1046-G1-1881 **Frederick A. Adkins*** (`fadkins@iup.edu`), 212 Stright Hall, Mathematics Department, Indiana, PA 15705. *A Curriculum Module for Modeling Bioaccumulation, Biomagnification, and Elimination of Toxins.* Preliminary report.

Bioaccumulation is the increase of a substance in organisms, as they take in contaminated air, water, or food more rapidly than it can be eliminated. As pollutants move from one link in the food chain to another they concentrate through the process of biomagnifications. Through a module designed for use in an introductory calculus course, students explore these concepts using data derived from research on mercury levels in the environment and aquatic food chain. Students begin by tracking mercury and other toxins across the food chain from algae and bacteria to humans. Students use their typical weekly consumption of fish to calculate their average daily dosage of mercury or PCBs per kilogram of body weight. Based on models of absorption from food, a separable differential equation modeling toxin elimination and the fraction of toxins circulating in blood, a time dependent equation for blood concentration is derived. Students then find their steady-state level of blood toxins and compare this to the U.S. Environmental Protection Agency's "safe benchmark blood levels." (Received September 16, 2008)