

## Hickman, John

---

**From:** Sokolsky, David [DDS2@pge.com]  
**Sent:** Monday, July 16, 2012 12:28 PM  
**To:** Hickman, John  
**Cc:** Sharp, Loren; Baldwin, Thomas (DCPP); Albers, John P; Joe Weismann (jweismann@usecology.com); Barley, William H; Kristofzski, John; Chadwick, Jack; Sherman, Robert  
**Subject:** HBPP RESPONSES TO NRC RAIs FOR 3RD EXEMPTION REQUEST  
**Attachments:** HBL-12-002-Encl-REV-CLEAN.doc; Att 3\_HBPP ADR#3\_RESRAD Files\_Complete\_070212.pdf; PG&E\_Alt Disposal Request#3\_Int-Ext Dose\_Revised061912.xlsx

John Hickman,

Below are the PG&E responses to the 4 NRC RAIs that were emailed to PG&E on June 14, 2012 (from John Hickman to David Sokolsky and Robert Sherman). As a result of the responses, PG&E had to revise some information contained in the Enclosure and Attachment 3 to PG&E Letter HBL-12-002, dated May 2, 2012. The revised Enclosure and Attachment 3 are attached to this email, both as a mark-up version and a clean version. The Summary and Detailed RESRAD Reports that are referred to in Attachment 3 are attached to this email. Finally, an EXCEL spreadsheet is also attached to this email to clarify the response to RAI #3 below.

1. The concentrations used in RESRAD appear to be inaccurate. Specifically, the RESRAD analysis does not appear to include the inventory in the water being disposed, only the solid waste. In addition, the dilution factor for the concentrated scenario appears to be based on a volumetric dilution rather than a mass based (which is what would be appropriate for calculating the dilution of pCi/g).

Response: As a clarification, water shipped from HBPP to USEI will be completely solidified using clay prior to its placement in the landfill cells. Therefore, it will be physically identical to a 'solid waste' upon final disposal.

The NRC is correct that the RESRAD 'baseline case' did not include the volume of water in the HBPP waste steam that is proposed for solidification at USEI. A revised RESRAD run was performed with the correct concentrations, resulting in a postulated dose of 3.82E-02 mrem (@ t=246.9 yrs), compared to a dose of 2.44E-02 mrem as stated in the May 2, 2012 submittal, PG&E letter HBL-12-002. The Summary and Detailed Reports are provided in revised Attachment 3 to HBL-12-002, and are attached to this email. Please note that the 'Concentrated' RESRAD case provided to the NRC in a May 15, 2012 email (from Robert Sherman to John Hickman), did include the water volume as part of the source term. We are also attaching to this email an Excel spreadsheet <PG&E Alt Disposal Request#3\_Int-Ext Dose\_Revised061912.xls> that provides a summary of all source term derivations and dose calculations.

The NRC's comment regarding the use of volumes for the dilution factor (DF) in the RESRAD Concentrated Case is acknowledged. If waste disposal mass values are instead used to determine the DF, a value of 0.0228 is calculated ( $5.5E+6$  lb [HBPP incoming waste] /  $1.21E+08$  lb [2-mo Avg for USEI]). By comparison, a DF using volumes ( $2831.7$  m<sup>3</sup> /  $73,080$  m<sup>3</sup>) is equal to 0.0387. Although the volume-based DF is more conservative, i.e., less source term dilution, HBPP will apply the mass-based DF if the NRC requests that it be done. Derivations of the DF's are provided in 'Conc Resrad Model' Tab in the attached Excel spreadsheet.

2. The staff has been unable to reproduce the internal worker dose calculation. You did not provide details of these calculations, so it is unclear if you changed a parameter from the previous submittal. In order to clarify the discrepancy please provide more details on these calculations.

Response: Details of the Internal Dose calculations are provided in the 'Int-Ext Dose Assessment' tab of the attached Excel spreadsheet. Internal dose calculations are provided in Section III, and Notes/Assumptions are provided in Section V. The same method was used in this submittal as in previous submittals.

3. A few of the parameters used in Microshield are different than those assumed in the previous request. Please clarify the reason for the change in:
- distance from stabilization tank for stabilization worker
  - the area waste is spread over for cell operator

Response: (a) The orientation of the stabilization operator is modeled to be at the corner of the USEI stabilization cells, which replicates the actual position of the excavator. This represents a refinement to the prior model to better reflect actual field conditions at USEI. (b) The size of the 'lift' in the Microshield Model for the Landfill Cell Operator is 6 ft x 12.5 ft x 3 ft deep as indicated in the May 2, 2012 alternate disposal request, PG&E letter HBL-12-002, and is identical to that which was submitted in prior PG&E alternate disposal requests, contained in letters HBL-10-003, dated April 1, 2010, and HBL-11-006, dated June 7, 2011. We believe the 6'x12.5'x3' model is appropriate because it represents a volume of soil that would consistently be irradiating the cell operator as he compacts waste in the landfill.

4. Apparent typographical errors in the text:
- p6 1st paragraph, the reported internal doses are an order of magnitude lower than in the table.
  - p7, the RESRAD dose should be 2.44 E-2 not 2.24 E-2.

Response: The typographical errors in the text are acknowledged and corrected in the revised HBL-12-002 Enclosure that is attached to this email.

It is our understanding that you will place this information on the HBPP docket.

Let me know if this information is sufficient for the NRC to close out the RAIs. If the NRC wishes to discuss these RAIs in more detail, PG&E will be pleased to participate in a teleconference.

**David Sokolsky**  
HBPP Supervisor of Licensing  
415-973-5024 office  
707-601-6703 cell