

Polycyclic Aromatic Hydrocarbon Concentration in Sediments from Penobscot Bay, ME

Polycyclic aromatic hydrocarbons (PAHs) are a group of hydrophobic compounds produced via incomplete combustion. PAHs are known to be carcinogenic and mutagenic in marine organisms, especially benthic organisms. In 1985 a study found that sediments from Penobscot Bay, ME had surprisingly high PAH concentrations. This study attempted to remeasure the concentrations of PAHs throughout the Penobscot Bay. One gram of wet sediment was spiked with 0.2 micrograms of a premade deuterated PAH (dPAH) solution. Hexane dichloromethane (1:1) was then used as a solvent to extract the PAHs from the wet sediment using an ultrasonic method. The coextracts were removed using Supelclean™ Florisil®/Na₂SO₄ SPE Tubes. The total organic carbon of the soil was calculated to normalize the PAH concentration within the sediment using the ignition method. Less than 1% of the dPAHs were recovered, making us unable to measure the concentration of PAHs in the sediment. Based on a previous pilot study, the newly introduced silica cleanup step may have removed the PAHs and the dPAHs from the solvent. Future studies should focus on optimizing the silica cleanup methods so that PAHs can be measured in the marine sediment and so that more laboratories are able to easily monitor PAHs.

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