



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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October 4, 2006

Mr. Robert F Lewandowski, P.E.  
Navy Base Realignment and Closure  
Program Management Office, Northeast  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303

Subject: Technical Memorandum of Risk Assessment Evaluation  
Site 5 - Fire Training Area Groundwater (OU 2)  
May 2006

Dear Mr. Lewandowski:

Thank you for the opportunity to review and offer comments on the Technical Memorandum of Risk Assessment Evaluation for Site 5 - Fire Training Area Groundwater (OU 2). The document has been reviewed and following comments are provided for your consideration.

1. Executive Summary. Throughout the summary, discussions regarding the exclusions of inorganics in the presented risk assessment is discussed. In addition, the summary concludes inorganics are no longer considered COPCs in groundwater since risk was not identified for inorganics in the 1997 risk assessment. Although risk was not identified for individual inorganics ( $HI < 1.0$ ), the cumulative risk (sum of all HI) exceeds EPA benchmark criteria of 1.0 for inorganics (1997, Risk Assessment). Specifically, the Adult  $HQ = 8.9E-01$  and the Child  $HQ = 2.1$ . In addition, these results do not include the organic non-cancer risk results which also contribute to the overall non-cancer or hazard quotient results. With this said, EPA requires all COPCs identified to be included in the risk results since the cumulative risk results (sum of all HI's) must also be calculated and evaluated to make final risk/remedial decisions.
2. Introduction. The report should include a map of the monitoring well sample locations as well as the data results from the monitoring wells used to calculate risk. Was data from the center of the plume or most concentrated area of the plume used to calculate risk? EPA requires the use of sampling from the most concentrated area of the plume (or the center of the plume) to be used to calculate risk. In addition, the Exposure Point Concentration (EPCs) used to calculate risk cannot be duplicated since the data analysis results were not included in the report.



3. Section 3.4. The report discusses the use of Cal EPA toxicity values for trichloroethene. As stated in the report, EPA Headquarters recommends using a CSF range to evaluate TCE, (0.02 - 0.4 mg/kg/day). Therefore, since the Cal EPA has not been endorsed by EPA headquarters, the recommended range should be applied when calculating risk to offer a risk range to managers making remedial decisions. The CAL EPA risk values can be included in the table for additional risk information. See Comment #15.
4. Table 1.0, Child Residents, RME. The inhalation from showering exposure parameters should be omitted since this pathway is not typically evaluated for the child resident.
5. The report should include RAGS D Table 1.0, the Conceptual Site Model (CSM).
6. Table 3.0. Adult Resident, RME. EPA's RAGS E, Dermal Risk Assessment, September 2001 now recommends a 95<sup>th</sup> percentile value to be used when applying the Foster and Chrostowski Showering Model. Therefore, the following parameters should be used when calculating groundwater showering risk for adults;  
Dt=60min (EPA, 1997; Draft PRA)  
Ds=30min (EPA, 1997; Draft PRA; RAGS E)  
SV=12m<sup>3</sup> (Professional judgement)  
ts=0.5sec (CPF, Foster and Chrostowski, 2003)  
FR=10L/min (professional judgement adapted from flow rates reported in EPA, 1997)  
SV=12m<sup>3</sup> (Professional judgement)
7. Table 4.2, RME. The child inhalation exposure parameters should not be included in the report since this pathway was not evaluated in the risk assessment. See Comment #4.
8. Table 5.0. An incorrect oral RfD is recorded for barium. According to EPA's Region III's RBC for correct value is 2E-01. In addition, the Oral Absorption Efficiency for Dermal value is 0.07.
9. Table 5.0: According to EPA's Region III's RBC table, there is no current oral RfD for 1,2-dichloroethane.
10. Table 5.0. The inhalation RfD for manganese (water) is 1.4E-05.
11. Table 5.0 See Comment #3 regarding toxicity value for trichloroethene (TCE).
12. Table 10. This table does not depict actual risk results' comparisons since metals (inorganics) were included in the 1997 risk assessment (old values) and were not included in the current risk estimates (new values). Therefore, this table should be removed or updated to include non-cancer risk contributed by inorganics.
13. Table 4.2. See Comment #4.

14. Table 4.3. According to EPA's RAGS E, Dermal Risk Assessment, September 2001 the RME dermal Exposure Time (ET) is 0.58 hr/event for the Adult Resident and 1.0 hr/event for the Child Resident. The ET recorded in the table is for Central Tendency estimates and thus should only be used to estimate Central Tendency risk. Please adjust the time to reflect RME exposure parameters.
15. Table 7.1. Since EPA recommends the use of a risk range when evaluating risk exposures from TCE, the lower bound and upper bound toxicity values were used to calculate risk. The results are the following:

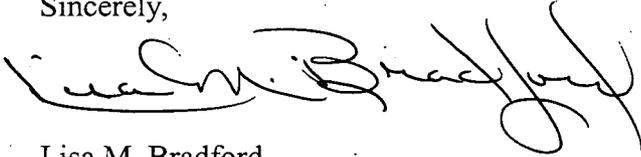
Cancer Risk	Adult Resident			Child Resident		Lifetime Resident	
	Ingestion	Dermal	Inhalation	Ingestion	Dermal	Ingestion	Dermal
Lower Bound 2E-02 oralCSF	3.1E-05	3.5E-06		1.8E-05	1.7E-06	4.9E-05	5.2E-06
Upper Bound 4E-01 oralCSF	6.1E-04	7.0E-05	1.7E-04	3.6E-04	3.4E-05	9.7E-04	1.0E-04
1989 inhalationCSF 6E-03			2.5E-06				

Non-Cancer Risk	Adult Resident			Child Resident	
	Ingestion	Dermal	Inhalation	Ingestion	Dermal
Draft 2001 oralRfD 3E-04	1.5E+01	1.7E+00		3.5E+01	3.3E+00
Draft 2001 inhalation RfD 1E-02			1.2E-01		

16. The vapor intrusion pathways must be included in the risk evaluation since volatile organic compounds are the primary COPCs. All groundwater results should be converted into air vapor concentrations using the Johnson & Ettinger Model. Please consult with EPA's Air Models Specialist, Patricia Flores-Brown for all questions related to the use of the Johnson & Ettinger Model.

Again I would like to thank you for the opportunity to offer these comments for your consideration. If I can be of further service, please do not hesitate to contact me at (215) 814-3363.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa M. Bradford". The signature is fluid and cursive, with the first name "Lisa" and last name "Bradford" clearly distinguishable.

Lisa M. Bradford  
Remedial Project Manager

Copy to:

J. Edmond, NASJRB Willow Grove

C. Frye, FEC Midlant

A. Flipse, PADEP

R. Turner, TtNUS