

CAPITALIZING ON AVAILABLE MONITORING DATA TO INFORM EXPOSURE ASSESSMENT IN THE GULF STUDY

Lawrence Engel, *National Institute of Environmental Health Sciences*

Mark Stenzel, *Exposure Assessment Applications, LLC*

Patricia Stewart, *Stewart Exposure Assessments, LLC*

Richard Kwok, *National Institute of Environmental Health Sciences*

Aubrey Miller, *National Institute of Environmental Health Sciences*

Aaron Blair, *National Cancer Institute*

Dale Sandler, *National Institute of Environmental Health Sciences*

Background and Aims: The Deepwater Horizon disaster, which released approximately 5 million barrels of oil into the Gulf of Mexico, is the largest oil spill in United States history. Over 100,000 workers participated in clean-up efforts. These workers may have been exposed to a number of agents during clean-up activities, including volatile organic compounds such as benzene, toluene, ethyl benzene, and xylene (BTEX); semi-volatile compounds such as polycyclic aromatic hydrocarbons; 2-butoxyethanol; propylene glycol; particulate matter; and oil mist. The duration of the spill and subsequent clean-up operation, as well as the large number of workers involved, enabled collection of a large amount of monitoring data, including over 20,000 observations of workers or work areas. These data were collected primarily by BP contractors and government agencies. They will be used, together with other data, to estimate exposures for each job group/location/time scenario defined in the GuLF STUDY, a large, prospective study currently being conducted by the US National Institute of Environmental Health Sciences to investigate the health effects of clean-up related exposures among these workers. The majority of measurements were reported to be below the limits of detection; however, interpretation of these data are complicated by the large number of job group/location/time scenarios, differences in analytical methods and instrumentation employed, use of compliance-based rather than research-based sampling strategies, and severe and varied working conditions.

Methods: Exposure distributions will be examined across, and descriptive statistics presented for, various job group/location/time scenarios. Important exposure determinants will be identified and reported. Results will be interpreted in light of the sampling strategies and analytic methods/instrumentation used.

Conclusions: Despite their limitations, the monitoring data available for Deepwater Horizon clean-up workers provide a rare opportunity to clarify exposure scenarios and their determinants for this spill and may help inform monitoring and exposure mitigation efforts in future spills.