

Review Status of Area IV Santa Susana Field Laboratory SEC Petition-00235

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Advisory Board on Radiation and Worker Health
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Work Group Members

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SEC-00235 Background

August 9, 2016: Petition SEC-00235 received for class:

- *All employees of North American Aviation, to include corporate successors and subcontractors who worked at Area IV of the SSFL from December 31, 1964 through present.*

February 1, 2017: NIOSH qualified the petition for the following class:

- *All employees who worked at Area IV of the Santa Susana Field Laboratory from August 1, 1991 through June 30, 1993.*
- Petition qualified for evaluation report (ER) based on lost, falsified, or destroyed dosimeter data due to the site's use of CEP as a contractor providing internal dosimeter data for the period August 1991 to June 1993.

SEC-00235 Background (cont.)

August 2017: SC&A tasked to review SEC-00235 ER focusing on NIOSH's position that the lack of 1991–1993 data does not affect NIOSH's ability to perform sufficiently accurate internal dose reconstructions for monitored or unmonitored workers.

November 2017: SC&A issued SCA-TR-2017-SEC011, Revision 0, *A Focused Review of the NIOSH SEC-00235 Petition Evaluation Report for Santa Susana Field Laboratory Area IV*.

December 4, 2017: SSFL Work Group (WG) meeting to discuss SC&A report and path forward.

Previous Petitions Qualified for Evaluation

2009: Petition SEC-00093

- January 1, 1955, through December 31, 1958

2010: Petition SEC-00156

- January 1, 1959, through December 31, 1964

2017: Petition SEC-00234

- January 1, 1965, through December 31, 1988

Summary of SC&A Review Findings

- Employee monitoring and workplace monitoring data sufficient to bound external exposures.
- Review of available documentation does not indicate significant changes in the nature of radiological work or unusual occurrences during the SEC period that would preclude dose reconstruction.
- The bioassay data obtained during the remediation period did not exceed the bioassay data from the operations period (pre-1988) that are proposed for use in dose reconstruction.
- Extending uranium, plutonium, and mixed fission product intake rates in ORAUT-OTIB-0080 would likely bound potential intakes during the CEP period for these radionuclides (assuming is adequately established via air sampling that conditions did not appreciably change).

Remaining Areas of Concern

- SC&A's review of ORAUT-OTIB-0080 identified several findings relevant to the 1991–1993 period. These findings and observations have not been resolved.
- Not clear how NIOSH will reconstruct internal exposures to other actinide contaminants, such as americium and thorium, during the evaluated period.
- Suggest comparison of general air and breathing zone data from the 1991–1993 period to other decontamination and decommissioning (D&D) activities as well as the operational period to assure radiological conditions are sufficiently similar or bounding for use in internal dose assessment.

SSFL Internal Coworker Model: OTIB-0080

- NIOSH proposes to use the internal coworker data from the operational period to reconstruct intakes during the SEC period (August 1991–June 1993).
- OTIB-0080 was approved in March 2014 and provides intake values for plutonium, uranium, and fission products:
 - Plutonium intakes developed for 1965–1986
 - Uranium intakes developed for 1965–1988
 - Fission product intakes developed for 1965–1991
- SC&A reviewed OTIB-0080 in November 2014, with a total of 15 findings.

SSFL Internal Coworker Model: OTIB-0080 (cont.)

What SC&A OTIB-0080 findings are still relevant to SEC-00235?

- Some original findings/observations were obviated by SEC-00234 (Findings 4, 11)
- Others are no longer relevant because OTIB-0080 has not been updated to reflect the time-weighted-one-person-one-statistic (TWOPOS) approach (Findings 5, 8, and 10)
- Most remaining findings center around the calculation of the coworker intakes during the operational period (likely not relevant to SEC determination but relevant to site profile issues):
 - Combination of years for bioassay analysis
 - Interpretation of “less than” bioassay results
 - Inclusion criteria for usable bioassay results
- Finding 15: Other potential radionuclides (i.e., tritium, thorium, americium) – potentially relevant to the SEC

OTIB-0080 Finding 15 (SEC Relevance)

- SEC-00234 was granted based mainly on the inability to reconstruct internal exposures to thorium and americium during the operational period.
- Current SEC-00235 evaluation does not discuss this potential source term or methods for reconstruction of these radionuclides during potentially relevant D&D activities.
- NIOSH has agreed to evaluate the exposure potential to these contaminants and/or develop methods to reconstruct internal exposures (if deemed necessary).

Relevant Air Sampling During SEC Period

- Air sampling data available for major radiological areas during the SEC period:
 - Rockwell International Hot Laboratory
 - Radiological Material Disposal Facility
 - System Nuclear Auxiliary Power Facility
- Hot Laboratory data are available throughout SEC period.
- Other areas have partial data due to regulatory recommendations at the time.
- Other relevant air sampling may be available.
- NIOSH has agreed to determine the availability of air sampling records and evaluate relevant records to assure that radiological conditions during the SEC period are sufficiently similar to other D&D activities and are effectively bounded by operational coworker data.

SC&A Survey of Affected Claimants

- 30 total claims (1 more submitted since NIOSH SEC ER)
- SC&A reviewed claims for CATI information relevant to the SEC discussion:
 - At least one incident described demolition work; however, it was not clear that radiological hazards existed in addition to general medical/health hazards
 - No information identified in CATI reports to indicate significant changes in work practices or the general radiological environment during the SEC period
 - Several claims indicated they were monitored externally and/or internally; however, no corresponding DOE monitoring records were identified
- DOE monitoring records:
 - Internal data (whole body count): 5 of 29*
 - External data: 10 of 29*

** One of the 30 claims had not yet received DOE monitoring records because it was recently filed.*

SC&A Survey of Affected Claimants (cont.)

- Survey of current population indicates 11 of 30 would likely require dose reconstruction if it is deemed feasible (others already compensated or have been administratively pulled).
- Past Dose Reconstruction Methods:
 - Internal Dose: whole body counts used (where available), environmental internal exposures or program-wide guidance documents (i.e., OTIB-0002 and OTIB-0018)
 - External Dose: personal monitoring data (where available), ambient external exposures, or a combination of both
- SC&A Recommendation: If dose reconstruction is deemed feasible, it would be beneficial for the Board to review example dose reconstructions (hypothetical or actual) to understand how NIOSH intends to implement new internal/external coworker dose assignment. (*Note: considered a site profile issue*)

NIOSH and SC&A Planned Path Forward

- **Issue 1:** NIOSH is to review and summarize available reports and extract summary air sample information for relevant facilities for the remediation period (post 1988). This is to rule out any abnormalities in the exposure potential during the CEP period, as well as before and after. The results will be presented to the WG as a white paper. This is not a dose reconstruction approach, but a summary of general levels of recorded air concentration information.
- **Issue 2:** NIOSH is to provide more detail and relevant references on the nature of the source term for thorium and americium during the residual period in continuation of the infeasibility of the later part of the operational period as outlined in SEC-00234.
- **Issue 3:** NIOSH is to provide sample dose reconstructions for the CEP period demonstrating the use of the coworker model. This is to be completed after Issues 1 and 2 have been discussed/resolved.
- NIOSH and SC&A are to review new information provided by the Petitioner just prior to the December 4, 2017, WG teleconference meeting.