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Organoarsenicals in Foods: Occurrence and Toxicological Effects of Chronic Exposure



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Seminar Details

*Friday, April 12, 2024
2:30pm – 4:00pm*

*UH Campus
Science Building
Room S105*

*Online via Teams
[https://www.cive.uh.edu/
research/beyer-
distinguished-lecture](https://www.cive.uh.edu/research/beyer-distinguished-lecture)*

ABSTRACT

Arsenic is a ubiquitous environmental contaminant, exposure to which has been linked to cancer, cardiological disease, and cognitive deficiencies. Much emphasis has been placed on arsenic exposure to drinking water, however, the majority of arsenic exposure occurs through diet and across lifetime. Foods such as seafood, cereals, and fruits contribute to approximately 93% of arsenic exposure in humans, yet, there are few guidelines or recommendations regarding arsenic in foods. This is due to the complexity of arsenic speciation in foods and the challenges involved in assessing their prevalence and potential toxic effects. Arsenic in foods is present mostly as organoarsenic species (e.g., arsenobetaine, arsenolipids, arsenosugarphospholipids, methylated arsenates) - emergent compounds whose structures, prevalence, and toxicity are understudied. In my group, our long-term goal is to examine the speciation, occurrence, and toxicity of arsenic in foods, infant foods (largely cereal based) and seafoods, in particular. Analytical methods utilized include hyphenated liquid chromatography inductively coupled plasma mass spectrometry, and liquid chromatography quadrupole time of flight mass spectrometry. In collaboration with researchers at TTU Health Sciences Center and the University of California Merced, we also conduct in vivo studies to investigate the bioaccumulation, biotransformation, and toxicological effects of synthesized organoarsenicals using an in vivo mouse model. The results of this work are relevant for the development of arsenic-related dietary guidelines and regulations..

BIOGRAPHY

Dr. Amrika Deonarine received her BS in Civil and Environmental Engineering from Florida International University, Miami FL USA (2005), followed by a Ph.D. in Civil and Environmental Engineering from Duke University, Durham NC USA (2011). She was awarded a Mendenhall Postdoctoral Fellowship at the US Geological Survey from 2011-2014 in Reston, VA USA. Dr. Deonarine completed another postdoc at the University of Bern before starting an Assistant Professorship at Texas Tech University in Lubbock, TX USA in 2019. Dr. Deonarine's research focus is on metal and trace element biogeochemical cycling and transformation processes, with a specific emphasis on understanding chemical speciation. Her work is applicable to element transport and environmental fate, remediation of contaminated sites and drinking water sources, the intersection of environment and health, and resource recovery from wastes.