“MANAGING AQUATIC MERCURY POLLUTION: MODERN APPROACHES FOR A LEGACY CONTAMINANT”

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ABSTRACT

Environmental pollution of mercury (Hg) is a broad concern due to the propensity for this metal to biomagnify in aquatic food webs. The methylated form of the metal, methylmercury, bioaccumulates in organisms and is a potent toxin for humans and wildlife. Therefore, the management of contaminated ecosystems typically aims to minimize the distribution of Hg (both organic and inorganic forms) to waterways and especially to areas vulnerable to the production of methylmercury by anaerobic bacteria. Our group and others in the scientific community have made significant advances in recent years in understanding the processes contributing to the production of methylmercury in the environment. These contributions include a new understanding of the nanoscale processes controlling the geochemical forms of Hg in soil and sediments and the microbial processes that underpin the production methylmercury. This talk will provide an overview of these findings and present new strategies to quantify Hg bioavailability and methylation potential in sediments.

BIOGRAPHY

Heileen (Helen) Hsu-Kim is the Yoh Family Professor of Environmental Engineering at Duke University, where she has been a member of the faculty since 2005. Prior to joining Duke, Dr. Hsu-Kim completed her B.S. degree in Environmental Engineering at MIT, and M.S./Ph.D. degrees in Environmental Engineering at UC-Berkeley. Dr. Hsu-Kim’s expertise area is aquatic geochemistry and her research focuses on the biogeochemistry of trace metals in the environment. In addition to her research on environmental mercury pollution, Dr. Hsu-Kim studies environmental and human impacts of artisanal gold mining, the impacts coal ash waste disposal, and new technologies to recover valuable metals from coal ash waste.