

### **143g Sediment and Contaminant Release during Gas Ebullition**

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Significant quantities of gas are generated by labile organic materials in sediments. The implications for the gas generation and subsequent release for contaminants from sediments are unknown but may include enhanced direct transport as well as physical disruption of the sediment increasing other modes of transport such as porewater advection and diffusion. The behavior of gas in sediments and the resulting migration of a PAH, phenanthrene, was investigated in an experimental system with methane injection at the base of a sediment column. Hexane above an overlying water layer was used to trap any phenanthrene migrating out of the sediment layer. The rate of resuspension of solid particulate matter from the sediment bed into the overlying water layer was also monitored. The experiments indicated that significant amounts of both solid particulate matter and contaminant can be released from a sediment bed by gas movement with the amount of release related to the volume of gas released. A thin sand capping layer was found to dramatically reduce the amount of contaminant released with the gas, presumably due to the reduced resuspension potential of sand relative to fine-grained contaminants and the lack of significant contamination of the sand. The experimental data was used to predict the contaminant migration potential of gas ebullition under a variety of field conditions and draw conclusions about the implications of this mechanism for contaminant release under natural conditions.