

Lecture Hall

Session Abstracts

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

Environmental Health Tracking and Informatics

Tuesday, June 24

8:00 – 8:50am

Advancements in CDC's Environmental Public Health Tracking Initiative

Karen Roof, MS, Consultant, Kroof EnviroHealth Consulting, CO

Current national efforts to track environmental health related diseases such as cancer and environmental exposures are fragmented, uncoordinated, and inadequate based on a 2001 report issued by the Pew Environmental Health Commission. This view was also supported by the Institute of Medicine that reported that there is too little attention focused on the health aspects of environmental problems.

Why is it important for the Nation to establish an environmental public health tracking network for diseases and exposures? Currently 50 infectious diseases are tracked on a national basis; but there is not a similar network to track chronic diseases and the connections that the environment contributes to them. Can you imagine if we were able to readily link different types of environmental and public health data to make more accurate and informed decisions about policies? Or what if the government could more swiftly identify an emerging public health issue and improve the response time of emergencies and environmental threats? This is the hope with the creation of the Center for Disease Control and Prevention (CDC) Environmental Public Health Tracking (Tracking) Network. Over the last four years, CDC has embarked on a bold initiative to develop this national system to track environmental exposures and hazards and specifically the chronic diseases they cause. Currently only 20 states have been funded by CDC for Tracking with the hope that all states will be funded so an effective national network can be developed. Ultimately tracking will potentially increase the capacity to better track and cross analyze health and environmental data to more comprehensively and more accurately address and reduce health risks and prevent disease.

This presentation will highlight the national Tracking program and its many successes to date. This includes the new CDC online Tracking 101 training course that is administered through NEHA that will be the main focus of this presentation. The course format consists of presentation modules designed for online exercises and will be demonstrated during this session.

9:30 – 10:20am

New Mexico Environmental Health Tracking Innovative Data Applications Including NASA Satellite Data Models

M. Helen Flowers, PhD, MS, Bureau Chief, New Mexico Dept. of Health, NM

Many datasets utilized in Environmental Health Tracking have been in existence for decades but were previously under-utilized or un-utilized in the context of environmental health. The Tracking Program has brought meaningful application of these data including geospatial interpretation as

well as evaluation of temporal, demographic, and environmental exposure and health outcome linkages. These include: statewide cancer cluster analyses for bladder, thyroid, brain, and childhood cancers, including analysis of drinking water exposure linkage; evaluation of mortality data for trends in neurodegenerative diseases including Alzheimers and Multiple Sclerosis; and asthma and myocardial infarction hospitalization records evaluated for spatial distribution and temporal trends associated with air exposures to ozone and particulates.

Creation of new data sources includes the addition of biomonitoring data to our list of Notifiable Conditions where clinical laboratories now report blood and urine data to be evaluated in our Tracking Program. This creates an exposure database that allows temporal, geographic, and demographic description of exposure levels across the state at a minimal cost. Additional biomonitoring data are being collected and analyzed including urine levels of arsenic, metals, and endocrine disruptors as well as infant bloodspots for mercury and lead.

One goal of Tracking is to link environmental or exposure data with health outcome data. NM Tracking Program has conducted several data linkages including Asthma Emergency Department visits and ozone levels in a rural county. These studies indicated a positive temporal correlation of increases in summer ozone levels with increased emergency department visits for asthma. This analysis was also conducted with NASA-modeled air quality data for NM. The NASA DREAM model for dust particulates has been developed for the southwest US using satellite data that has been linked with NM asthma and myocardial infarction data. The modeled values of particulates based on remote sensing data fill a significant data gap since we only have one metropolitan area that has a system of regular particulate monitors. An ozone model and pollen model are also under development, as well as exploration of remote sensing data for supporting evaluation of health effects associated with climate change.

11:00 – 11:50am

An Integrated Surveillance System to Track Pollution and Pollution-Related Diseases

Fazlay S. Faruque, PhD, Director of GIS and Remote Sensing, Professor of Health Systems, The University of Mississippi Medical Center, MS

Environmental air quality has a major impact on human health. An example is the effect of air pollutants on asthma and other respiratory diseases. An integrated surveillance system to track and correlate air pollution with pollution-related disease incidence can assist in risk assessment, public awareness and healthcare preparedness. At the University of Mississippi Medical Center (UMMC), we have developed GeoMedStat, an evolving surveillance system capable of mapping and analyzing both real-time and historical patient encounters and environmental pollution data. GeoMedStat utilizes links with hospital information systems to allow access to both chief complaints and International Classification of Diseases (ICD9) codes of patient encounters. In addition, GeoMedStat utilizes NASA satellite data and EPA ground-monitor data to develop a surface model for air pollution for the entire state of Mississippi. This presentation will demonstrate how server-based GIS and Web technology allows us to combine this hospital data with the air pollution data model to make timely information readily available to a user community through the GeoMedStat interface. This system utilizes GIS technology to monitor events in terms of “what,” “when” and “where”. The user can define the desired time period, geographic area, disease diagnosis, type of patient encounter and pollutant of interest, and then view the information presented in a map or graph format. Information obtained from this system can enable stakeholders to: a) better understand health outcomes influenced by environmental pollution, b) optimize resource allocations, and c) respond efficiently in the event of manmade or natural health disasters in the community.

1:30 – 2:20pm

Using GIS Tools for Targeting Prevention Strategies to Areas at High-Risk for Childhood Lead Poisoning

Barbara Candalla, MPH, Research Scientist, New York City Lead Poisoning Prevention Program, NY

The incidence of lead poisoning has dramatically declined over the past ten years, but thousands of children are still identified as having elevated blood lead levels each year in New York City. The ability to effectively target high risk areas for lead poisoning is crucial for achieving the national goal of eliminating elevated blood lead levels among young children by 2010. Geographic Information Systems (GIS) is one tool that can be used to target strategies to neighborhoods at high risk for lead poisoning. In this study, we used raster-based GIS to create a risk evaluation model by combining data on multiple community characteristics that represent known risk factors for lead poisoning. These community characteristics included: percent of buildings built before 1950, percent of housing with less than three units, housing vacancy rates, percent of unemployment, median family income, percent of recent immigrants, percent of South Asian-born population, as well as two indices of socio-economic resources – Townsend Index and Index of Local Economic Resources, and rates of children with lead poisoning in previous years. Community characteristics data at the census tract level were obtained from Census 2000. Data on rates of children with lead poisoning in 1997, 2000, and 2003 were obtained from the Childhood Blood Lead Registry of the New York City Department of Health and Mental Hygiene Lead Poisoning Prevention Program. We show how this GIS method of combining and visually presenting information can help understanding complex relationships among community characteristics that represent risk factors for childhood lead poisoning, and how this method can be used in creating neighborhood specific childhood lead poisoning prevention and elimination interventions.

3:00 – 3:50pm

Jamming: A Web-Based Forum for Engaging Stakeholders in Program and Policy

Mia Zmud, MS, Director, NuStats, TX

Successful decision-making by government agencies often requires communication and dialogue with the public, stakeholders, or technical experts. This past summer, the Texas Department of Transportation (TxDOT), in collaboration with the RAND Corporation and NuStats, conducted a pilot test of an a web-based online discussion venue, an “Online Jam” to assess its potential for informing policy and program decision-making. An online jam uses collaborative software to enable group interaction in a computer-mediated, virtual environment. Unlike traditional public involvement techniques such as in-person meetings, where ideas or thoughts are offered one at a time in a very linear and structured manner, the Online Jam enhances the free flow of ideas among many persons at once, regardless of their physical location; a written record of the discussion is instantaneously accessible. The venue allows public agencies to move beyond using the worldwide web as an information sharing vehicle for posting content to creating online communities for targeted, analytical dialog to inform decision-making.

This presentation/paper introduces the role of online dialogues in engaging the public and others in policy and program decision-making. Using the TxDOT Online Jam as a case study, it will define and describe the process for planning, designing and conducting an online jam. A focal point of this is the construct of the Online Jam as a two-session, iterative process—first it engages participants in a idea or brainstorming discussion on a specific topic and in a second, follow up session, participants select the top ideas/strategies/options in a consensus-building discussion. The presentation will present the outcomes and pitfalls associated with the technique and provide tips for engaging participants in a lively and active online discussion. Ultimately, the presentation/paper will provide participants who hold key roles in program and policy decision

making, the details, costs, and level of effort required to host an online jam for their own applications.

4:30 – 5:20pm

Local GIS Efforts Using GPS to Locate Onsite Systems in Database

David Lundstrom, RS, Environmental Health Practitioner, Custer Health, ND

Aaron Johnson, Environmental Health Practitioner, Custer Health, ND

Custer Health undertook GPS'ing onsite components using ArcView, Trimble software and hardware to try accurately locate the various components of new onsite systems as a way of being able to locate the features at a later time. The program is in its infancy but we will point out the difficulties, expenses and what accuracy can be expected using this technology. Location can be interfaced with water, ground water and other GIS layers for research at a later date showing impact on surface and ground water when and if those layers are interfaced.