

Lecture Hall

Session Abstracts

National Environmental Health Association (NEHA)
72nd Annual Educational Conference & Exhibition

Environmental Health Research

Sunday, June 22

1:00 – 1:50pm

Environmental Health Disparities and the Rural Poor

Michele Morrone, PhD, RS, Associate Professor, Ohio University, OH

As part of Appalachia, Southeastern Ohio posts the highest poverty levels in the state. Combined with this poverty are numerous environmental problems that expose area residents to environmental health hazards. Residents of southeastern Ohio have been exposed disproportionately to inadequately-treated drinking and waste water, solid and hazardous waste disposal facilities, and environmental health issues associated with the built environment. This paper discusses environmental health and health disparities in Appalachia, Ohio. Evidence of health disparities can be found in higher than average cancer rates in Appalachian counties. Evidence of environmental health disparities can be found in substandard schools and a lack of environmental health services. Two case studies are presented including a case of Perfluorooctanoic Acid (C8) exposure and a case related to emissions from a coal-burning power plant. These case studies demonstrate how poor, rural populations are often the victims of environmental contamination simply because of where they live.

2:00 – 2:50pm

Evaluation of Gross Alpha Contaminate Levels in Private Drinking Water Wells

Sandra J. Donohue, DPA, REHS, Associate Professor and Coordinator, California State University, Fresno, CA

Alpha particles, when absorbed, are known to have carcinogenic effects on the human body. As a result, a Maximum Contaminate Level (MCL) has been set by the United States EPA at 15 pCi/L for gross alpha particle contamination in drinking water. This standard applies to all public drinking water systems. However, private wells are not covered by the standard and are rarely tested for gross alpha contamination. Consequently, little is known about the level of gross alpha in private wells and the breadth of the potential health threat to those dependent on private wells for their drinking water.

The purpose of this study was to evaluate private wells in four sample areas in the foothills of the Sierra Nevada Mountains for gross alpha contamination. Foothill areas were selected because of the historical mining of uranium in such locales, the reports of some foothill communities experiencing high levels of gross alpha contamination, and the increasing development of new home sites requiring private wells in the region. The objectives of the study were to discover whether the private wells had gross alpha levels above the MCL set for public water systems and whether there was a difference in gross alpha levels between the areas tested.

Using a one-tailed t-test and one-way ANOVA, the study determined that there was sufficient evidence, at the 0.05 level of significance, to show that one area out of the four sampled was over the MCL and statistically different from the other sample areas. Possible causative factors for the findings and indicators of the need for gross alpha sampling are discussed. Implications for local agency policy on private well water testing are also explored.

3:00 – 3:50pm

Predicting Foodborne Outbreaks at Restaurants: Results of a Risk Assessment Model

Heidi D. Sato, PhD, MPH, Assistant Professor of Health Sciences, TUI University, CA

This study examined relationships between risk factors and foodborne outbreaks at restaurants. Two study designs were used: 1) historical cohort and 2) case control. The historical cohort design was used to test relationships between violations and outbreaks. 19,753 restaurants were reviewed for violations that occurred during routine inspections that preceded an outbreak in 2004. A case control design was used to test relationships between outbreaks and the organizational culture, foods served, and number of customers. A case was defined as a restaurant with a foodborne outbreak during 2004. A control was a restaurant without foodborne complaints between July 2000 and December 2005. In the case control study, five inspectors surveyed managers from 186 “case” restaurants and 277 “control” restaurants, randomly selected and stratified by number of seats and risk rating.

Using multivariate analysis, outbreaks were significantly associated with buffets (OR=3.14, 95%CI=1.54-6.64), higher price entrées (OR=1.64, 95% CI=1.29-1.83), larger number of customers (OR=1.24, 95% CI=1.14-1.36), larger number of seats (OR=2.32, 95% CI=2.05-2.63), and sanitizing violations (OR=1.98, 95% CI=1.03-3.50). Other factors associated with outbreaks included cooking/reheating violations, contamination violations, full wait service, off-site catering, food prepared for multi-day use, larger number of foodhandlers, large menu size, ownership type, receiving imported fish or crustacean, receiving/pooling eggs, and serving raw meats or produce.

A structural model based on number of customers, foodhandling violations, and raw food served was developed for estimating the risk of foodborne outbreaks at restaurants. The results suggest that structural equation modeling is an effective tool for predicting foodborne outbreaks at restaurants. Utilizing a risk-based model would allow health departments to focus more inspections towards restaurants that pose the greatest risk to public health.

4:00 – 4:50pm

Speaker and Topic TBA