



Evaluation of Feasibility and Utility of Subcontractor Exposure Potential Comparison

Bob Barton, CHP

Advisory Board on Radiation and Worker Health

September 25, 2024



Background

- ◆ SRS Work Group met on March 23, 2023 (ABRWH, 2023)
- ◆ Work Group requested that SC&A explore possible analysis that compares the exposure potential of subcontractor workers to prime contractor workers (e.g., Westinghouse)
- ◆ Update presentation given to the full Board on August 16, 2023
- ◆ SC&A submitted a memorandum evaluating the feasibility and utility of subcontractor/prime contractor analysis using available electronic internal and external monitoring records in December 2023 (SC&A, 2023)

Available data

- ◆ Suite of data files provided by NIOSH titled “SRS_ProRad”
- ◆ SC&A found that 19 of the 27 data files would not provide the necessary information to perform a meaningful evaluation:
 - Most of the 19 files were out of the period being evaluated
 - One was specific to tritium: Tritium monitoring was excluded from the prior ORAUT-RPRT-0092 (NIOSH, 2020) analyses as not salient to the evaluation
 - Lacked actual dose information
- ◆ SC&A found that 8 of the 27 data files could possibly be used for an exposure potential comparison
 - 1 of 8 contained information to allow for subcontractor identification in other files
 - 2 of 8 contained internal dose information
 - 4 of 8 contained external dose information
 - 1 of 8 contained incident information

Most relevant file for feasibility evaluation

- ◆ SC&A identified the file: “SRS_INDV_NONTRITIUM_LEGACY” as most relevant to the feasibility discussion
 - Contains individual bioassay results during period of interest
 - Subcontractor and prime contractor workers can be identified based on SSN
- ◆ 238,491 bioassay samples identified that could be used for comparison
 - Did not include baseline samples or fecal samples
 - Only samples from 1991–1997 were considered relevant (if void date was not available, the receive date was used to include the sample in the tabulation)
- ◆ Radionuclides monitored: trivalent actinides, neptunium, plutonium, strontium, and uranium
- ◆ Prime contract workers made up between 80–90% of the bioassay results by year (1991–1997)

Potential path forward

- ◆ Similar analysis comparing job categories has been made at other EEOICPA sites (e.g., RPRT-0102 for Los Alamos National Laboratory [ORAUT, 2021])
- ◆ Benefits:
 - Simplistic analysis comparing the magnitude of bioassay results for different groups of workers
 - NIOSH has already performed similar statistical analysis
- ◆ Drawbacks:
 - Does not account for data dominance (i.e., a large number of samples associated with a few workers). Time-weighted one person one statistic (TWOPOS) approach would be preferable
 - Does not separate into time periods such as an individual year
 - Less than 1% of bioassay samples during the period of interest are positive

Utility of proposed comparison

- ◆ Previous SEC (1972–1990) established based on uncertainty around collection and analysis of radiation work permit (RWP) job-specific bioassay
- ◆ Evaluation of available bioassay may not fully illuminate the primary SEC issue under discussion as it does not reflect what the uncollected job-specific bioassay would inform about exposure potential differences
- ◆ While subcontractors can be identified in dataset, job-specific (non-routine) bioassay cannot be separated
- ◆ SC&A expressed these reservations during March 2023 Work Group meeting

SC&A summary conclusions

- ◆ Electronic dataset available that contains internal and external dosimetry records that allow for identification of subcontractors
- ◆ 238,491 relevant bioassay results; however, less than 1% (~0.25%) results are actually positive
- ◆ 80–90% of bioassay results are for prime contractors over the period of interest (1991–1997)
- ◆ TWOPOS approach likely most appropriate for potential comparison
- ◆ Potential comparison may not reflect the exposure potential of the RWP-driven, job-specific bioassay given noted uncertainties in collection and analysis of these samples



Questions?

References

- ◆ Advisory Board on Radiation and Worker Health. (2023). Savannah River Site (SRS) Work Group meeting. *Wednesday, March 22, 2023* [Transcript of teleconference meeting]. <https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2023/wgtr032223-508.pdf>
- ◆ National Institute for Occupational Safety and Health. (2020). *NIOSH response to SC&A comments on ORAUT-RPRT-0092* [Response paper]. https://ftp.cdc.gov/pub/FOIAREQ/182968_red-508.pdf
- ◆ Oak Ridge Associated Universities Team. (2019). *Evaluation of bioassay data for subcontracted construction trade workers at the Savannah River Site* [Redacted version] (ORAUT-RPRT-0092, rev. 00). <https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-92-r0-508.pdf>
- ◆ Oak Ridge Associated Universities Team. (2021). *Assessment of Los Alamos National Laboratory plutonium bioassay programs 1996 to 2001* (ORAUT-RPRT-0102, rev. 00). <https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-102-r0-508.pdf>
- ◆ SC&A, Inc. (2023). *SC&A evaluation of feasibility and utility of subcontractor exposure potential comparison* [Response paper]. <https://www.cdc.gov/niosh/ocas/pdfs/abrwh/scarpts/sca-subcontexppot-r0-508.pdf>