



Status and Update of Special Exposure Cohort (SEC) Issue Discussion

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Background: Recent discussions on co-exposure completeness

- ◆ After discussions at an April 2022 meeting of the Sandia National Laboratories Work Group (Advisory Board on Radiation and Worker Health (ABRWH), 2022), the National Institute for Occupational Safety and Health (NIOSH) issued a white paper in March 2023.
- ◆ Question: Is there a quantitative method to evaluate completeness in the formulation of co-exposure models?
- ◆ SC&A and NIOSH agree there is not a universal method because of the unique characteristics of each site.

NIOSH 2023 conclusions 1 and 2 and SC&A summary

- ◆ **NIOSH conclusion 1:** All data are not required, only a significant portion of the most highly exposed workers.
 - SC&A agrees, in principle, that if you capture the most highly exposed workers, then a co-exposure model is feasible.
- ◆ **NIOSH conclusion 2:** Radiation protection programs (RPPs) are not likely to be 100% effective; however, data missingness is likely to affect workers with low potential for exposure.
 - SC&A agrees that evaluation of the RPP is an important qualitative (but not quantitative) measure.

NIOSH 2023 conclusions 3 and 4 and SC&A summary

- ◆ **NIOSH conclusion 3:** To demonstrate that the dataset is complete enough, the RPP that generated the data and the recordkeeping systems that store and report the data must be vetted.
 - SC&A agrees that such evaluation is an important facet in establishing the feasibility of the co-exposure model.
- ◆ **NIOSH conclusion 4:** Under the presumption the RPP generated data are complete, external and internal checks should be performed.
 - SC&A **agrees** such checks provide value in a weight-of-evidence argument.
 - SC&A **does not agree** that the RPP should be presumed to be complete.

NIOSH 2023 conclusions 5 and 6 and SC&A summary

- ◆ **NIOSH conclusion 5:** Universally applicable, technically based quantitative limits for a dataset being complete enough may not be feasible.
 - SC&A agrees generic quantitative criteria are not attainable for this program. Each individual co-exposure model must be evaluated on a subjective and qualitative basis.
- ◆ **NIOSH conclusion 6:** Regulatory compliance of the RPP, by itself, should not be used to determine completeness.
 - SC&A agrees: It is just one part of the weight-of-evidence approach, and compliance or noncompliance must be weighed accordingly.

NIOSH 2023 conclusion 7 and SC&A summary

NIOSH conclusion 7: Stratification of datasets is time consuming, would not answer data missingness issues, and would not benefit unmonitored workers.

- ◆ SC&A agrees stratification would result in lower unmonitored doses to some workers and higher doses to others.
- ◆ It will not solve data missingness but is intended to help to identify a group that appears to have higher exposure potential.

NIOSH implementation guide on stratification

DCAS-IG-006, “Criteria for the Evaluation and Use of Co-Exposure Datasets,” discusses stratification as follows:

“The distribution of a potentially more highly exposed population should be evaluated as a separate standalone distribution in situations where: 1) accurate job categories and/or descriptions can be obtained for all workers making up the general co-exposure dataset; 2) there is reason to believe that one of the job categories is more highly exposed; and, 3) there were unmonitored workers in this job category. If it can be demonstrated, however, that there were no unmonitored workers with the potential for exposure in this more highly exposed population, then stratification would not be necessary” (NIOSH, 2020, p. 11).

NIOSH implementation guide on completeness

Significant discussions on what “completeness” means in this program:

“The amount of available monitoring data must be evaluated to determine if there are sufficient measurements to ensure that the data are either bounding or representative of the exposure potential for each job/exposure category at the facility” (NIOSH, 2020, p. 6).

NIOSH implementation guide on completeness (example in practice)

“If the number of potentially exposed workers in each category is unknown, a useful starting point is to look at the distribution of samples among the various categories of workers represented in the claimant population at that site. . . . In [the analysis of workers at the Nevada Test Site], the radiation safety staff was monitored to a larger extent than workers directly involved in site activities. Thus, a co-exposure model based on these data would not necessarily reflect the exposure conditions of the unmonitored production/process workers. If, in fact, it can be established that the categories of workers were potentially exposed, yet inadequately monitored, it could preclude the development of a sufficiently accurate co-exposure model, unless it can be established that the exposures to another, adequately monitored category of workers reliably bounds the initial category’s exposures” (NIOSH, 2020, pp. 6–7).

SC&A overall conclusions

- ◆ Agrees with the overall logic and principles discussed in the NIOSH white paper
- ◆ Each Energy Employees Occupational Illness Compensation Program Act of 2000 site is unique and must be evaluated separately
- ◆ Agrees that a quantitative approach is not plausible
- ◆ DCAS-IG-006 should be the guiding document when evaluating completeness and other facets of the SEC process

Path going forward for SEC Issues

- ◆ ABRWH agrees with expanding the current database to update prior SEC decisions
 - Allows for examination of past decisions
 - NIOSH and the Division of Compensation Analysis and Support have already created a database that is an excellent starting point; SC&A will work directly to update
- ◆ What does the database show?
 - Site, dates, class evaluated
 - Determination on external and internal dose and justification
 - Further justification for what doses **can** be reconstructed
 - Details on ABRWH deliberations that led to the decision

References

Advisory Board on Radiation and Worker Health, Sandia National Laboratories Working Group. (2022). *Monday, April 11, 2022* [Transcript of teleconference meeting].

<https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2022/wgtr041122-508.pdf>

National Institute for Occupational Safety and Health. (2020). *Criteria for the evaluation and use of co-exposure datasets* (DCAS-IG-006, rev. 00). <https://www.cdc.gov/niosh/ocas/pdfs/dr/dc-ig-006-r0-508.pdf>

National Institute for Occupational Safety and Health. (2023). *A discussion of completeness in co-exposure models* [White paper]. Site Research Database (SRDB) Ref. ID 196229