Department of Chemistry Seminar

Kris Rolfhus
Department of Chemistry and Biochemistry
University of Wisconsin – La Crosse

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Mercury Contamination in the Western Great Lakes Region

Abstract:
Mercury (Hg) is a heavy metal that has received significant attention due to its neurotoxicity to humans and wildlife. The issue has been clouded by a complex array of chemical, biological, physical, social, and political features. It has an amazingly complex biogeochemical cycle in the environment, and anthropogenic activities have contaminated both aquatic and terrestrial ecosystems by at least a factor of three since the industrial revolution. Consumption of seafood is the principal route of exposure, and while every state in the nation has fish consumption advisories for Hg, challenges remain in educating the public about its risks. Despite extremely low Hg concentrations in most natural waters, enough to pose a significant analytical challenge, gamefish may reach levels that are ten million-times higher due to biomagnification through the food web. Recent projects at UW-La Crosse have focused on evaluating the factors that drive Hg trophic transfer though the aquatic food web of rivers, small lakes, and the western Great Lakes, as well as the use of biological proxies (such as dragonfly larvae and fish fin clips) that characterize the relative extent of Hg contamination within an ecosystem. I will discuss the outlook for Hg issues in light of its global cycle, recent attempts to control boiler emissions in the US, and the ongoing threat posed by climate change.