

16 May 1997

MEMORANDUM FOR THE CHIEF OF NAVAL OPERATIONS (N4)  
COMMANDANT OF THE MARINE CORPS (L)

Subj: DEPARTMENT OF THE NAVY ENVIRONMENTAL POLICY MEMORANDUM 97-04; USE OF ECOLOGICAL RISK ASSESSMENTS

Ref: (a) EPA Ecological Risk Assessment Issue Papers (EPA/630/R-94/009)

Background. Ecological risk assessments (ERAs) are performed at contaminated sites to determine if contaminants are causing adverse ecological effects. They are typically performed as part of the baseline risk assessment process in the Remedial Investigation (RI) phase. Techniques for conducting ERAs continue to evolve. The risk estimate typically provided by an ERA is often more qualitative than the quantitative assessment provided by a human health risk assessment. In other words, standards for acceptable risk are lacking. Remedial program managers need to understand the limitations of the ERA process as it currently exists and the conditions for which ERAs may be valuable, as well as those conditions where ERAs may provide little value in the remedial decision.

ERAs are conducted for both terrestrial and aquatic environments, including the marine environment. Although the general approach for each type is similar, the complexity and cost involved in the latter can be significant. Because so many Department of the Navy (DON) installations are located on bays and estuaries, the issue of marine ERAs is a particularly important one for DON. These ERAs primarily focus on the risk to ecological resources posed by contaminated sediments. Unlike terrestrial risk assessments, where ERAs often play a supporting role to human health risk assessments, marine assessments are driven mostly by ecological concerns (with the exception of recreation/subsistence fishing and shellfishing concerns).

Since there is no standard level of protection for ecological receptors, ecological risk assessment experts must continue to work closely with remedial project managers. In determining whether remedial action is necessary, the remedial project manager considers the eight "balancing criteria" in the National Contingency Plan, as well as the protection of ecological receptors. In accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), EPA can only require potentially responsible parties to take response action if it can support a finding of "imminent and substantial endangerment." Neither CERCLA nor the National Contingency Plan address what is necessary to support an endangerment finding. As a matter of policy, EPA has stated that it does not want to spend limited resources where the expected adverse ecological impact is minimal. The presence of an observed or predicted effect may or may not mean that there has

been or will be an adverse effect that constitutes a significant ecological risk. EPA discusses “ecological significance” in reference (a).

Applicability. For purposes of this memorandum, the term environmental restoration includes site assessments, investigations, characterizations, cleanups and related management activities at both active and closing bases. The term relates to environmental restoration activities involving both petroleum (past releases only) and hazardous substances performed under CERCLA, the Resource Conservation and Recovery Act (RCRA), and applicable state laws. Environmental restoration does not include clearance of unexploded ordnance or building demolition and debris removal which are otherwise authorized under the Defense Environmental Restoration Program (DERP).

#### Key Issues.

- To date, ERAs have not done a good job at distinguishing between the risk posed by contaminants originating at Navy sites versus those from other sites. This is important because most Naval installations are located in areas with significant non-Navy contaminant sources.
- Historically, the scope and problem formulation of ERAs have not been well defined and this has led to large, unstructured efforts. This was due, in part, to soils and sediments usually showing exceedances of some contaminant concentrations indicative of the *potential* for risk. This in turn leads to regulatory requests for a large suite of additional procedures including toxicity tests, organism tissue sampling programs, community surveys, and water column sampling programs.
- Marine ERAs pose a number of significant challenges for DON and our partners in regulating agencies. Marine ERAs may not provide the type of specific risk information that readily supports decision making because they address complex scientific issues whose resolution is often beyond the scope of available techniques and methodology.
- Marine ERAs have not typically addressed the fundamental issue of whether natural attenuation of the contamination via deposition or sediment dispersion (i.e. *passive* remedial alternatives) is ongoing or likely. This is a difficult scientific question to address. However, it is important from the point of view of evaluating remedial alternatives.
- Despite the risk findings of marine ERAs, few realistic *active* remedial options are available. For example, sediment excavation may cause more harm to the environment than taking no action at all. In addition, the cost of such remedial actions may outweigh the environmental benefit.

The net result of these considerations is that expensive, complex studies are often performed whose findings have little impact on final remedial or no action decisions.

Policy. Regulators may request Navy and Marine Corps installations to conduct terrestrial and/or marine ERAs for areas of contaminated sediments adjacent to Naval installations. Before agreeing to studies related to ERAs, DON officials need to ensure that these studies will provide information relevant to the remedial decision process. Absent a human health risk, it should be determined as early as possible in the ERA whether an active remedial action would likely be more harmful to the environment than a passive remedy. In such cases, resources to be used for an ERA may be more effectively applied to other cleanup program priorities. In particular, given that active marine remedial actions are unlikely in most cases, large scale sediment and water column sampling programs, including extensive use of toxicity tests, should be carefully scrutinized and, if required, the end objectives agreed upon before the ERA is initiated.

ERAs should be conducted at the screening level using best available, cost effective chemical and biological screening technologies. If analyses at the initial screening level show contaminant concentrations below levels of concern, then a finding of no further action will likely be an acceptable Record of Decision (ROD). These screening levels should be regional or national levels agreed to in advance with regulators. If screening determines areas of high contamination or significant toxicity, then a more thorough ERA may be necessary to define the spatial distribution of the contaminants, evaluate what populations are at risk, and determine contaminant mobility and bioavailability. In the latter case, it may be more appropriate to do an initial cost/benefit analysis of an active or passive remediation before deciding on an expensive site specific ERA.

The following policies apply to ERAs considered or undertaken within DON:

a. ERAs should focus on the risk to ecological receptors from past and current exposure pathways from DON sites, but should also consider the contaminant loadings from all significant sources and pathways. This will allow the development of a mass balance for significant contaminants in order to assess both Navy and non-Navy contributions. The ability to distinguish between Navy and non-Navy sources can be greatly enhanced by using rapid screening technologies to accurately determine the spatial distribution of contamination. This will require some sampling outside the sphere of direct influence of Naval facilities and/or the use of external data bases to determine background or ambient levels for a region.

b. Source control and Best Management Practices (BMPs) should be used to prevent additional contaminants from entering the environment.

c. Sediment chemistry and other sampling programs should focus primarily on identifying the potential sources of contamination and delimiting the areas of contaminated sediment (and fish and/or shellfish if human consumption is an issue). These sampling programs should make use of advanced chemical and biological screening technologies, data quality objectives and statistical procedures to minimize overall sampling requirements.

d. Large scale water column sampling programs should not be warranted under most circumstances unless there is a major issue regarding flux of a particular contaminant into the water

column or major sources of contamination need to be determined. In such cases, tightly defined water column sampling may be necessary.

e. If long term monitoring is required by regulators, well defined exit criteria must be part of the agreement. Unless the Naval installation is clearly the only source of contamination, DON officials should avoid monitoring programs whose exit criteria involve monitoring until contaminant concentrations decline to a specified level.

f. Where risks are found to be significant during initial screening, an assessment of natural attenuation should be included as part of the ERA.

g. The scope of ecological risk assessments should be approved by a senior Navy or Marine Corps manager directly responsible for environmental restoration matters in consultation with DON ecological risk assessment experts.

h. If an ERA is initiated, DON officials should not complete multiple planning, data collection, and report preparations solely as a result of changes in regulatory personnel.

i. CNO (N4) should take action to develop standard ERA procedures and a formal process for incorporating ERA refinements and lessons learned into subsequent ERAs.

j. During the January/February cleanup program In Progress Review (IPR), the amount of ER,N funds spent on ecological risk assessments during the past fiscal year shall be identified.

k. Disagreements on the use of ecological risk assessments should be brought to the immediate attention of COMNAVFACENGCOMHQ, CNO (N45), CMC-LFL, and OASN (I&E), as appropriate.

The points of contact in OASN (I&E) are Mr. Paul Yaroschak, 614-1282, for environmental restoration policy matters, and Mr. Roger Normand, 695-3457, for programming and budgeting matters.

(original signed)

ROBERT B. PIRIE, JR.

Copy to:  
AGC (I&E)  
CNO (N45)  
HQMC (CMC-LFL)  
COMNAVFACENGCOM (40)