel, 2007, Enhanced Pollutant Biodegradation by Electrode Use, Delaware Water Resources Center, University of Delaware, Newark, Delaware, 8 pages.
- Other Publications:
 - Boyd, A., ed., 2006, Delaware Water Resources Center WATER NEWS Vol. 6 Issue 2 Nine DWRC Internship Winners for 2006 2007, <http://ag.udel.edu/dwrc/newsletters/Summer2006.pdf>, p. 6-7.

Report Follows

Undergraduate Internship Project #2 of 9 for FY06



For her *DWRC / University of Delaware (UD) College of Engineering* co-sponsored project, *Belinda Gao* studied the practicality of using electrodes for water pollution treatment in situations where a lack of oxygen would otherwise inhibit microbial oxidation of organic material. The project, titled “*Enhanced Pollutant Biodegradation by Electrode Use,*” was advised by Dr. Steven Dentel of *UD’s* Department of Civil and Environmental Engineering.

Abstract

For this experiment, the electricity generation of an electrode fuel cell was monitored by the installation of graphite electrodes in biodegradable environments; the two settings examined involved sediment underlying natural ground waters and anaerobic sludge obtained from a wastewater treatment plant. An aerobic and anaerobic zone was set up in the top and bottom, respectively, of hexagonal fish tanks. The purpose of this experiment was to see if improvements could be made on previous experiments by varying certain factors, such as temperature, to increase the rate of biodegradation (as measured by the electrical current produced between aerobic and anaerobic zones). While it was apparent that the electrodes did indeed affect the biodegradation rate since a notable current could be measured from the tanks, no discernible pattern could be observed from the data collected.