obtaining results for the Colilert method presents a significant limitation in the utility of the monitoring for the protecting the public's health. The results from the previous day may close a beach when it should be open (Type I error), or deem a beach open when it should be closed (Type II error). Type I errors pass burden to the local businesses as type II errors increase the public's risk to illness and disease. Precipitation has been shown to elevate microbial concentrations in recreational swimming waters. The goal of this research is to study the relationship between precipitation and *E. coli* concentrations at Chicago beaches, and to reduce type II errors by developing a mixed effects model for determining beach advisories and closures using rain information as the main predictor.
Methods: Beach monitoring data has been provided by the Chicago Parks District and precipitation data obtained from the National Climatic Data Center.
Results: During the time interval of 2003 to 2011 there were a total of 15,208 *E. coli* monitoring observations used to guide decision making. The geometric mean and median *E. coli* concentrations were 42.5 MPN/100 mL and 42 MPN/100 mL respectively. The interquartile range was from 14 to 138 MPN/100 mL.
Conclusions: During the studied time interval the highest *E. coli* concentrations on average were observed at the following beaches: 31st Street Beach, Jackson/63rd Street Beach, Rainbow Beach, Montrose Avenue Beach, and Calumet Park Beach. The results from this research could have beach management policy implications and guide efforts for public health interventions.

37. Groundwater Arsenic in Chimaltenango, Guatemala

J.T. Lotter, S.E. Lacey, S. Erdal, A.P. Khodadoust, University of Illinois at Chicago, Chicago, IL

Objectives: Arsenic is a highly toxic substance capable of contaminating groundwater drinking sources and causing serious adverse health effects. Preliminary data from 2009 reported arsenic concentrations of greater than four times the WHO provisional guideline value for arsenic in drinking water of 0.01 mg/L at a single well, Cerro Alto, in the municipality of Chimaltenango, Guatemala. As a result, we returned and characterized the presence of arsenic in the groundwater of the entire municipality.
Methods: Samples were collected over three days in January 2012. A total of 42 samples were collected from 27 of the 62 (43.5%) wells in the municipality. Well sites were chosen to ensure a representative sampling for both rural and urban areas and from those utilizing a pump and from spring fed and artesian wells. GPS coordinates were recorded at each sampling site, along with well depth and diameter, pump flow rate and pumping schedule. The analysis for total inorganic arsenic was performed by an AIHA accredited laboratory using EPA Method 200.8 with a minimum reporting limit of 0.0040 mg/L.
Results: The only site with a concentration above the 0.01 mg/L WHO guideline was Cerro Alto, where the average concentration was 0.0475 mg/L, similar to the finding in 2009. Analysis of results showed that other factors such as well depth, elevation, and flow rate are not related to arsenic concentrations in the area.
Conclusion: Arsenic contamination of groundwater is often the result of natural processes. Due to the single isolated deposit found however, we are also investigating possible anthropogenic causes. These include potential contamination from mining, agricultural pesticides, and additives in livestock feed. Other future work includes conducting a risk assessment to determine the health impacts for the residents consuming water with arsenic at the levels found.

38. Assessing Information Quality of First Reports of Injury Forms

E. Orumwense, S. Lacey, University of Illinois at Chicago, Chicago, IL

Accuracy of information such as location of injury or accident description on injury/illness records, or incompleteness of these forms have been identified as barriers in injury reporting process and a contributor to underreporting. We evaluated the completeness of First Reports Of injury/ illness (FROI) forms at the University of Illinois at Chicago (UIC), reviewed the current injury reporting process and identified factors that may affect information quality.
110 FROI forms submitted from January to December 2011 to the UIC-Environmental Health and Safety Office (EHSO) were evaluated for level of completeness: presence of supervisor reports, frequency of missing fields and accuracy. Descriptive statistics were generated to analyze data and determine the frequency of missing data fields. UIC policies and procedures on injury reporting were reviewed. Internet searches such as 'UIC injury reports' and 'UIC first reports of injuries' were launched on the Google search engine and on the UIC website.
Ninety-four percent of the forms were from the University of Illinois Medical Center (UMC). In addition, 46.4% and 82% had the supervisor reports attached and involved nurses respectively.
Approximately 63 % had at least 1 missing field while 45% involved needle stick injuries and slips. Of the 18% FROIs indicating not seeking medical treatment, 39% involved exposure to blood-borne pathogens. Searches through the Google and UIC search engines generated dated versions of the forms and procedures that did not reflect current injury reporting process.
The injury reporting process was not well-defined. Variability of information was observed between web searches and current UIC policies. It is possible that there may be an issue of underreporting by other facilities on the University campus. Creation of a streamlined injury reporting process, employee education on updated reporting policies, promotion of early reporting and the restructure of FROIs were recommended.

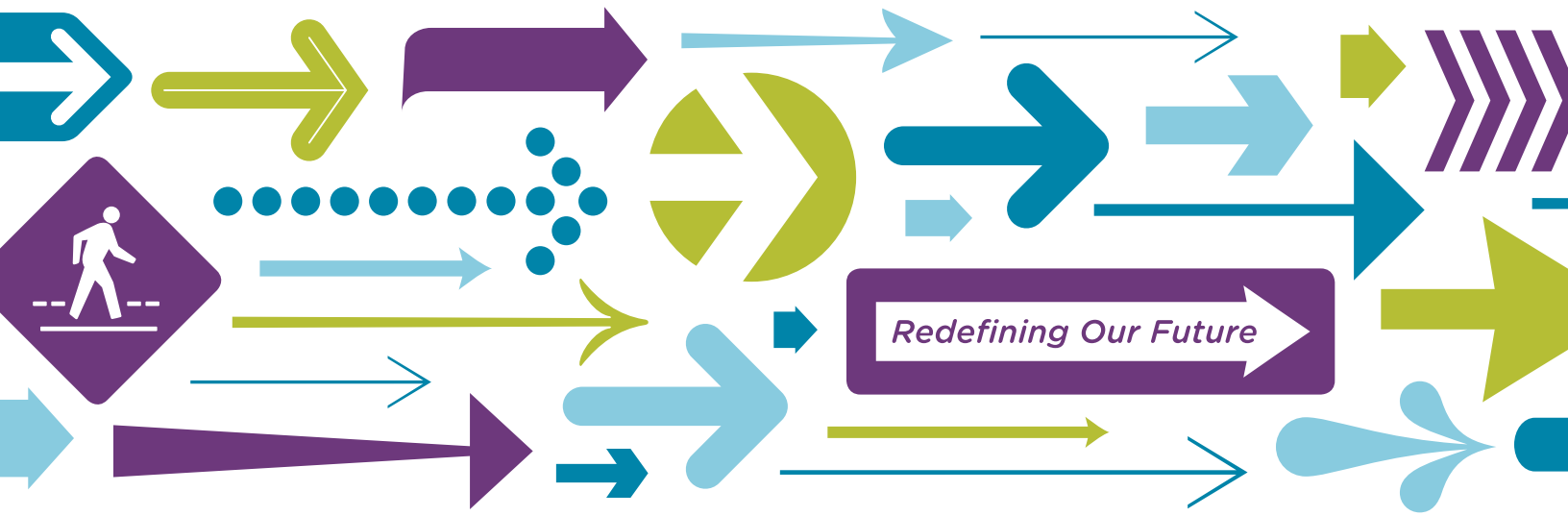
39. U.S. EPA's Toxic Release Inventory Data: Spatial and Temporal Trends in Illinois

F. Pagone, S. Erdal, S. Kim, University of Illinois at Chicago, Chicago, IL

Objective: The Toxic Release Inventory (TRI) is an EPA emissions database that provides information on release amounts of toxic chemicals from U.S. facilities. This study is designed to characterize emissions reported to the TRI database by the facilities in the state of Illinois and Cook County spatially and temporally as a proxy measure for exposure. By analyzing the toxic chemical release data, time trends of changes in emissions can be ascertained. More importantly, specific industries and chemicals that should be targeted for further reduction can be delineated to guide future environmental and public health policy and reduce the health risk burden on specific locations.
Methods: Using a public application (EPA's-TRI.NET), TRI data was downloaded for all counties in Illinois for the years: 1990, 1995, 2000, and 2008–2010. The most populated county, Cook County, was examined at the zip-code level to determine the highest on-site contributors (industries, chemicals) to air and land emissions.
Results: The total, total on-site and total off-site release amounts in Cook County have declined by 77%, 91%, and 30%, respectively, between 1990 and 2010. However, between 2009 and 2010, each release category increased by an average of 22% (23%, 16%, and 26%). Many of the same chemicals and industries were found to contribute the most to the total on-site releases over time. Certain glycol ethers, ammonia, and n-hexane are some of the chemicals with highest emissions, and primary metals, fabricated metals, and chemical storage industry categories contributed the most to total on-site air and land emissions.

aihce

CO-SPONSORED BY
AIHA® & ACGIH®



AIHce 2012

INDIANAPOLIS

June 16–21 » aihce2012.org

THE PREMIER CONFERENCE AND
EXPO FOR OEHS PROFESSIONALS

Abstract Book