Message

From: Brasaemle, Karla [Karla.Brasaemle@TechLawInc.com]
Sent: 7/23/2020 8:59:27 PM
To: Praskins, Wayne [Praskins.Wayne@epa.gov]
Subject: RE: Initial questions on the draft Parcel F submarine pen report

Hi Wayne,

Please see below.

Karla Brasaemle, P.G.,
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From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Wednesday, July 22, 2020 7:50 PM
To: Brasaemle, Karla <Karla.Brasaemle@TechLawInc.com>
Subject: Initial questions on the draft Parcel F submarine pen report

Karla – I've reviewed through Section 5. (Most of your comments are on Section 6.) Here are my initial questions:

1. Section 2.5 says "ROCs from nuclear and atomic weapons tests would include a mixture of fission products, activation products, and actinides. 137Cs and 239Pu were selected as ROCs most likely to be present and most likely to be detected as contamination at HPNS." Do you know or can you point me to a rationale for the selection of Cs-137 and Pu-239 as ROCs associated with weapons testing?

   KB: These radionuclides are specifically mentioned in Section 6.3.5 of the HRA (page 6-32). I found an on-line article that states that there are more than 100 fission products from Pu-239 (or U-235); some of them are listed, along with their half-lives: https://www.sciencedirect.com/topics/earth-and-planetary-sciences/plutonium-239

2. Also in Section 2.5 it says "Radioactivity from contaminated ships is most likely to occur where contaminated ship surfaces could come into contact with drydocks or piers." Do you agree? Are they saying that physical contact between the ship hull and drydock/pier is the most likely cause of contamination?

   KB: Yes, that is what the text is saying – that direct contact is the most likely cause of contamination. I do not agree completely. Direct contact is only one mechanism for contamination. At an Army research facility in Massachusetts (AMTL), the investigation team (including me) found that depleted uranium that was stored on wood pallets had contaminated the concrete beneath the pallets, indicating that proximity is sufficient. At Hunters Point, there were numerous attempts to decontaminate the Operation Crossroads ships and this process could have resulted in contamination of nearby ships. I read (on-line) about Operation Cross-roads and all of the contamination of personnel that happened when they were attempting to decontaminate ships near the test site. As a result, the ships were sent to Hunters Point.

3. Section 2.4 does not mention previous investigations of drydock 6 described in the HRA (mentioned in Tables 6-6 and 6-7 and Sections 8.3.2.11 to 8.3.2.12 in the HRA). Nor do I see mention of these previous investigations in the Work Plan. An oversight?

   KB: Yes, this is an oversight.

4. Section 3.3.5 of the report says: "The IL for alpha/beta static measurements is 50 percent of the most conservative (i.e., lowest) release criteria provided in Table 1 for alpha- and beta-emitting radionuclides." Why

is 50% used? Aren't static measurements usually compared directly to RGs (i.e., 100% of the release criteria)? And is this statement consistent with Section 4.3.6 which says "At the completion of each two-minute count, the alpha and beta results were recorded and compared to the release criteria presented in Table 1.

KB: Table 1 lists specific radionuclides, but as it is possible that other alpha emitters (e.g., U-235, or daughters of Ra-226, U-235, or Pu-239, etc.) or beta emitters, could be present. To be conservative (i.e., in case there are other radionuclides present, they are using an IL of 50% of the lowest release criteria so that further investigation would be triggered.

5. Section 3.4.4 says "The alpha background on concrete ranged from 3.5 cpm to 10.5 cpm." In Table 4, I see a range from 23.1 to 34.5 cpm. Shouldn't these match? Same with the alpha efficiency values and beta background values. Section 3.4.4 and Table 4 appear to differ.

   KB: Yes, I think EPA should ask the Navy to explain why the text differs from Table 4.

6. Section 3.4.7 of the Report says "Concrete samples were collected ... to support the characterization of locations with identified elevated alpha activity... Samples were analyzed for 137Cs and 226Ra by gamma spectroscopy analysis" Why measure Cs137 since not an alpha emitter?

   KB: Because Cs-137 is an ROC for this area. This is a gamma spectroscopy analysis so it doesn't have to be limited to alpha emitters. This section also states that analyses were done for Pu-239 and Sr-90. The text could probably be clarified.

7. Section 4.3.1 says "A concrete pad in Parcel C was used as the RBA for alpha/beta measurements. This RBA was selected because the concrete was most similar in nature to the concrete on the submarine pens, and it was non-impacted because it was constructed after the radiological operations occurred, as described in Section 2.2." I don't see any discussion of the RBA in Section 2.2. Do you?

   KB: No, Section 4.3.1 is the first mention of this specific RBA. Also, if the concrete is newer than the concrete used to construct the sub pens, it probably came from a different source and likely has different background concentrations. (We didn't comment on this issue because it seems like there probably isn't unimpacted concrete the same age as the sub pen concrete).

8. Section 4.3.1 says: "A small concrete pad adjacent to SU 3 was used as the RBA for gamma measurements." I see a footnote in Table 5 that says "concrete in Parcel C" was used as RBA for static gamma. Shouldn't these statements match?

   KB: Yes, this is confusing. Field Change Request (FCR) 004 in Appendix B explains what they did to generate unimpacted concrete nearby. The text should be revised to clarify which RBAs were used and for what.

9. Section 5.3.2 of the Work Plan says "Concrete Background Area: The reference area behind Building 810 (Figure 1) will be used to collect gamma instrument-specific background levels." Is this inconsistent with the report?

   KB: Yes, they moved the RBA. This should be discussed in Section 1.2 and a FCR should be provided.

10. Section 5.4.5 of the Work Plan says "The IL for gamma scan measurements is the average of gamma scan measurements for a similar material in an appropriate background area plus three standard deviations." Section 3.3.5 of the report says "The IL for gamma scan measurements is the average of gamma scan measurements for a SU plus three standard deviations (FCR-003; Appendix B)." The latter (referring to the SU, not the background area) is less conservative?

    KB: Yes, using the SU to generate the IL is less conservative because the data set would include contaminated areas. It may have been necessary to do this in some cases (e.g., vertical surfaces near a corner) because of "shine." However, where possible the RBA should have been used to generate the IL.

11. The last paragraph in Section 4.3.5 says that they collected about 20 alpha/beta statics in each of the three SUs. That is consistent with Figures 37 and 38. The paragraph (and Table 7) indicate that 2,148 locations exceeded the alpha scan IL . So they only did alpha/beta statics at a fraction of locations exceeding the alpha/beta scan IL? The following statement is offered to explain why: "This investigation approach was selected because the scan MDC for alpha radiation exceeded the release criterion resulting in a large number of scan results that exceeded the IL in each SU." Are they saying that most exceedances of the scan IL were not actual exceedances (i.e., the MDC exceeded the IL)?

    KB: That appears to be what the text is saying. They should have had a longer count time to lower the MDC. Since they did not, then the MDC exceeds the IL. This doesn't mean, however, that there isn't contamination in some areas where the MDC exceeded the IL, but such contamination cannot be unambiguously detected unless an instrument with a lower MDC is used.

12. Also in Section 4.3.5, is the statement that 20 statics were collected inconsistent with Section 6.2.2.3 and Figure 39 which indicate 48 alpha/beta statics for SU3?

    KB: Section 6.2.2.3 states that 54 alpha/beta statics were collected in SU 3 and Table 8 indicates that 54 systematic alpha/beta statics were collected in SU3. Only 48 static locations are shown (by counting the location IDs) on Figure 39. Not sure why there is a discrepancy of 6. Table 9 indicates that 59 biased alpha/beta statics were collected in SU 3, so the difference is not related to systematic vs. biased statics. It does not appear that only 20 statics were collected anywhere (based on Tables 8 and 9), so it appears that Section 4.3.5 is incorrect.