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Emerging Contaminants: An Overview of On-going Research

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Abstract:

This presentation covers an overview of research on emerging contaminants on-going at U.S. EPA's National Exposure Research Laboratory in Las Vegas. Due to the improvements and sophistication of recent analytical instruments, increasing numbers of chemicals are being detected in environmental media. These chemicals are often referred to as "emerging contaminants". In reality, each of these contaminants has probably been in the environment since the time it was manufactured and used by society. They escaped detection because they were not on target list of pollutants to monitor or the instruments at the time were not sensitive enough to detect them (at concentrations of parts per billion and below). Among the emerging contaminants on which our laboratory focuses are pharmaceuticals (human and veterinary use) and personal care products (PPCPs) because of their widespread use. Presence of these materials in the environment poses potential exposure for a wide spectrum of organisms (especially aquatic life) as well as for humans (especially from drinking water supplies). Exposure assessment is the key to risk assessment and management.

The following research projects are currently on-going: 1) Development of approaches to identify-categorize which 'emerging contaminants' (or classes) present potential exposure risks for the environment or human health (e.g., macrolide antibiotics in biosolids, phototoxicity of sunscreen agents by computational chemistry), and 2) Development and application of analytical tools to determine exposure in various environmental compartments (water, sediments, fish tissue, aquatic plants) to human and veterinary-use pharmaceuticals and personal care products. Preliminary results will be presented for each of the studies.

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