Currently, the Food and Drug Administration (FDA) believes that 4,4'-(propane-2,2-diyl)diphenol (bisphenol A, or BPA) may have toxic effects on the brain and negatively impact the behavior of toddlers and small children. Recent studies have detected BPA in various aquatic systems {i.e. landfill leachate and rivers) throughout the world where BPA containing products, such as many consumer plastics, are found. While direct photochemical degradation of BPA is very slow under natural sunlight, indirect photochemical reactions that occur with dissolved organic matter {DOM), nitrate, and/or iron present could greatly enhance degradation of BPA when exposed to light. In this project, natural water samples from various local environments will be subjected to simulated sunlight and the degradation of added BPA will be monitored. Lab experiments will be aimed at either enhancing or inhibiting specific pathways involving reactive oxygen species produced photochemically in the water body and/or dissolved organic matter in order to determine how rates of BPA degradation change as a result. Field studies will be integrated into this project to make the lab results relevant to the stream site. In-stream parameters such as temperature, turbidity, and light absorbance will be monitored while conducting experiments at depth to determine a depth-integrated observed rate of BPA photochemical decay. The results from both the lab and field studies will be compared to easily measured stream water quality parameters {i.e. absorbance, turbidity, etc.) in order to extrapolate data from these watersheds to other aquatic systems. Natural abiotic photochemical degradation of BPA may be a major pathway limiting BPA concentrations in the aquatic environment.