

Society For Risk Analysis Annual Meeting 2010

Risk Analysis in Action

W3-E: Wednesday, December 8, 2010

Oil Spill Exposures

W3-E.1 13:30 Estimating the airborne concentrations of benzene and other relevant volatiles in boats operating in or near oil spills: A comparison between the Exxon-Valdez and Deepwater Horizon incidents. *Avens HJ**, *Keenan JJ*, *Unice KM*, *Pastenbach DJ*; ChemRisk, 4940 Pearl East Circle, Suite 300, Boulder, CO 80301; ChemRisk, 25 Jessie Street at Ecker Square, Suite 1800, San Francisco, CA 94105; ChemRisk, 20 Stanwix Street, Suite 505, Pittsburgh, PA 15222 dpaustenbach@chemrisk.com

Abstract: The Deepwater Horizon oil spill in the Gulf of Mexico has been noted as already surpassing the Exxon-Valdez oil spill as being the largest in U.S. history. In particular, at the time of this writing, the Deepwater Horizon incident is alleged to be leaking approximately 25,000 barrels a day into the Gulf of Mexico. Concerns have been raised about the degree of human exposure to various volatiles in crude oil including, but not limited to, benzene, ethyl benzene, and toluene. It is not uncommon for persons involved in the recovery efforts or the collection of wildlife for cleaning to be exposed to these vapors while on a boat in these waters. This paper discusses the application of one of the most common oil spill analysis software, ADIOS2 (Automated Data Inquiry for Oil Spills-2), which was developed by the National Oceanic and Atmospheric Administration, in partnership with a number of other federal agencies. The model takes into consideration the key variables such as oil type, wind speed and direction, water temperature and salinity, speed and direction of water currents, wave height, and type and duration of oil release. We not only apply this model but compare the results with available air samples which have been collected during the Deepwater Horizon and Exxon-Valdez incidents. The benefits and disadvantages of utilizing ADIOS2 and other related models are discussed. Additionally, if new information regarding the impact of hurricane-level winds on the airborne concentration of volatiles above oil spills becomes available, that information will be incorporated into our analyses.