Mo-S-B2-03
Utilizing Internet Data, Social Media, and Community Networks to Gather Data for Characterization of Recovery Worker Exposures
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Abstract: Following the devastation caused by Hurricane Sandy, response and recovery for the working-class neighborhoods in New York City's industrial waterfront areas required massive efforts by many different types of recovery workers, including residents, business owners and their employees, paid contractors, and volunteers both from within the affected communities and from other areas. For many, working with little or no training and protective gear, contact (dermal, inhalation and oral) with the debris and muck was inevitable. No systematic monitoring was completed in real-time to understand what types and duration of activities took place or what personal protective equipment was used by the various types of recovery workers. The rise of social media, Internet sharing sites, and mobile digital technologies can retrieve information about recovery worker activities through photos, videos, text narratives and other media, many of which are publicly available. With a unique community-based approach, we have pioneered a systematic collection of these media to understand and characterize exposure-related elements such as behaviors, recovery site tasks, protective equipment, and media comprising the muck and debris. We will discuss a community-based risk assessment approach for gathering and evaluating photographic, digital, and narrative information in order to characterize recovery worker exposures following Hurricane Sandy. The process utilized both a comprehensive media review to collect publicly-available information and a community-led effort to gather private media collections. Successes and challenges in data collection and use and lessons learned will also be presented.

Keywords: A-emergency response, A-activity patterns, D-community

Mo-S-B2-04
Assessing Exposure to Recovery Workers from Fugitive Chemicals after Sandy's flooding
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Abstract: The exposure assessments are calculated using activity profiles constructed from the descriptive information collected by the community and estimates of chemical residue based on analyses of chemical disbursements from the source points in the flooded neighborhoods. These calculations and underlying assumptions are presented. In doing these exposure assessments, we can identify activities and scenarios contributing significantly to exposure. The exposure mitigation achieved by different patterns of protective clothing or changes in activity profiles are also presented. These exposure assessments are useful to community planners and health professionals as they prepare for future disaster responses. This approach could be applied in other communities for disaster planning, and the assessments can be used to prioritize monitoring sites, chemical security plans, and risk mitigation options.

Keywords: A-activity patterns, A-exposure models, D-community, A-aggregate exposure, A-emergency response

Mo-S-B2-05
Panel Discussion: The CBRA Approach for Guiding and Using Exposure Assessments for Community Planning for Disaster Resilience
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Abstract: The NIOSH project officer will focus the discussion among panelists from RAND, UPROSE, NYC-EJA and The LifeLine Group. Agencies like NIOSH and CDC recognize the challenges introduced by rising sea levels, changing climates and severe weather events. One of those challenges involves potential health threats from chemicals displaced from their storage/use sites during destructive weather events. Approaches used in

this project may be useful for many global sites where rising sea levels and storm threats are forcing communities toward resiliency projects. Estimating the possible concentrations of fugitive chemicals within community zones can focus public health monitoring and protection strategies and inform recovery worker protection practices. CBRA approaches and input strengthen the overall process and increase the likelihood that study results will be accepted and acted upon for community planning. . The sciences of exposure assessment, vector analysis, mapping, modeling, chemical hazard assessment, and activity profiling from visual descriptive materials can inform these difficult community-specific strategies. The scientific approach initiated in this project can be emulated and improved upon when applied to other sites. The panel discussion focuses on the strength and weaknesses of the community-led approach, technical approaches from multiple scientific fields, and social media information sources employed in this project and their utility for public protection options and guidance to health professionals and epidemiologists.

Keywords: A-climate change, A-cumulative exposure, A-emergency response, A-environmental justice, A-environmental policy

Mo-S-C2: Exposure Science in the 21st Century: Activities Across the Federal Government

Mo-S-C2-01
Innovations in Exposure Science at the USEPA
J. Orme-Zavaleta; USEPA, Durham, NC

Abstract: EPA's mission is to protect human health and the environment. Understanding and characterizing exposure is integral to achieving EPA's mission. Exposure is a multidisciplinary science that sets the context for understanding the real world situation and in the context of sustainability, simplifies the problem in a systems context. New innovations in technology are catalyzing advancements in exposure science. EPA is transitioning its exposure research program by emphasizing the use of new tools and technologies. This presentation will focus on innovations in data mining and analysis of big data, use of 'omics, sensors, and computational methods for predicting measurements, integrated systems of predictive models, and high throughput computational exposure analyses. Examples of research in each of these areas will be presented.

Keywords: A-exposure models, A-sustainability, A-exposure factors, Exposure Tools and Technology; innovation

Mo-S-C2-02
Overview of NIEHS Activities in Transforming Exposure Science
D. Balshaw; NIEHS, Morrisville, NC

Abstract: The NIEHS Strategic Plan for 2012-2017 emphasizes a goal on transforming exposure science which places a priority on both enhancing the power and impact of exposure assessment as well as the development and dissemination of the exposome concept. This program builds on nearly a decade of the Exposure Biology Program supporting the development of wearable technologies for monitoring the complexity of the personal environment including chemical exposures and lifestyle factors. The initial focus of the Exposure Biology program included both improving exposure assessment and linking exposure with biological response. Exposure assessment activities include increasing the temporal and spatial resolution of exposure metrics, enabling multi-exposure exposure analysis and decreasing the burden on both the participant and the study investigators. As the program has involved NIEHS has increasingly supported the validation of the tools for use in research and community settings. As we implement the new NIEHS strategic plan we are transitioning our focus from exposure biology to the broader concept of the exposome, the assessment of the totality of exposures across the life-course. Specific near-term goals for the implementation of the exposome include a further expansion of the analytical capacity both at the point of contact and in biomonitoring, the development of computational capabilities for the integration of exposure across scales, the linkage of comprehensive exposure and biological response assessment, and the demonstration of the added scientific value of an exposome analysis.

Keywords: A-sensor technology, A-geospatial analysis/GIS, A-biomonitoring

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