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IN REPLY REFER TO

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From: Commanding Officer, Naval Research Laboratory
To: Naval Facilities Engineering Command, Engineering Field Activity Northeast
Attn: David Barclift, 10 Industrial Highway MSC 82 Lester, PA 19113-2090

Subj: PAHs IN COASTER'S HARBOR SEDIMENT

1. According to the United States Environmental Protection Agency (USEPA), "*EPA conducts risk assessment to provide the best possible scientific characterization of risks based on a rigorous analysis of available information and knowledge*" (An Examination of EPA Risk Assessment Principles & Practices, 2004, www.epa.gov). It is in this context that the Naval Research Laboratory (NRL) was asked by the Naval Facilities Engineering Command, Engineering Field Activity Northeast (NAVFAC EFANE) to study the PAHs in the sediments adjacent to the Old Fire Fighter Training Area (OFFTA) site in Coaster's Harbor and Narragansett Bay off the coast of Rhode Island. On 8 April 2004, Drs. Michael Montgomery, (NRL) and David C. Smith, University of Rhode Island (URI), presented our findings to representatives from NAVFAC EFANE, USEPA, Rhode Island Department of Environmental Management (RIDEM) and Tetrattech at Naval Station Newport.

2. Questions regarding the study report (Montgomery et al. 2003) and unpublished data from a sampling in October 2002 were addressed. Based on our analysis, discussion of this data in the context of other data collected on the site (presented by Tetrattech) we provide the following findings and recommendations.

a. Prior to 1999 (Battelle, URI/SAIC, Brown & Root Environmental), PAH concentrations at the OFFTA sediment site were higher than reported for recent samplings (Tetrattech, 2001, 2002, 2003; NRL, 2002; EPA 2003). There is also scientific evidence that bacterial degradation of PAH can account for the mass loss of ambient PAHs in the sediments. Whether the PAH attenuation is due to primarily to biotic or abiotic (sediment transport, migration to overlying water) processes was not addressed in any of the studies presented. There is no scientific evidence that surface sediment PAH concentrations are lower due to burial. Current PAH concentrations in Narragansett Bay sediments may also be lower due to better watershed management practices. Although the attenuation mechanism has not been conclusively identified due to the limited scope of the investigations, based on the comparison of the data sets presented, PAH concentrations in OFFTA sediments clearly have decreased since 1999.

b. Sediment PAH concentrations are not currently above background for the Narragansett Bay watershed. Based on the Tetrattech and NRL samplings, the PAH concentrations at the OFFTA site are indistinguishable from those determined from sites throughout the bay that are not undergoing remedial investigations (background reference). When compared to data obtained from coastal sediments in other ecosystems (Charleston Harbor, Delaware Bay, Chesapeake Bay, coastal Oahu, San Diego Bay, and San Francisco Bay),

the Coaster's Harbor and Narragansett Bay sediments have among the lowest ambient PAH concentrations that we have measured.

c. The PAH compounds that exceeded the Ecological Preliminary Remediation Goals (PRGs) in a November 2001 sampling may be artifacts and not representative of accurate sediment PAH concentrations. Only three stations had reported exceedances of Ecological PRGs; the compounds which exceeded these guidelines were Acenaphthalene and 2-Methylnaphthalene, both of which are common laboratory contaminants. Additionally, if these compounds originated from a shore side point source of petroleum products, they would co-occur with other higher molecular weight PAHs. The compounds in question would also not be present as a result of historical inputs of petroleum products as they attenuate more rapidly than the higher molecular weight PAHs (which are below PRGs).

d. There is no scientific evidence that the low levels of PAH recently measured are the result of historical Navy shoreside activities. PAH source fingerprinting evidence reported by Tetrattech indicates that the PAH composition in the sediments adjacent to OFFTA is indistinguishable from urban runoff (surface runoff from parking lot). This is consistent with findings and conclusions from an earlier independent sampling (URI 1998) and from NRL's study (2002). This is also consistent with the possibility that better watershed management practices have resulted in low PAH concentrations in all sediments of Narragansett Bay.

e. There is no scientific evidence to support the implementation of any remedial activity of sediments at the OFFTA site in Coaster's Harbor. No scientifically defensible data exists to indicate that risk at the site is above background risk for the watershed.

3. Based on current data analysis, we strongly recommend against the intrusive remedial corrective action in the sediments adjacent to OFFTA that was proposed by federal (USEPA) and state (RIDEM) regulators at the 8 April 2004 meeting at Newport. Given the proximity of environmentally sensitive eelgrass beds to the OFFTA sediments and the lack of adverse effects of the sediments to the beds, we advise against performing a remedial excavation. In addition, there is little scientific evidence to justify support of a large investigative study of PAH source and fate in the OFFTA sediments. We concur with TetraTech's findings that PAH concentrations in marine sediment at the OFFTA site are decreasing over time and are typical of urban runoff. We would agree to pursue further study of this site provided the sampling itself does not risk degradation of the habitat.


W. W. Schultz
By direction

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