three performance reference compounds were recovered successfully. Polycyclic aromatic hydrocarbons in the vapor phase were contaminants of specific interest. Six un-substituted and six methyl-substituted compounds were recovered with concentrations ranging from 23 to 819 pg/µL. Extracts from blank devices were exposed to the embryonic zebrafish model to test for developmental toxicity. These developmental exposure assays showed site specific differences in morphological endpoints. Utilizing combined mass spectral libraries, over 1200 analytes were screened, included in the screen are known pesticides, endocrine disruptors, and other contaminants of concern. Many compounds were positively identified including classes of polycyclic aromatic hydrocarbons, triazines, and terpenoids.

WP287  Determination of Anionic Surfactants from Corexit Dispersants in water, oil, and biota from the Gulf of Mexico E. Sinclair, G. Salata, Columbia Analytical Services, Inc.
Corexit 9500A and Corexit 9527 are commercial dispersants used extensively to treat oil from the Deepwater Horizon spill. Unprecedented volumes of this dispersant were released into the Gulf of Mexico during spring 2010. Sensitive and specific analytical methods are necessary in monitoring the distribution of these dispersants in various environmental matrices. A robust analytical method for measuring the anionic surfactants component of Corexit dispersants using solid phase extraction (SPE) with liquid chromatography tandem mass spectrometry (LC-MS/MS) has been developed capable of measuring these anionic surfactants at ng/L and ng/g concentrations in seawater and oil, respectively. Furthermore, the occurrence of anionic dispersants in Gulf of Mexico waters contaminated with oil will be discussed, as well as any evidence of bioaccumulation of dispersants in marine organisms.

WP288  Development of Web-Based Toxicity Reference Values and Protective Cleanup Levels for Contaminants of Concern and Habitat-Based Indicator Receptors J.L. Rogers, V. Saxena, G.C. Barbee, M. Jafar, A. Nagarej, B. Yates, West Texas A&M University / Life, Earth & Environmental Sciences; L. Champagne, Texas Commission on Environmental Quality This research is the result of a five year effort between West Texas A&M University (WTAMU) and the Texas Commission on Environmental Quality (TCEQ) to develop ecological soil and sediment contaminant default values for diverse habitats found in Texas. The main objective of this project was to develop a web-based user interactive toxicological database capable of calculating protective cleanup levels (PCLs) based on representative indicator receptors for trophic levels and feeding guilds found within those habitats. Primary and secondary receptors were selected for each trophic level/guild resulting in about 100 receptors in five primary habitats. Potential contaminants of concern (PCOCs) commonly found in Texas, particularly at Texas CERCLA sites, and PCOCs from crude oil spills including Corexit oil dispersants, comprised the 120 PCOCs included in the database. A toxicological profile was developed for each PCOC from an exhaustive literature review, which includes fate and transport and acute and chronic toxicity data that is sufficient for developing default Toxicity Reference Values (TRVs). The TRVs, along with the other data gathered, were then used to develop NOAEL / LOAEL-bounded protective cleanup levels (PCLs) for each PCOC/receptor pair. With 120 PCOCs and 100 receptors, this interactive database can generate up to 12,000 PCLs each for mortality, reproductive, growth, and population toxicity endpoints for the five habitats, resulting in a total of 60,000 PCLs. This tool allows the user to replace default values with site-specific ones for conducting ecological dose-response calculations. The database also provides a systematic tool to collect toxicological and indicator receptor data using a web-based data submission form from user contributions. All data submissions are refereed by a technical oversight group headed by the TCEQ. The model is currently being expanded to represent more habitats in Texas, including the estuarine/marine coastal habitats along the Louisiana and Texas Gulf of Mexico to assess potential toxicological impacts from the BP Deepwater Horizon oil spill. While the interface is web-based, the back-end is a MySQL database engine that is used for data storage and retrieval. The WTAMU team has recently added data entry verification and validation features, data search features, and a more user friendly web-based interface and will continue to improve and expand the capabilities of the model.

WP289  Do oil dispersants make spilled oil more toxic to fish? P.V. Hodson, Queen's University / School of Environmental Studies The recent Deepwater Horizon disaster was the world’s largest unintentional oil spill. It was unprecedented in its duration, volume spilled, and the technology applied for control and clean-up. Among these unique features was the continuous and wide-spread application of oil dispersant, at the surface and at the discharge. 1500 m deep, generating public concern about dispersant toxicity and the effects of dispersion on oil toxicity. Recent USEPA reports claim little difference in acute toxicity to marine fish and invertebrate species among commonly available dispersants and between dispersed and non-dispersed Louisiana Sweet Crude. The EPA reports were technically correct: the toxicity of waterborne hydrocarbons does not vary with chemical dispersion. However, the agency did not tell the entire story, omitting any consideration of loading. Our research on the chronic toxicity of dispersed oil to fish embryos demonstrates that toxicity expressed as oil loading increases by a factor of 10 to 1000 times with dispersion, primarily because 10 to 1000 times more oil enters the water column. From a practical perspective, the risk of oil toxicity to fish increases an equivalent amount because the action of dispersant is on the exposure component of the risk equation, not on the potency of the toxic components of oil. By telling only part of the story, the USEPA seriously misled the public about the risks of dispersant use in oil clean-up.

WP290  Documentation of Sub-Surface Oil Plume by Analyses of Toxic PAH in Water Samples from the Deep Water Horizon Oil Spill, T.L. Wade, S.T. Sweet, J.L. Sericano, Texas A&M University / Geochemical and Environmental Research Group; N.L. Guinasso, Jr., Texas A&M University / Geochemical and Environmental Research Group; S.M. Moghaddas, Texas A&M University / Department of Marine Science; J. Dixie, Texas A&M University / Department of Marine Science; A.J. Skora, Texas A&M University / Department of Marine Science; A.R. Diercks, V.L. Asper, University of Southern Mississippi / Department of Marine Sciences; R.C. Highsmith, University of Southern Mississippi / National Institute for Undersea Science and Technology Surface and sub-surface water samples were collected in the vicinity of the Deep Water Horizon (DWH) blowout. Samples were extracted with dichloromethane and analyzed for the toxic component, polycyclic aromatic hydrocarbons (PAH) using total scanning fluorescence (TSF) and by gas chromatography/mass spectrometry (GC/MS). An aliquot of fresh, floating oil from a surface sample was used as a DWH oil reference standard. Twelve of 19 samples collected from May 24-June 6, 2010 on the R/V Walton Smith cruise contained TSF maximum intensities above background (~2 ug/L based on 1 L sample size). These 12 samples had DWH oil equivalent concentrations ranging from 5 to 1,300 ug/L. Quantitative GC/MS analysis of these twelve samples resulted in total PAH concentrations ranging from 0.01 to 55 ug/L. PAH patterns for 11 of the 12 samples indicated that low molecular weight, more water soluble naphthalene and alkylated naphtalenes were present in the water samples. The 12th sample exhibited substantially reduced concentrations of naphtalenes relative to other PAH compounds. The total PAH concentrations in the 11 samples were positively correlated (R2 = 0.92) with the total oil equivalents from TSF measurements. TSF is a simple, rapid technique that provides an accurate prediction of the amount of un-weathered PAH present in a sample. TSF-derived estimates of the relative contribution of PAH present in the oil provided evidence that PAH represented 4% of the total oil equivalents in samples from this study. A good correlation between in situ CDOM fluorescence and total PAH concentration was observed based on the analysis of 36 additional water samples for PAH collected during the R/V Pelican cruise conducted 9-16 May 2010. A stronger correlation was obtained between in situ CDOM fluorometer and total phenanthrenes, which are more resistant to weathering. The CDOM fluorometer has been used to track the subsurface oil plume in the vicinity of the DWH. This study validates the use of fluorescence techniques (CDOM and TSF) which measure toxic PAH for monitoring sub-surface oil plumes.

WP291  Does the Exxon Valdez Oil Spill Still Pose Risks to Harlequin Ducks? A Quantitative Ecological Risk Assessment M.A. Harwell, Harwell Gentile & Associates, LC / Rosenstiel School of Marine & Atmospheric Science; J.H. Gentile, Harwell Gentile & Associates, LC The recent Deepwater Horizon disaster was the world’s largest unintentional oil spill. It was unprecedented in its duration, volume spilled, and the technology applied for control and clean-up. Among these unique features was the continuous and wide-spread application of oil dispersant, at the surface and at the discharge. 1500 m deep, generating public concern about dispersant toxicity and the effects of dispersion on oil toxicity. Recent USEPA reports claim little difference in acute toxicity to marine fish and invertebrate species among commonly available dispersants and between dispersed and non-dispersed Louisiana Sweet Crude. The EPA reports were technically correct: the toxicity of waterborne hydrocarbons does not vary with chemical dispersion. However, the agency did not tell the entire story, omitting any consideration of loading. Our research on the chronic toxicity of dispersed oil to fish embryos demonstrates that toxicity expressed as oil loading increases by a factor of 10 to 1000 times with dispersion, primarily because 10 to 1000 times more oil enters the water column. From a practical perspective, the risk of oil toxicity to fish increases an equivalent amount because the action of dispersant is on the exposure component of the risk equation, not on the potency of the toxic components of oil. By telling only part of the story, the USEPA seriously misled the public about the risks of dispersant use in oil clean-up.