SEC-00109
Los Alamos National Laboratory (LANL)
Status Update

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Recent SEC-00109 Reports and Presentations

In response to findings and observations raised by SC&A and the LANL Work Group:

- NIOSH prepared four reports and two memos.
  - Reports 101, 102, 103, and 107 [ORAUT 2021, 2022, 2023a,b]
  - Two “weight of evidence” memos assessing dose reconstruction feasibility for Technical Area-53, which includes the Los Alamos Neutron Science Center [NIOSH 2023, 2024]
- NIOSH responded to *SC&A Review of Remaining Internal Dose Issues for the LANL SEC-0109 Addendum Period (1996–2000)* [SC&A 2024] with a document titled *NIOSH Response to SC&A’s Review of Remaining LANL SEC-00109 Internal Dose Issues for 1996-2005* [NIOSH 2025].
- NIOSH previously presented Reports 101 and 102 to the Work Group in March 2022 [NIOSH 2022].

The documents mentioned above are available on the CDC website. Page numbers cited in the presentation are from the website documents: Los Alamos National Laboratory (LANL) | NIOSH | CDC

Overview

NIOSH Reports:

- Report 101: ORAUT-RPRT-0101, Rev. 1 (8/30/2023)
  Bounding Intakes of Exotic Radionuclides at Los Alamos National Laboratory
  - Rev. 0 (superseded) (Published 3/1/2022)
- Report 102: ORAUT-RPRT-0102, Rev. 0 (12/2/2021)
  Assessment of Los Alamos National Laboratory Plutonium Bioassay Programs 1996 to 2001
- Report 103: ORAUT-RPRT-0103, Rev. 0 (8/15/2022)
  Review of Potential Exposure to Exotic Radionuclides Using Radiological Work Permit Data at Los Alamos National Laboratory
- Report 107: ORAUT-RPRT-0107, Rev. 0 (9/15/2023)
  Dose Estimation from Intakes of Exotic Radionuclides at the Los Alamos Neutron Science Center, 1996 to 2005

NIOSH Memos:

- *Weight of Evidence Supports NIOSH's Ability to Bound LANL TA-53 Doses for 1996-2005* (8/15/2023, provided to Work Group on 8/28/2023)
- *Weight of Evidence Supports NIOSH's Ability to Bound LANL TA-53 Doses for 1996-2005: Evaluation of Radiological Work Permits (2/22/2024*, provided to Work Group 03/25/24)

Report 101 Rev. 1 Summary

Bounding Intakes of Exotic Radionuclides at Los Alamos National Laboratory

Report 101 assessed the ability to bound 1996–2005 doses from exotic radionuclides at 100 mrem/year Committed Effective Dose (CED) [ORAUT 2023a]. The report:

- Evaluated the data from Technical Areas 3, 48, and 53 (areas involving exotic radionuclides):
  - Surface contamination survey data
  - Air monitoring data
- Assessed and discussed LANL's radiological controls
  - Workplace controls
  - Workplace monitoring
  - Worker self-monitoring
- Concluded that LANL's radiological control program:
  - Controlled routine contamination in Technical Areas 3, 48, and 53
  - Was structured and implemented such that the weight of evidence indicates doses to unmonitored workers can be bounded at 100 mrem/year CED

SC&A Review of Report 101

SC&A's review of Report 101[a] [SC&A 2024] identified three findings and three observations.

- SC&A's over-arching comments of the report were that it:
  - Does not assess data randomly, from all facilities, or from clearly specified job types
  - Does not address to what extent nonroutine bioassays were complete
  - Does not confirm that LANL adequately assessed internal exposure potential to exotics at 100 mrem/year CED
- SC&A agreed that the Report 101 sampling survey indicates no likely exposure potential for the three targeted areas (Technical Areas 3, 48, 53) above 100 mrem/year CED

[a] SC&A reviewed Revision 0 of Report 101 (March 1, 2022), which was superseded by Rev. 1 [NIOSH 2023]. SC&A stated "Note: NIOSH has since issued revision 01 of RPRT-0101 to correct self-identified errors. SC&A has not officially reviewed this revision. However, based on the changes, it does not appear to materially affect the conclusions of this report" [SC&A 2024].

NIOSH Response to SC&A's Review of Report 101

NIOSH provided detailed responses to each SC&A finding and observation [NIOSH 2025, pp. 3–9].

NIOSH's position:

- Based on extensive evidence of established procedures and processes, LANL implemented the necessary administrative and engineering controls to determine when and what type of internal dose monitoring was required to comply with the 100 mrem/year CED monitoring threshold requirement site-wide.
- Though data assessed within this report were not collected randomly or from all facilities, this position is based on the weight of evidence obtained from thousands of captured data and documents, interviews with LANL Radiation Protection personnel, and the absence of direct evidence to the contrary.

Report 102 Summary

Assessment of Los Alamos National Laboratory Plutonium Bioassay Programs 1996 to 2001

Report 102 analyzed available data and searched for evidence that the most highly exposed workers were not monitored [ORAUT 2021].

The Report:

- Analyzed six health-physics-related datasets to assess bioassay data completeness
- Found that plutonium bioassay data for the period included a significant portion of the most highly exposed workers
- Concluded that the plutonium bioassay data were adequate to construct a co-exposure model for plutonium

SC&A Review of Report 102

SC&A's review of Report 102 identified three findings and three observations [SC&A 2024, pp. 35–49].

- SC&A's primary concerns were with how NIOSH determined whether submitted samples were compliant with bioassay program requirements, which potentially impacted data completeness
- Despite these observations and findings, SC&A stated:

  > *"SC&A believes that an appropriate co-exposure model for plutonium may be found acceptable. However, such a determination is a matter of professional judgment for the LANL Work Group and Board as a whole."* [SC&A 2024, p. 49]

- SC&A also stated that the conclusions of Report 102 are not transferrable to non-routine, job-specific sampling for exotics [SC&A 2024, pp. 83–87].

NIOSH Response to SC&A's review of Report 102

NIOSH provided detailed responses to each SC&A finding and observation [NIOSH 2025, pp. 9–15, 25–26].

NIOSH's position:

- A bounding plutonium co-exposure model is feasible.
- No evidence has been identified that bioassay data from workers with the highest exposure potential are insufficient to develop of a bounding co-exposure model.
- NIOSH agrees with SC&A that the conclusions presented in ORAUT-RPRT-0102 are not transferrable to exotics. NIOSH has previously stated that a chronic co-exposure model for plutonium is not appropriate for bounding intakes from exotics [NIOSH 2012, pp. 9–12].

Report 103 Summary

Review of Potential Exposure to Exotic Radionuclides Using Radiological Work Permit Data at Los Alamos National Laboratory

Report 103 [ORAUT 2022] was generated as a supplement to Report 101, assessing the ability to bound 1996–2005 doses from exotic radionuclides at 100 mrem/year.

Report 103:

- Evaluated 24 Radiation Work Permits (RWPs) to
  - Determine if LANL monitored work such that they could identify which workers required bioassay monitoring to bound doses at 100 mrem/year CED
  - Compare pre-job radiological protection requirements to final, “post-job” reviews
- Concluded that LANL Health Physics personnel monitored workers for routine and nonroutine radiological work conditions as required to comply with the 100 mrem/year CED monitoring threshold requirements

SC&A Review of Report 103

SC&A's review of Report 103 identified three observations and one programmatic finding [SC&A 2024, pp. 21, 49–75, 77–83].

- SC&A reviewed the 24 RWPs in Report 103 and an additional 10 RWPs associated with the 1996–2005 period of interest.
- SC&A's over-arching comments of the report were that:
  - There are apparent discrepancies between monitoring specified by the RWPs and actual monitoring performed.
  - It does not address to what extent nonroutine bioassays were complete.
  - It does not confirm that LANL adequately assessed internal exposure potential to exotics at 100 mrem/year CED.

NIOSH Response to SC&A's review of Report 103

NIOSH provided detailed responses to the SC&A observations and finding [NIOSH 2025, pp. 16–25].

NIOSH's position:

- There are no discrepancies in monitoring specified by the RWPs and actual monitoring performed:
  - Signed acknowledgement sheets indicate workers have read and understood the RWP, not that they performed work under the RWP.
  - Various enrollment criteria, specified in the Technical Basis Document [LANL, no date], must be met for bioassay and contamination follow-up monitoring.
- LANL developed special monitoring for exotic radionuclides on a case-by-case basis as warranted by workplace radiological hazards [LANL, no date; LANL 2013].
- The subject reports and weight of evidence memos demonstrate that LANL implemented a monitoring program that ensured unmonitored workers were unlikely to receive 100 mrem/year CED.

General Conclusion

Reports 101, 102, & 103 conclude that dose reconstructions can be completed with sufficient accuracy to support the EEOICPA compensation program.

Thank you.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U. S. Centers for Disease Control and Prevention or the National Institute for Occupational Safety and Health.

REFERENCES (1 of 3)

Note: Page numbers provided in the body of the presentation are actual page numbers from the document as provided on the NIOSH website. PDF page numbers of the documents in the SRDB will be different.

Brackett EM, LaBone TR [1999]. Assessment of the Los Alamos National Laboratory internal dose evaluation program. Williamsville, NY: MJW Corporation, Inc. Aiken, SC: Westinghouse Savannah River Company. 99-202.002, April 22. [SRDB Ref ID: 175134]

LANL [no date]. Internal dosimetry technical basis. Los Alamos, NM: Los Alamos National Laboratory. HSR-12-03-TB.0. [SRDB Ref ID: 191395]

LANL [2013]. NIOSH data request (LANL FY13-001), responses to NIOSH questions for LANL staff regarding 10 C.F.R. 835 implementation and unresolved issues. Correspondence to P Griego. Los Alamos, NM: Los Alamos National Laboratory. March 19. [SRDB Ref ID: 166130]

NIOSH [2012]. U.S. Department of Health and Human Services Centers for Disease Control National Institute for Occupational Safety and Health Advisory Board on Radiation and Worker Health Work Group on Los Alamos National Laboratory Tuesday September 11, 2012. Transcript. Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Advisory Board on Radiation and Worker Health. [SRDB Ref ID: 204629]

REFERENCES (2 of 3)

NIOSH [2022]. US Department of Health and Human Services Centers for Disease Control National Institute for Occupational Safety and Health Advisory Board on Radiation and Worker Health Los Alamos National Laboratory Work Group Wednesday, March 23, 2022. Transcript. Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Advisory Board on Radiation and Worker Health. [SRDB Ref ID: 204630]

NIOSH [2023]. Weight of evidence supports NIOSH's ability to bound LANL TA-53 doses for 1996-2005. Correspondence to LANL Work Group. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. August 15. [SRDB Ref ID: 198013]

NIOSH [2024]. Weight of evidence supports NIOSH's ability to bound LANL TA-53 doses for 1996-2005: evaluation of radiological work permits. Correspondence to LANL Work Group. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. February 22. [SRDB Ref ID: 204633]

NIOSH [2025]. NIOSH response to SC&A's review of remaining LANL SEC-00109 internal dose issues for 1996-2005. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. April 23. [SRDB Ref ID 206063]

REFERENCES (3 of 3)

ORAUT [2021]. Assessment of Los Alamos National Laboratory plutonium bioassay programs 1996 to 2001. Oak Ridge, TN: Oak Ridge Associated Universities Team. ORAUT-RPRT-0102, Rev. 00, December 2. [SRDB Ref ID: 187245]

ORAUT [2022]. Review of potential exposure to exotic radionuclides using radiological work permit data at Los Alamos National Laboratory. Oak Ridge, TN: Oak Ridge Associated Universities Team. ORAUT-RPRT-0103 Rev 00, August 15. [SRDB Ref ID: 193468]

ORAUT [2023a]. Bounding intakes of exotic radionuclides at Los Alamos National Laboratory. Oak Ridge, TN: Oak Ridge Associated Universities Team. ORAUT-RPRT-0101 Rev. 01, August 30. [SRDB Ref ID: 197263]

ORAUT [2023b]. Dose estimation from intakes of exotic radionuclides at the Los Alamos Neutron Science Center, 1996 to 2005. Oak Ridge, TN: Oak Ridge Associated Universities Team. ORAUT-RPRT-0107 Rev. 00, September 15 [SRDB Ref ID: 198630]

SC&A [2024]. SC&A review of remaining internal dose issues for the LANL SEC-0109 addendum period (1996–2000). Arlington, VA: SC&A. SCA-TR-2023-SEC002, April 12. [SRDB Ref ID: 204632]