

Partitioning of Metals on Size-Fractionated Harbor Sediment

Breslin, Vincent T., Santanelli, James, Ogalin, Erica and Conklin, Joshua
Science Education and Environmental Studies
Center for Coastal and Marine Studies
Southern Connecticut State University
New Haven, CT 06515

This study examines trends in the metal content of size fractionated sediment in Connecticut coastal embayments. Previous research has shown that the chemical composition of harbor sediment may be highly variable over small distances, primarily due to sediment grain-size effects. The goal of this study will be to test the following hypothesis: sediment metal concentrations will vary as a function of sediment grain size, with increasing metal contents with decreasing sediment grain size. Sediment was collected using a ponar grab during 2005 and 2006 from stations located in New Haven harbor, Norwalk harbor and Branford harbor. Whole sediment samples were size fractionated using standard dry sieving techniques to obtain 2 mm, 1 mm, 0.5 mm, 0.25 mm, 0.125 mm and 0.063 mm sieve sizes. Whole sediment and size fractionated sediment samples were digested using HNO₃-H₂O₂ and analyzed for Fe, Cu, Zn and Pb. In general, sediment metal contents are lowest in sand sized sediment fractions (0.5 mm-2 mm) and are highest in silt-clay size fractions (<0.063 mm). For example, for two stations in Norwalk harbor where the whole sediment Cu contents were 7.3 mg/kg (outer harbor) and 146 mg/kg (inner harbor), Cu contents of the silt-clay fraction of the sediment increased to 2800 mg/kg and 1200 mg/kg, respectively. Although the mass fractions of the silt-clay sized particles in some harbor sediments may be small (< 5%), these sediment particles are likely ingested by organisms and may be an important route for contaminant metal accumulation. Results of this study will be an important contribution in assessing the effects of grain size on sediment metal contamination assessing current and future impacts to commercial activities and living marine resources.

Author to Contact: Vincent Breslin, Associate Professor
Science Education and Environmental Studies
Southern Connecticut State University
501 Crescent Street, New Haven, CT 06515

Telephone: (203) 392-6602

FAX#: (203) 392-6614

Email: breslinv1@southernct.edu

**Submission
Category:** Poster