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NSY PORTSMOUTH  
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LETTER REGARDING U S NAVY RESPONSES TO U S EPA REGION I COMMENTS ON  
RADIOLOGICAL SAMPLING OF WATER, SEDIMENT AND BIOTA NSY PORTSMOUTH ME  
3/22/2001  
U S EPA REGION I



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 1  
1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

March 22, 2001

Mr. Jeff Brann  
Director, Radiation Health  
Portsmouth Naval Shipyard  
Portsmouth, NH 03804-5000

Re: Navy's Responses to Comments on  
Results of Radiological Sampling for Water, Sediment, and Biota  
Portsmouth Naval Shipyard  
Kittery, Maine

Dear Mr. Brann:

The United States Environmental Protection Agency (EPA) has reviewed the Navy's responses to our comments on the draft document entitled "Results of Radiological Sampling of Water, Sediment, and Biota" for Portsmouth Naval Shipyard in Kittery, Maine. EPA's comments were submitted to the Navy in a letter dated October 2, 2000. The Navy's responses were forwarded with a letter dated January 9, 2001.

The comments submitted on October 2, 2000 were generated by staff at EPA's National Air and Radiation Environmental Laboratory (NAREL). NAREL also reviewed the responses provided by the Navy.

EPA's comments on the Navy's responses are provided in Attachment I to this letter.

If you have any questions regarding these comments, please contact me at (617)918-1387.

Sincerely,

A handwritten signature in cursive script that reads "Meghan F. Cassidy".

Meghan F. Cassidy  
Remedial Project Manger

Enclosure

cc: Marty Raymond/PNS  
Iver McLeod/ME DEP  
Vicki Lloyd/EPA NAREL

## ATTACHMENT I

The following are EPA's comments on the Navy's responses to our comments on the draft document entitled "Results of Radiological Sampling of Water, Sediment, and Biota" for Portsmouth Naval Shipyard in Kittery, Maine. EPA's comments were submitted to the Navy in a letter dated October 2, 2000. The Navy's responses were forwarded with a letter dated January 9, 2001.

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1. In this specific case EPA's concerns with the procedure didn't appear to make a difference. However, EPA notes that there are too many unknowns to categorically accept this procedure. It is possible that it provides the correct answer, but it is also possible that it doesn't without additional information. That additional information would be the uranium concentrations at a minimum.
2. No comments.
3. The Cs-137 concentrations do not seem to be correlated specifically to any area. Furthermore, the concentrations show significant uncertainty, and are probably very close to the detection limit. This does not represent a significant concern at this time.
4. The Navy should discuss, in some detail, the typical cesium-137 levels found in the environment from NCRP 50 in the report.
5. No comments.
6. If a sample shows detected gross alpha above expectations, and no action is taken except to simply state natural sources with no additional data to back the statement up, then why was the sample collected in the first place? Although the likely source is naturally occurring radionuclides, some type of follow-up would have seemed appropriate.

7. The response does not adequately address the issue. First, the Navy appears to be contending that potassium-40 is the sole source of beta activity in the samples. Section 5.3 of the report states, "Examination of Appendices D and H indicates that a correlation exists between potassium-40 levels observed by gamma spectrometry and gross beta levels. As discussed above, potassium-40 emits both gamma and beta radiation. Of the 40 samples with gross beta activity levels above 100 pCi/L, 38 had detectable levels of potassium-40. The correlation between potassium-40 levels and gross beta activity provides confirmation that the beta activity in the groundwater is due to natural radioactivity." This seems like an attempt to indicate that the potassium-40 levels correlate and confirm the beta activity is due to potassium-40. However, this cannot be confirmed statistically, although a PORTION of the beta activity can be attributed to potassium-40. What is the REMAINING portion of the beta activity? For example, Appendix D indicates that K-40 concentration in well JW-13S is 261 pCi/L and Appendix H indicates that the gross beta concentration in JW-13S is 660 pCi/L. Since beta particles are emitted in about 90% of K-40 disintegrations, the effective beta from K-40 is 235 pCi/L. Therefore, there is a remaining 425 pCi/L gross beta which is not accounted for. Again, if the assessment is simply going to assume that gross beta is detected, and a naturally occurring radionuclide is also detected, thus the beta is all natural, then there was no need to perform this sampling. Additional follow-up is warranted, including additional sampling and analyses which are more sensitive and may detect additional nuclides.

8. No comments.

9. No comments.

10. If the MDC values for gross alpha were a little more reasonable (perhaps reduced by a few orders of magnitude), the issue of radium-226 may not be a problem, with or without costly analysis. However, the fact is that with the extremely elevated radium-226 and gross alpha detection limits, there is no way to say that radium-226 is or is not present. It is indeterminable based upon the data presented. Therefore, although the reviewer agrees that radium-226 is not an issue for the Navy's nuclear propulsion program, the navy's conclusion "b" in the final paragraph for section 9.0 cannot be made since radium-226 analyses were not sensitive enough to detect potential spread of contamination to water.

11. No comments.

12. The Navy's response addresses the concern and potential cause of elevated gross alpha. However, what does the navy plan to do? MDC values for gross alpha as shown in Appendix H are essentially useless. No conclusions, other than there apparently is not contamination of alpha emitters at levels greater than several thousand pCi/L, can be made.