



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OCEAN ASSESSMENTS DIVISION
HAZARDOUS MATERIALS RESPONSE BRANCH
c/o U.S. Environmental Protection Agency
Waste Management Division - HEE-6
J.F. Kennedy Federal Building
Boston, MA 02203
28 February 1991

Dr. Wayne Munns, Jr.
Science Applications International Inc.
EPA ERL, Narragansett
27 Tarzwell Drive
Narragansett, RI 02882

Dear Dr Munns:

Thank you for the Supplement to the Work/Quality Assurance Project Plan; for Risk Assessment Pilot Study; Naval Construction Battalion Center, Davisville, Rhode Island; Phase III - Quantification of Ecological Risks. The work plan proposes a total of 11 types of bioassays using three media to characterize the toxicity of landfill leachate flowing into Allen Harbor and of harbor sediments. This work will go a long way to characterizing the potential toxic responses of the system, but it is not clear how these data will be used to actually generate a "quantitative" risk assessment. NOAA has a concern that the bioassay testing series will result in a lot of discussion, and possibly argument, about the site being "bad" or "not bad," based on the numbers of tests showing toxic responses and the degree of toxicity found. These data would contribute to, but do not constitute, a quantitative risk assessment.

General Comments

(1) How the laboratory results will be interpreted in an ecological risk assessment of Allen Harbor is mentioned in only two sentences: "A quantitative model of ecological risk will be developed from data obtained in laboratory exposure-response models. In conjunction with information obtained in Phases I and II, this model will form the basis of the final risk assessment." There are several ways this interpretation can be accomplished and how it is proposed to be done needs to be described (cited by reference for a more or less standard approach or explained in more detail for an original approach). For example, the bioassay data should provide EC50-type measures of the range of the relative toxicity of the tested media for each of the species and endpoints used. These data, together with chemical analyses could be used to establish no-effect concentrations for the substances at the site, or simple measures of the dilution with clean media that would be required to eliminate the toxicity. Such data alone, however, do not constitute a risk assessment, which usually includes a description of the resources at risk, a quantitative discussion of the exposure of those resources to the toxic media, and some method of intergrating the exposure scenarios with the toxicity data for the substances present or for the media. None of these steps are straight-forward or have well-established approaches.

(2) There is no discussion in this work plan that existing data will be analyzed or that any other steps will be taken to describe the natural history of Allen Harbor. It is as important to have an understanding of the natural system that is being evaluated as it is to

know responses of test organisms to laboratory exposures. Step 6.3 in the U.S. Environmental Protection Agency guidance on ecological risk assessments is entitled "Describe the Site and Study Area" (U.S. EPA 1989. Risk Assessment Guidance for Superfund; Volume II: Environmental Evaluation Manual. EPA/540/1-89/001. March 1989. p. 49.), which is an indication of the importance of this task. The natural history information available for Allen Harbor and how it is proposed to be used should be described.

(3) The description of protocols to be followed in the bioassays was limited. Some specifications of bioassay procedures are missing (e.g., duration of exposure, technique for evaluating endpoints, conditions for maintaining test organisms, etc.). The work plan states that "established bioassays will be conducted," but it does not cite a method by reference. Undoubtedly, your group is composed of competent scientists, but that is all the more reason that they should know they need to identify their proposed techniques explicitly.

Specific Comments

(4) The work plan supplement proposes to use bioassays exclusively; some of the techniques used in previous phases (such as examination of lesions) have been dropped. Though it is by no means the final word on the subject, the EPA guidance material allows for techniques other than bioassays. While there are listed criteria for selection of bioassays in the study, there is no discussion of why bioassays were selected exclusively. It would be useful to understand why the work plan chose this approach.

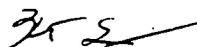
(5) The term "chronic mortality" is used as an endpoint for three bioassays. The meaning of the term as it used for these bioassays should be defined.

(6) Some of the proposed bioassays are more frequently encountered. Others, however, are not widely practiced and are ones in particular that should have their protocol cited by reference and described in some detail. These include the bioassays with *Mulinia*, *Cyprinodon*, and the bacterium, *Photobacterium*.

(7) The work plan states that water from seeps (leachate) and sediments will be collected from those locations displaying the highest contaminant levels and greatest toxicological threat. How this will be determined, however, is not specified.

Please contact me with questions or comments.

Sincerely,



Kenneth Finkelstein, Ph.D

cc: Carol Keating