

N00102.AR.002005  
NSY PORTSMOUTH  
5090.3a

LETTER AND COMMENTS ON BEHALF OF SEACOAST ANTI POLLUTION LEAGUE  
REGARDING HUMAN HEALTH RISK ASSESSMENT REPORT AND FINAL HUMAN HEALTH  
RISK ASSESSMENT FOR OFFSHORE MEDIA NSY PORTSMOUTH ME  
12/22/1998  
LEPAGE ENVIRONMENTAL SERVICES

# Lepage Environmental Services, Inc.

P. O. Box 1195 • Auburn, Maine 04211-1195 • 207-777-1049 • Fax: 207-777-1370

December 22, 1998

Peter Vandermark  
Seacoast Anti-Pollution League  
P. O. Box 1136  
Portsmouth, New Hampshire 03802

Subject: Review of Human Health Risk Assessment Documents

Dear Mr. Vandermark:

As you requested, we are transmitting comments to the Seacoast Anti-Pollution League (SAPL) concerning review of two human health risk assessment documents. Dr. David Brown briefly reviewed the March 4, 1994, *Human Health Risk Assessment Report*, which focuses on on-shore risks and the May 10, 1994, *Final Human Health Risk Assessment for Off-Shore Media*, which addresses risks offshore. Dr. Brown's comments are enclosed.

While neither of these documents were up for review and comment, as the Navy considers both of them to be final, Dr. Brown's review is timely. In the October 1998 *Proposed Plan for Interim Action at Operable Unit 4*, the Navy has proposed conducting additional monitoring in the areas offshore of the Shipyard. It would be efficient and cost-effective for the Navy to collect sufficient data now as part of the proposed monitoring to resolve the issues Dr. Brown has identified, rather than wait for some time in the future when funding may be less certain.

Please give me a call at 207-777-1049 if you have questions regarding the enclosed comments.

Sincerely,



Carolyn A. Lepage, C.G.  
President

Enc.

cc: Iver McLeod, Department of Environmental Protection  
Meghan Cassidy, Environmental Protection Agency  
David Brown, Sc.D.  
Marty Raymond, Portsmouth Naval Shipyard

December 20, 1998

Carolyn A. Lepage, C.G.  
Lepage Environmental Services, Inc.  
P.O. Box 1195  
Auburn, Maine 04211-1195.

Subject: Human Health Risk Assessments review and need for update

Dear Ms. Lepage:

In response to a request from the Seacoast Anti-Pollution League (SAPL), I have reviewed two human health risk assessment documents. The Navy has recently proposed conducting additional monitoring in the areas offshore of Portsmouth Naval Shipyard. However, the focus of the monitoring, as proposed, will be on risks to ecological receptors, not on human health risks. Indeed, the October 1998 *Proposed Plan for Interim Action at Operable Unit 4*, which presents the Navy's intent to conduct additional monitoring, states that, while ingestion of seafood exceeded regulatory risk guidelines, concentrations of chemicals detected in seafood in the Lower Piscataqua River are equal to or lower than other areas of coastal Maine. The Navy also cites fish advisories and shellfish bed closures

This review is timely because the proposed additional monitoring provides an opportunity to address human health concerns related to historic and current releases from the Shipyard. The Maine Department of Environmental Protection has clearly stated (letter from Iver McLeod to Fred Evans dated September 30, 1998) that the State of Maine intends to see adverse impacts to the Piscataqua River addressed so that bans and advisories are no longer necessary. In addition, for reasons outlined below, the 1994 human health risk assessments should be updated to reflect current methods and data.

I reviewed two documents, one covering risks in on-shore areas, the other in the off-shore environment. The March 4, 1994, *Human Health Risk Assessment Report* focused on on-shore risks. The May 10, 1994, *Final Human Health Risk Assessment for Off-Shore Media*, as the title suggests, addresses risks offshore. Risks are delineated for soil and groundwater but not for sediment or surface water from on-shore ponds. Air risks, although present, are not attributed to the site contaminants. Off-site risks are delineated for biota and sediment but not surface water.

These assessments are based on data available prior to 1994 and prior to completion of the April 1997 *Revised Draft Final Estuarine Ecological Risk Assessment*. After review of both 1994 risk assessment reports, it is clear that the human health risk needs to be updated to more closely reflect current information. Also, the proposed monitoring currently under consideration can easily obtain additional information on exposures that should be reviewed for human health risk assessment. These new measurements are particularly important in expansion of the off-shore risk assessment.

The characterization of the toxic potential of on-site contaminants for both 1994 assessments is based on 1989 USEPA Guidance. I reviewed the current reference doses on the EPA Integrated Risk System database for several of the Chemicals of Concern at the site and find that there are updated reference values that are substantively different from those used in the RA. Some are higher while some are lower. Moreover, the methodology currently recommended for determination of risks from polycyclic aromatic hydrocarbons (PAHs) has been modified. In some cases this change will increase the overall risk and in others it will reduce the risk estimate. Most importantly, the changes in both methodology and PAH reference values could potentially alter the exposure pathways of concern for certain chemicals.

Failure to address these methodological changes and the expanded data on exposures and pathways and additional sampling results compromises the appropriateness and effectiveness of the future remedial actions at the site. As the assessments currently stand, the only substantial risk identified is lead

exposures in different pathways. The 1994 assessment concluded that "lead is the only contaminant which shows levels in off-shore media that is ...elevated over the other areas of the estuary and for which a source has been identified in the on-shore study." However the risk estimates were exceeded for ingestion of lobsters, mussels and flounder for five other inorganics, ten pesticides, four PAHs and total Arochlors.

### Recommendations

I believe it is timely and appropriate to revisit the 1994 risk assessments ,to collect additional data as part of the Navy's proposed monitoring of the offshore area and to update the assessments.

Points that should be expanded in updating the human health risk assessment are:

- The use of lobster, mussels and flounder as surrogates for all exposure pathways and estimates of risk for the multiple human consumption pathways occurring in the estuary limits the risk management options. The data and analysis currently available should be adequate for a fuller evaluation of the human ingestion risk for other species. A more complete analysis would provide a more focused public health message to those consuming seafood.
- The rationale for ruling out all compounds except lead as site-related is based on comparisons of chemical contamination concentrations before 1994. The current data and analysis should be evaluated to see if this rationale is still supported
- USEPA has updated the toxicity measures and the methodology for application of these measures to differing pathways. The conclusions expressed in the *Human Health Risk Assessment for Off-Shore Media* should be revisited to determine if they are still valid.
- Arsenic is responsible for an unusually high level of risk in the assessment. Is this consistent with current thinking about the toxicity of arsenic?

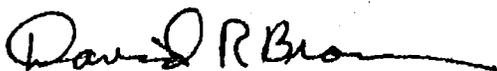
Other issues also may be found when the current data set and ecological evaluation is compared to the 1994 risk assessments. In particular PAH's in fin fish and benthic feeders in the lower estuary should be evaluated.

Both of the human health risk assessments reflect the state of the art in human health risk assessment the early 1990's, but it is possible with current techniques to more completely analyze the data. That, together with the additional data on sampling collected since 1994 and the modified toxicity values, will providing a better picture of potential human health risks and improve remedial action decisions. It is likely that the risk pathways will be changed rather than that the overall risk will be increased.

Presently the human exposures are limited by state advisories against consumption and shell fish bed closures. These closures will not continue after bacterial contamination in the river is ameliorated. At that time the chemical contamination will need to be evaluated and reduced to protect public health.

A review of the Risk Assessments and preparation of an addendum would be sufficient to upgrade the human health risk characterization. I recommend that an analysis of the Human Health Risk Assessment be undertaken to address the recommendations above.

Sincerely



David R. Brown Sc.D.  
Public Health Toxicologist  
65 Bulkley Avenue North  
Westport, Connecticut 06880  
203 259-5698  
203 256-8799 fax.