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From: Charles Owens
Sent: Friday, April 22, 2005 1:24 PM
To: NIOSH Docket Office
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Subject: RE: Paducah Gaseous Diffusion Plant Site Profile 030

Please accept the following questions and concerns regarding the Paducah Gaseous Diffusion Plant Site Profile #030

Technical Basis Document-Site Description

1. In Section 2.3, the second paragraph indicates the following with regard to the reactor tails material: "The percentage of PGDP cascade feed material from reactor tails averaged 17% during the periods this material was used, ranging from 3% in 1965 to 65% in 1973."
 - a. What is the reference for these percentages?
 - b. Rather than just indicating the percentage, a table indicating the amount in pounds along with a percentage would be useful
 - c. The percentage indicated in this section is not in agreement with the percentage indicated in the Internal dose section of the Paducah site profile (page 6, section 5.2) which indicates the 19% of feed was reactor tails (which is referenced as DOE 2000)
2. In Section 2.3, the end of the third paragraph indicates "High Radiation Areas" existed near the fluorination towers and ash receivers.
 - a. How is "High Radiation Area" defined? Current regulatory definition?
 - b. Do you have any survey data that would give the reader a sense of the exposure levels?
3. Section 2.3 paragraph 5 indicates that there were two cascade improvement/upgrade programs (1958-1962 and 1973-1981). These were significant because of possible worker exposure to transuranics while the cascade systems were open. We feel strongly that there was a very good potential for transuranic exposure during these activities, but we are a little concerned that the TRU concentrations associated with these operations are not defined within this section or more importantly, within the Internal Dose section.
 - a. Has NIOSH defined the TRU concentrations related to these activities?
4. Section 2.3, top of page 7, has several lines indicating that there was documentation supporting the presence of Np, Tc, and Pu; however, the original source documents were not referenced. It is unclear whether all these statements are contained within the document referenced at the end of the paragraph (Bechtel Jacobs 2001).
5. Pages 7 – 9 include information regarding levels of exposure as a function of area and job (including data in 2-1 and 2-2). Much of this information appears to come from a report co-authored by PACE and the University of Utah. However, a closer examination of the PACE/Utah report makes it very apparent that key qualifiers in how the data and conclusions within the report should be used were not included. Some of these qualifiers include:
 - a. Page 49 of the PACE/Utah report indicates in the synopsis that the rankings are based on potential radiation exposure and are not necessarily indicative of individual worker exposures.
 - b. Page 50 of the PACE/Utah report says, "The intent here is to provide a general overview and first pass ranking of the potential for exposure to both external radiation and internal radiation."
 - c. Page 55 of the PACE/Utah report says, "Preliminary spot checks of provided electronic database indicate that the electronic data may be incomplete and/or inaccurate." The report goes on to say that, the Team strongly recommends the review of the original dosimetry records.

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- d. Page 69 indicates that "A recent verification effort of the external dosimetry databases ("History Tapes") showed a large number of discrepancies (reference 47 within the PACE/Utah report)
- e. Page 69 states, "... the information in the databases should not be used to estimate individual doses." Further, a QA/QC of the data is recommended.

Given all of the above qualifiers and clarifications, we question whether the summary data, based on potentially flawed and unverified data, is appropriate for use in dose reconstruction.

Has NIOSH performed any validation of the data within these databases?

Does NIOSH believe that this information can be used for doses reconstruction without first validating the database data?

Technical Basis Document for the PGDP-Occupational Internal Dose

1. We are concerned that Carol Berger, the identified subject expert for this report, has done previous health physics consulting work for the Paducah site contractor. Can NIOSH indicate whether Carol Berger's past work included consulting work for Paducah? Did she author the referenced IT report?
2. Section 5.2, page 6, Table 5-1, presents fractions of neptunium and plutonium by plant location. The table seems to be taken from a previous assessment report (IT Corporation 1992); however, it is unclear, from the original assessment study, what the source of this data was.
 - a. Can NIOSH provide the source documents used to assemble the information in the table?
 - b. Can NIOSH explain why the value for Cascade (general) – zero, differs from Buildings C-333 and C-337 (which are cascade buildings)? Maybe if the source information were available this would be more understandable.
3. Section 5.2, page 7, between table 5-2 and Table 5-3 says: "Dust samples from a variety of process systems in 1989 were analyzed for their isotopic content." Then it goes on to say "Table 5-3 summarizes the results for selected process areas at the plant that dose reconstructors can use in the absence of employee-specific information to evaluate the total uranium bioassay data collected after 1953 (Baker 1987, pp 6-8)."
 - a. What is the reference for the 1989 data? Is this data consistent with the Baker report data used in table 5-3?
 - b. The second sentence suggests table 5-3 can be used in the absence of employee specific data. Is there ANY employee specific data regarding Np or Pu exposures? Any before 1989?
 - c. Table 5-3 lists radionuclide concentrations in units of nCi/microgram and table 5-4 lists radionuclide concentrations in units of nCi/g. Are the units in table 5-3 supposed to be the same as in 5-4 (the correct units?)
4. Table 5-4 is labeled "Default isotopic distribution"
 - a. It appears that these are default maximum values. Again, in deriving these maximums was the 1989 reported activity concentrations considered?
 - b. Were other data, cited in the PACE/Utah report and derived from HP investigation reports considered in establishing a maximum?
5. Based on the site profile document, how does NIOSH intend for individual dose reconstructors to apply TRU activity concentrations (mentioned in table 5-4) when considering an individuals' urinalysis data? Are the activity concentrations applied to the urine data before estimating intakes or are intakes of uranium estimated and then the activity fractions applied to that data?
6. Have the site profile authors compared intake estimates derived based on available urine data versus estimates based on air sampling data with regard to all radionuclides of concern?

Technical Basis Document for PGDP- Occupational External Dose

1. Section 6.5.1 discusses estimating missed photon deep dose and appears to rely upon data summarized

with the PACE/ Utah 2000 report. Again, it should be pointed out that we believe that the PACE/Utah report cautions against just this type of use of this data without further investigation and verification of the data.

Thank you for your consideration of these comments and concerns, and I will anticipate your timely response.
Sincerely,

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