



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT

ENVIRONMENTAL RESEARCH LABORATORY
SOUTH FERRY ROAD
NARRAGANSETT, RHODE ISLAND 02882

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October 25, 1988

Douglas C. Allen
E.C. Jordon Co.
New Bedford Harbor Site Manager
261 Commercial Street
P.O. Box 7050
Portland, Maine 04112

Dear Mr. Allen:

This is in response to your request of EPA/ERL-Narragansett for a summary of the information available on the in-situ biodegradation of PCBs in New Bedford Harbor. Several papers authored by John F. Brown et al. from the General Electric Research and Development Center (Northeastern Environmental Science 3: 167-179 (1984); Science 236: 709-712 (1987); Environmental Toxicology and Chemistry 6: 579-593 (1987)) have reported the in-situ dechlorination of PCBs in sediments from the Hudson River and Silver Lake in Massachusetts. Also, Mark P. Brown and colleagues from the State of New York presented an alternative explanation to the PCB patterns in the Hudson River (Science 240: 1674-1675 (1988)) and John Brown et al responded (Science 240: 1675-1676 (1988)). These are the only reports that we are aware of in the peer reviewed scientific literature that describe in-situ anaerobic dechlorination. The findings of several of these studies are discussed in the attached memo from the Microbial Ecology and Biotechnology Branch, EPA/ERL-Gulf Breeze.

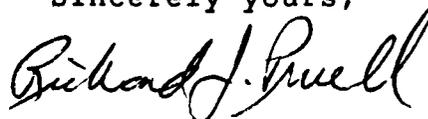
The 1987 Science article by the General Electric Group mentions that there is limited evidence for anaerobic PCB dechlorination in the sediments of New Bedford Harbor but provides no data. We also have a copy of a report to Mr. Paul Galvani of Ropes and Gray from S.J. Eisenreich of the University of Minnesota. This report presents the results of statistical analyses performed by Dr. Eisenreich on PCB data generated by John Brown et al. at General Electric. The report concludes that the analyses "support the hypothesis that weathering and/or degradation of PCBs is occurring in the sediments of the Acushnet River estuary upstream of the inner harbor". We feel that the data presented in this report are not conclusive and could mostly

be explained by the differential mixing of various Aroclors in the sediments of the estuary.

We have analyzed 12 sediment cores from the location of the Pilot Dredging Project in New Bedford Harbor for PCBs. These analyses did not specifically address the anaerobic dechlorination of PCBs as only the levels of Aroclor 1242, Aroclor 1254 and thirteen PCB congeners were measured. Visual inspection of the chromatograms, however, indicates little or no change in the relative peak heights with depth in the cores. This suggests, but does not prove, that the anaerobic dechlorination of PCBs is not a significant process at this site. We are presently in the process of rigorously studying the concentrations of numerous PCB congeners at several stations within the harbor to determine if anaerobic dechlorination is an important process in the New Bedford Harbor estuary. The results of these studies should be available in approximately six months.

In summary, we believe that insufficient data have been generated to conclusively determine if anaerobic dechlorination has occurred in the sediments of New Bedford Harbor.

Sincerely yours,



Richard J. Pruell, Ph.D
Research Chemist



James L. Lake, Ph.D
Research Chemist

cc: Charles Bering, EPA Region I
Frank Ciavattieri, EPA Region I
Leroy Folmar, EPA Narragansett
Walt Galloway, EPA Narragansett