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**APPROACHES AND ANALYTICAL CONSIDERATIONS FOR ASSESSMENT OF DEGREE AND TOXICITY OF METALS CONTAMINATION IN MARINE SEDIMENTS.** Warren S. Boothman

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A variety of approaches exist for assessing the degree, extent and/or risk of metals contamination in sediments. Selection of the "correct" method depends on the nature of the question being asked and the approach used to answer it. The aluminum-normalization approach uses a statistically-derived estimation of the background concentrations of metals to estimate the degree of metals contamination in marine sediments, but does not address the risk of toxicity from those metals. Empirically-derived approaches, such as Effects Range Low/Median, Apparent Effects Threshold, and Logistic Regression approaches, are based on correlations between concentrations of contaminants in sediments and biological effects and can help predict the likelihood of toxicity, but do not identify the cause of toxicity. The Equilibrium Partitioning approach, on the other hand, relates the partitioning of contaminants between sediment components and interstitial water and addresses the question of whether metal contaminants in sediments can contribute to toxicity, but can't address other possible contaminants. Each of these approaches impose requirements on the analytical methods used to measure the metals (e.g., total or partial digestions, selective leaching). Therefore, it is critical to decide what question is being asked (e.g. is a given sediment likely to be toxic?) and the approach to be taken to answer it prior to conducting chemical analysis, so that appropriate analytical methods are used. This talk will give the basis for use of these differing analytical methods and approaches, and examine the steps required to ensure the quality of each.

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