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August 16, 2005

Edwin A. Walker

Dear Mr. Walker:

Thank you for sharing the concerns of the Bethlehem Steel Action Group regarding the Bethlehem Steel site profile in your June 25, 2005 correspondence and subsequent e-mail correspondence on July 31, 2005. The Office of Compensation Analysis and Support (OCAS) welcomes comments on site profiles and technical basis documents that have been developed to support dose reconstructions under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA).

The Bethlehem Steel technical basis document (ORAUT-TKBS-0001 Rev 1) was recently revised in response to comments by the public, the Advisory Board on Radiation and Worker Health ("the Board") and the Board's technical support contractor, Sanford Cohen & Associates (SC&A). A copy of this draft document (Draft Rev 2 dated 5-27-2005), is enclosed for your convenience and is also available on the OCAS website at:

<http://www.cdc.gov/niosh/ocas/pdfs/abrwh/drbethst.pdf>

Responses to the issues raised in your letter dated June 25, 2005 are as follows:

**(1) Presentation of an incorrect schematic of the bar mill by SC&A:** We regret that an incorrect schematic or drawing was used in a presentation by a member of the Board's technical support contractor. The picture of the rolling bar mill you provided to NIOSH has been included in the draft technical basis document discussed above. The diagram presented at the Board meeting did not affect radiation dose reconstructions, and was only used by SC&A to provide some information on the nature and size of the operation. Additional background information concerning the Bethlehem Steel site has been added to the revised technical basis document.

**(2a) Impact on dose reconstruction of differences in the layout and purpose of the bar mill and strip mill:** No data collected from the strip mill at the Lackawanna facility or any strip mill facility was used in preparation of any of the revisions of ORAUT-TKBS-0001.

**(2b) Impact on dose reconstruction of the difference between the layout and size of Simonds Saw and Steel and Bethlehem Steel:** The applicability of Simonds as a basis (upper bound) for dose reconstruction at the Bethlehem Steel Lackawanna plant has been added as section 2.3 in the revised technical basis document. The following points drawn from that section seem relevant to the issues raised in your letter:

Size: Simonds was a smaller facility and the processes were closer to one another. Specifically, the intakes were higher at Simonds not only because of the process

arrangement (proximity to one another), but also because Simonds relied more heavily than Bethlehem Steel on manual processes. At Simonds, the rods were manually reintroduced into the same rolling stand, which was not required at the continuous bar mill which existed at Bethlehem Steel. The AEC cited the use of manual processes as at Simonds as one of the important reasons for elevated concentrations of uranium in air.

- **Location:** For purposes of reconstructing radiation doses, we assume that all workers at Bethlehem Steel were exposed at the 95<sup>th</sup> percentile of all air monitoring data. Data collected at Simonds in 1948 is used for 1949 and 1950 at Bethlehem Steel while data collected at Bethlehem Steel is used for 1951 and 1952. This level corresponds to the level of the highest exposed workers (at the rolling stands) in these plants. The estimates for the 1949 and 1950 periods are higher by almost a factor of 3 than the time-weighted averages the Health and Safety Laboratory determined for Simonds in their initial October 1948 evaluation. While only a small fraction of the 20,000 workers at the Lackawanna plant were rolling mill operators, this claimant favorable decision was made because of the difficulty of assessing the extent of other workers' involvement in and exposure to the rolling mill processes.

**Material:** Only the October 27, 1948 measurements at Simonds were used for establishing an intake in the 1948-1949 time period at Bethlehem Steel. Simonds rolled bare uranium (no lead or salt treatment) which is known to significantly elevate the exposure levels.

- **Facility specific data:** Comparison of the exposure levels at Simonds to those actually measured at Bethlehem Steel further show that these are bounding measurements. Assuming the 95% level as a constant intake rate for 10 hours during rolling (as assigned in the revised document), the intake based on Simonds data is over 26 times higher than that based on the Bethlehem Steel data. This is a claimant favorable decision to avoid underestimating the intake for periods prior to 1951 when the use of protective coatings on the uranium (e.g. lead bath or salt bath heating) is not known by NIOSH.

**Dilution:** The very large steel production of the rolling mill at Bethlehem Steel significantly reduces the importance of unmonitored areas and residual contamination because the uranium would be rapidly diluted with normal steel. Evaluation of residual contamination at Bethlehem Steel is discussed in section 3.5 of the revised technical basis document.

**(2c) Impact of the cooling bed on dose reconstruction:** The cooling beds were specifically considered in the development of the revised technical basis document residual contamination model previously discussed. The cooling beds and sub-basement were discussed at the town hall meeting with Bethlehem Steel workers (transcript of the meeting available at <http://www.cdc.gov/niosh/ocas/pdfs/tbd/outreach/wo070104.pdf>). While these areas will accumulate uranium, they will also accumulate steel residues. While the production of steel was much larger at the rolling mill compared to the production of uranium, the claimant favorable assumption was made that the steel was added at a rate equal to the uranium deposition rate. Furthermore, these workers are also evaluated using the same inhalation models discussed above (95% level) which is a claimant favorable evaluation.

**(3a) Presentation at the February 2005 Advisory Board Meeting using strip mill data:**

Even though an incorrect schematic or drawing was used in a presentation at the February 2005 Board meeting by a member of the Board's technical support contractor, I can assure you that all the data presented at the February meeting by NIOSH was based on rolling mill data from Bethlehem Steel and rolling mill data from Simonds.

**(3b) Missing cooling bed data:** The impact on dose reconstruction of the cooling bed is discussed in 2c above.

**(3c) Additional documents:** Both of the documents that you mention, HW-24849 (Production Test 313-10506-M Irradiation of Alpha Canned Uranium Slugs from Rods Salt Bath Beta Heat Treated at Lackawanna) and HW-22347 (Trip Report: Visits to AEC New York Operations Office, Lackawanna Plant, Bethlehem Steel Company, Argonne National Laboratory August 24-29, 1951), were referenced and used during the development of the revised technical basis document. As a result of additional record review, we have changed the number of rolling periods to 13 in 1951 and 16 in 1952.

**(4) Impact of the areas and procedures on dose reconstruction:** We believe that the scientific and technical bases of the site profile developed for Bethlehem Steel are sound. Application of the techniques for radiation dose reconstructions outlined in this document consistently results in dose estimates that we believe significantly exceed the radiation doses that were likely to have been actually received by workers at Bethlehem Steel.

**(5) The record:** Your correspondence dated March 18, 2005; June 25, 2005; and your e-mail dated July 30, 2005 have been posted as part of the public comment on the Bethlehem Steel site profile.

**Affidavits provided:** Both affidavits included with your letter have been added to the NIOSH site research database. The affidavits by \_\_\_\_\_ and \_\_\_\_\_ provide specific details regarding the cooling beds and basement area below the cooling beds as does your e-mail correspondence on July 31, 2005 with the hand drawn schematics of these areas. Evaluation of this data by OCAS resulted in no change to the revised technical basis document

**Additional information you provided for your case:** The information you provided was added to your claim file on 7/27/2005. This information was not posted as part of your comment on the Bethlehem Steel site profile because it contains information protected under the Privacy Act.

We recognize that all site profiles are living documents that can and do change as more information becomes available. Thank you again for your interest in this program and your efforts on behalf of employees and survivors.

Sincerely,



Larry J. Elliott, MSPH, CIH  
Director

Office of Compensation Analysis and Support

Enclosure (1)  
cc: ABRWH members