Baker Brothers Special Exposure Cohort Petition Evaluation Report Update

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Petition History

- June 5,2012: NIOSH received 83.13 petition for 1943 through 1996
- July 24, 2012: Petition qualified for evaluation
- November 14, 2012: Evaluation Report approved
- December 12, 2012: NIOSH proposes SEC Class for Operating Period 1943–1944
- January 31, 2013: ABRWH recommends proposed SEC class to HHS
- January – June 2013: TBD-6000 Work Group reviews dose reconstruction feasibility for residual period

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BAKER BROTHERS BACKGROUND

- Location – Toledo, OH
- Atomic Weapons Employer (AWE) 1943–1944; Residual radiation 1945–1994 and 1996; DOE remediation 1995
- Between June 1943 and July 1944, duPont and University of Chicago subcontracted Baker Brothers to machine uranium rods into slugs used to fuel reactors in Oak Ridge, TN, and Hanford, WA

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RESIDUAL PERIOD - PROPOSED NIOSH APPROACH

- At start of residual period use TBD-6000 generic machining operator to define airborne uranium concentration (GM – 5,480 dpm/m^3)
- Assume 30 days deposition and settling velocity of 7.5e-04 m/s
- Surface concentration – 5,480 dpm/m^3 × 7.5e-04 m/s × 30 days × 86,400 s/day = 10,653,120 dpm/m^2
- Assume exponential decay per OTIB-0070

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RESIDUAL PERIOD - PROPOSED NIOSH APPROACH

- NIOSH concluded that doses can be reconstructed during the residual period
- This conclusion has been re-examined by the TBD-6000 Work Group

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Potential SEC Problem for Residual Period

- Uranium fires were common occurrences during the operating period
- Uranium fires could cause elevated surface concentrations as compared to TBD-6000 approach especially if no clean-up occurred at end of operating period

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Resolution of Problem

- Data from Adley et al. 1952 show that airborne concentrations during U machining fires are lower than values for generic machining operator based on TBD-6000
- TBD- 6000 machining operator – 5,480 dpm/m^3 (DWA) versus Adley machinists – 182 to 2,340 dpm/m^3

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TBD 6000 Work Group Conclusion

- Doses during the residual period can be reconstructed with sufficient accuracy as proposed by NIOSH
- No change to SEC is required

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References

- Adley, F.E., W.E. Gill, and R.H. Scott, 1952. *Study of Atmospheric Contamination in the Melt Plant Building*, USAEC report HW-233352 (Rev.), April 4, 1952.
- TBD-6000. *Site Profiles for Atomic Weapons Employers that Worked Uranium Metals*. Battelle-TBD-6000. Rev. 01. National Institute for Occupational Safety and Health (NIOSH); Cincinnati, Ohio; Division of Compensation Analysis and Support (DCAS); effective June 17, 2011; SRDB Ref ID: 101251.

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