

Summary Position on Dose Reconstruction Feasibility for Subcontractor Construction Trade Workers at Savannah River Site: Chronology and Basis for Subcontractor Bioassay Data Completeness Issue under SEC-00103

Meeting of the Advisory Board on Radiation Worker Health
April 15, 2021

In 2013, the Savannah River Site (SRS) Work Group learned that SRS subcontractor dose records were maintained separately, on cards, from those of regular operations workers before being migrated into electronic databases in the 1990s. Given that circumstance, and the often transient and intermittent nature of subcontractor job assignments, SC&A questioned whether there had been any validation and verification of the completeness of those records. There had not. The National Institute for Occupational Safety and Health (NIOSH) subsequently sought to address that question, examining the NIOSH-DCAS Claims Tracking System (NOCTS) and other available databases containing subcontractor records, before pursuing an examination of subcontractor bioassay records at Building 773-A for 1979–1986, a review that resulted in ORAUT-RPRT-0083.¹ That review found 67 percent of randomly selected subcontractor construction trade workers (sCTWs) wearing respiratory protection were monitored for intakes of radionuclides from 1980 through 1986.

Following a presentation before the full Board in 2017, the ABRWH chair observed that ORAUT-RPRT-0083 only addressed one SRS facility for a limited time and, therefore, lacked the scope necessary to adequately sample data completeness. SC&A was then directed to use NIOSH's ORAUT-RPRT-0083 approach (permit-based examination of corresponding sCTW job-specific bioassays) to conduct its own sampling of bioassay data completeness for all SRS facilities for the years 1972–1995. While the results of that review² were similar to NIOSH's (66–80 percent complete), a major U.S. Department of Energy enforcement action was identified for 1997–1998 that was based on a lack of job-specific bioassay performance at SRS, stemming from an onsite survey by the operating contractor showing only 21 percent completeness.

¹ National Institute for Occupational Safety and Health. (2017). *Evaluation of monitoring of construction workers identified in high-level cave job plans at the Savannah River Site* (ORAUT-RPRT-0083, rev. 00). <https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-83-r0.pdf>

² SC&A, Inc. (2017). *Evaluation of Savannah River Site subcontractor bioassay data completeness* (SCA-TR-2017-SEC009, rev. 0 PC-1). <https://www.cdc.gov/niosh/ocas/pdfs/abrwh/scarpts/sca-srsbioassay-r0-pc1.pdf>

DISCLAIMER: This is a working document provided by the Centers for Disease Control and Prevention (CDC) technical support contractor, SC&A for use in discussions with the National Institute for Occupational Safety and Health (NIOSH) and the Advisory Board on Radiation and Worker Health (ABRWH), including its Working Groups or Subcommittees. Documents produced by SC&A, such as memorandum, white paper, draft or working documents are not final NIOSH or ABRWH products or positions, unless specifically marked as such. This document prepared by SC&A represents its preliminary evaluation on technical issues.

NOTICE: This document has been reviewed to identify and redact any information that is protected by the [Privacy Act 5 U.S.C. § 552a](#) and has been cleared for distribution.

This is significant not only because of the large percentage of missed job-specific bioassays, but also because the stated purpose of the job-specific bioassay program, as defined by the site, required bioassays for:

workers whose routine bioassay program does not include some or all of the radionuclides present at the work site and who are not on a routine program. [Kornacki et al., 1998, PDF p. 15³]

Further:

routine sampling programs may not be appropriate for work involving non-routine mixes or concentrations of radioactive material. [WSRC, 1997, PDF p. 9]

Transient short-term subcontractors are likely affected by the job-specific bioassay program. Former worker interviews indicate that some subcontractors were brought in to do work with higher exposure potential.

To address these heightened concerns with the permit-based, job-specific bioassay program, NIOSH developed a sampling plan to retrieve available job plans and Radiological Work Permits (RWPs) involving subcontractors for all SRS facilities for the years in question. Using these RWPs, one can then evaluate any subsequent followup bioassay in relation to the permit required for the nonroutine task. However, that extensive evaluation discovered that RWPs prior to 1991 were only available for one area (A Area) and were missing for the years 1975–1979. Furthermore, it is not possible to distinguish between what was considered a job-specific monitoring result and a routine result that may have been taken (in some cases) many years after the job. This evaluation was documented in ORAUT-RPRT-0092 (NIOSH, 2019a) and reviewed by SC&A (SC&A, 2019a) and the joint SRS and Special Exposure Cohort (SEC) Issues work groups. SC&A concluded that ORAUT-RPRT-0092 did not sufficiently establish the completeness of the job-specific monitoring program, as intended, for at least some of the evaluated period. The SRS work group concurred, and a recommendation for SEC consideration was forwarded to the full Board in December 2020.

To provide further evidence of completeness, NIOSH had earlier performed an analysis of the subset of SRS sCTWs who have filed claims to determine the percent that were monitored in a given year (NIOSH, 2019b). Coupled with plutonium logbook bioassay data for subcontractors, this additional information from the NOCTS database was advanced by NIOSH as an expanded “weight of evidence” proposal to the full Board at its December 2020 meeting. However, as already noted, there currently is no method for discerning between routine bioassay and job-specific bioassay at SRS. Therefore, any evaluation of the completeness of this dataset does not speak directly to job-specific bioassay, which was the basis for the work group’s original concerns.

³ All citations in the remainder of this handout refer to the References section of the accompanying PowerPoint presentation, “Summary Position on Dose Reconstruction Feasibility for Subcontractor Construction Trade Workers at Savannah River Site.”

The persistent question of relative exposure potential between subcontractors and other workers has figured in these proceedings. Indications came from worker statements (including the computer-assisted telephone interviews) that subcontractors were assigned radiological work that may have involved higher radiation exposure potential. In an effort to quantify potential differences, NIOSH performed stratification analyses (i.e., comparing the actual magnitude of potential doses between two populations) to determine whether subcontractors did, in fact, have higher exposure potential. However, since the job-specific portion cannot be separated from the routinely collected samples, such comparisons do not speak directly to the exposure potential of transient, short-term, subcontractor workers who should have been subject to the job-specific bioassay program. Additionally, it is logical to assume that routine monitoring would dominate the amount of available bioassay data for either group (subcontractor or prime contractor) and thus would likely have a large, but unknowable, effect on any subsequent statistical distribution.

In summary, there were documented completeness issues with the job-specific monitoring program as late as the 1990s. Attempts to fully evaluate the issue of permit driven, job-specific bioassay via the capture of RWPs was not sufficient to alleviate concerns over subcontract workers performing nonroutine tasks that may have involved elevated exposure potential. Supplemental completeness evaluations performed using the claimant (NOCTS) population fail to address the completeness of the job-specific bioassay program because job-specific samples cannot be distinguished from the likely much larger set of routine samples. Similarly, comparisons of the magnitude of derived doses for subcontractors and prime contractors cannot be separated into workers on the job-specific monitoring program and the larger portion of routinely monitored workers. Therefore, such quantitative analyses may be of limited value in addressing exposure potential for nonroutine jobs involving job-specific bioassay.