

Abstract for Analysis of Contaminants Poster for ICMGP 2013

Title: Analysis of Methylmercury Contamination in U.S. Market Rice: A Health Risk to Consumers?

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Abstract:

Rice is a staple food for vast numbers of people worldwide. With more than 470 million metric tons produced per year, rice is a major source of calories for around half of the world's population, particularly in Asian countries. As contaminants in foods become more of a concern, monitoring of the rice supply for toxic heavy metals and organo-metallic compounds becomes vital for ensuring food safety. There have been few studies published to date pertaining to the methylmercury content of rice at low concentrations.

For this research, we analyzed approximately twenty different ground rice samples for total mercury with a limit of quantification of 400 parts-per-trillion and methylmercury with a limit of quantification of 3 parts-per-billion. The samples include white rice, brown rice, and rice-based children's cereal, all commercially available in the US. We validated our method and results by analyzing the NIST 1568a Standard Reference Material and multiple matrix spikes. We compare our results to the mercury consumption guidelines recommended by the U.S. Environmental Protection Agency, the World Health Organization, the U.S. Food and Drug Administration, and the EU Directorate General for Health and Consumers. We speculate, based on average diet statistics for different groups in the U.S., whether rice purchased on the U.S. market could pose a health risk to consumers due to mercury contamination.