

EVENT: Nevada Environmental Health Association / Springs Preserve

DATE: Wednesday, July 28, 2010 / 1:30 – 2:30

TITLE: Implications of Pharmaceuticals, Personal Care Products, and Endocrine Disrupting Compounds on Water Quality – Case Study: Southern Nevada

BIOGRAPHY:

Daniel Gerrity received his Ph.D. in May of 2008 from the Department of Civil and Environmental Engineering at Arizona State University. During his time at ASU, Dr. Gerrity studied advanced disinfection technologies and developed novel microbiological methods to detect infectious pathogens in water. Dr. Gerrity also received a Department of Homeland Security Fellowship to work at Lawrence Livermore National Laboratory on a bioforensics project related to the 2001 anthrax attacks. Recently, Dr. Gerrity extended his research efforts to include mitigation strategies for carcinogenic disinfection byproducts and trace organic contaminants, such as pharmaceuticals, personal care products (PPCPs), and endocrine disrupting compounds (EDCs). Dr. Gerrity is now a Post Doctoral Researcher working with Dr. Shane Snyder at the Applied Research & Development Center at the Southern Nevada Water Authority.

ABSTRACT:

The limited availability of reliable drinking water supplies has put a severe strain on communities throughout the world. In the semiarid southwestern United States, this problem is exacerbated by burgeoning populations and climate variability, as demonstrated by the 100-foot drop in the elevation of Lake Mead over the past decade. The rapid urbanization of semiarid areas has increased the demand for novel water supplies, including reclaimed irrigation water and indirect potable reuse, and it has also increased the potential for water contamination by trace organic compounds, including pharmaceuticals, personal care products (PPCPs), endocrine disrupting compounds (EDCs), pesticides, and other anthropogenic chemicals.

Interestingly, many of these “emerging” contaminants have been detected in water supplies for decades. However, increased public awareness, potential human health effects, and demonstrated impacts on aquatic ecosystems have stimulated recent interest in PPCPs and EDCs in water and wastewater. The development of extremely sensitive analytical methods has also allowed researchers to confidently approach parts-per-quadrillion detection limits. This highlights the need to balance detection capabilities with the toxicological relevance of these contaminants at infinitesimally low concentrations. These contaminants are largely unregulated, but their ubiquity has necessitated studies on the efficacy of various treatment processes for their removal and/or transformation.

This presentation will describe the history, current status, and future implications that the detection of PPCPs and EDCs will have on water/wastewater treatment and energy sustainability, with a particular emphasis on utilities in Southern Nevada.