

Biogeochemistry of Fossil Fuel Compounds in the Marine Environment

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More than four decades of research concerned with the biogeochemistry of fossil fuel compounds in the marine environment has revealed much about inputs, pathways of movement, temporary and long term fates of fossil fuel compounds in the marine environment, including bioavailability and the role of microorganisms in the fate of fossil fuel compounds. Much of this information is for estuarine and coastal ecosystems, although there has been recent progress with aspects of research in deeper water ecosystems. The research has encompassed both acute oil spill inputs and chronic fossil fuel hydrocarbons inputs from a variety of sources.

Laboratory experiments, mesocosm experiments and field observations provide sets of data that are in accord. Examples of each will be reviewed and discussed for historical context. Details of molecular structure are important to understanding the fate of these compounds and progressively improving analytical chemistry methods provided, and continue to provide, important information. Some specific challenges with respect to the biogeochemistry of complex mixtures of cycloalkanes and polycyclic aromatic hydrocarbons will be presented and discussed.