HPNS RADIOLOGICAL BUILDING RG EVALUATION (and other topics)
Update, August 10, 2021

Recent history

- August 20, 2020: EPA letter stating EPA's inability to support Navy's RESRAD BUILD (RRB) risk estimates and concur with the Navy's protectiveness determination
- March 29, 2021: first DRC-level meeting
- April 22, 2021: Navy submittal of new RRB simulations responding to concerns identified in EPA's August 2020 letter
- July 8, 2021: second DRC-level meeting
- July 15, 2021 and July 20, 2021: EPA risk calculations to Navy and Navy comments
- **July 22, 2021: third DRC-level meeting**
- **July 23, 2021: Navy sent "pre-draft final evaluation" of building RGs based on RESRAD BUILD calculations**
- **August 4, 2021: EPA response to Navy's 7/20 comments, and summary of our outstanding concerns with the Navy's RRB calculations (enclosed)**
- **August 6, 2021: Update to OSRTI and FFRRO**

EPA evaluation

- **Most recent EPA calculations show risks associated with remediation goals for most radionuclides of concern in the risk range (< 1 x 10-4) if key assumptions verified.**
- **Key obstacle is how to verify assumptions: i) removable fraction and ii) assumed area of contamination**

Other issues

- Planned PEER meeting with Carlton Waterhouse
- Strontium-90 exceedances

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Subject:	HPNS building RGs
Date:	Wednesday, August 4, 2021 3:36:00 PM

Derek –

Thank you for your comments on the building RG risk calculations I provided on 7/15/21. You provided comments on 7/20/21

1. We agree with the comment that the exposure concentrations used to estimate risk from the external pathway should decrease to reflect the amount ingested. To avoid double counting, we will adjust our calculations accordingly. We expect this change to reduce the external risk estimates by about 20%.

2. We agree with the comment that assuming a future resident remains in the corner of an impacted building for the entire 26-year exposure period is overly conservative. The calculations we provided on 7/15 include risk estimates for the external radiation pathway for three receptor locations (corner, center, and average). We will use the average receptor location, which we expect to reduce the external risk estimates by roughly 10 – 20%.

3. We have considered the Navy comment proposing to reduce the assumed area of contamination to the floor and two walls. We have not changed our calculations but agree that assuming contamination on all four walls is a conservative assumption for most of the HPNS buildings. We discuss this comment further below.

4. We still cannot concur with the Navy's RESRAD BUILD risk estimates for the evaluation of HPNS building RGs. The Navy's RESRAD BUILD risk estimates are based on a number of conservative assumptions. However, after reviewing the Navy's most recent submittal, we are: i) unsure whether appropriate slope factors are used; ii) unclear on the rationale for the assumed exposure time for external radiation (15.3 hours daily), and iii) are unclear whether assumptions about receptor location (center), building size (10' x 10'), and the extent of any residual contamination (i.e., number of walls and whether to include ceiling) represent a reasonable maximum exposure scenario.

5. We understand that there are about 26 radiologically impacted buildings at HPNS where retesting is planned. The buildings vary greatly in size (from hundreds to tens of thousands of square feet), construction materials, and past usage of radiological materials. Given the range of conditions and uncertainty about how the buildings may be redeveloped as residences, it is challenging to select modeling assumptions which reflect conditions appropriate for all of the buildings but do not overestimate risk for a majority of the buildings.

   We believe that the best approach is to use reasonably conservative, but not worst-case modeling assumptions, and to verify key assumptions during retesting. That is the approach described in my 7/15 email. Two key assumptions made in EPA's risk calculations (and in the

Navy's RESRAD BUILD calculations) are: the maximum removable fraction (20%) and the maximum extent of any residual contamination (32m2 in EPA's 7/15 calculations; 21m2 in the Navy's most recent calculations). Verifying that contamination is limited to the assumed amounts may require lower Minimum Detectable Concentrations (MDCs) than described in the retesting workplans to demonstrate areas assumed to be uncontaminated are not contributing significant risk. We suggest that EPA and the Navy further discuss how these assumptions could be verified during retesting. If agreement can be reached, EPA should be in position to support Navy plans to begin retesting of the HPNS buildings. EPA's final determination about the long-term protectiveness of the buildings would be made after radiological retesting data are available. We supported a similar approach for the soil retesting work.

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