Evaluation Report for SEC-00245
Ames Laboratory 1971 - 1989

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Advisory Board on Radiation and Worker Health, 120th meeting
Albuquerque, NM
December 13, 2017

Ames Laboratory Site

- Ames Laboratory is Located on the campus of Iowa State University in Ames, Iowa
- An EEOICPA-covered facility from August 13, 1942 to present
- Various research in materials science and theory
- Developed methods and produced uranium and thorium metals metals during the 1940s and early 1950s

Background

- SC&A provided a review of the Ames Laboratory site profile to the Board in August 2013
- Among the Findings were comments that the site profile did not have a sufficient basis for estimating intakes for certain operations
- After additional data capture efforts and research NIOSH determined there is insufficient information to fully reconstruct internal dose prior to 1990

Background, cont.

- NIOSH initiated an 83.14 SEC petition for the 1971 through 1989 period due to the inability to fully reconstruct internal doses
- NIOSH presumes available monitoring data and information in the site profile is sufficient for external dose reconstructions during the period

Previous SEC classes for Ames

Petition	NIOSH recommended SEC class
SEC-00038	All covered employees in five identified buildings from January 1, 1942 through December 31, 1954 - insufficient internal dose monitoring for thorium - insufficient external dose monitoring (pre-1953)
SEC-00075	Various maintenance workers performing remediation and renovations in Wilhelm Hall from January 1, 1955 – December 31, 1970 - insufficient internal dose monitoring for thorium
SEC-00166	All covered employees from January 1, 1955 – December 31, 1960 - insufficient internal dose data for research work in Spedding Hall
SEC-00185	All covered employees from August 13, 1942 – December 31, 1970 - redefined previous classes to include all covered employees in all areas

NIOSH Proposed Class for SEC-00245

- All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked in any area at the Ames Laboratory in Ames, Iowa, during the period from January 1, 1971 through December 31, 1989
- Basis: insufficient monitoring data and information to reconstruct internal dose

Claims Affected by SEC-00245

- 123 total claims for workers with employment in 1971 through 1989
- 16 claims have tritium bioassay data; some of those have a few bioassay data for other radionuclides
- 21 claims have external dosimetry data

Ames Laboratory Operations

- Operations with potential radiation exposure:
  - Research and Development with various radionuclides
  - Ames Laboratory Research Reactor (1961 – 1982)
  - Remediation

Research and Development

- Conducted 1942 to present
- Laboratory scale research with uranium, thorium, plutonium, rare earth elements, fission products, and various other radionuclides
- Used various equipment and devices to study materials and develop methods of production

Research and Development, cont.

- Performed developmental work to develop and test metals production methods on a larger than laboratory scale basis
- Produced batches of metal, including uranium and thorium, of up to 25 pounds
- Utilized laboratories for producing the pure metals
- Metals were cut and machined in a machine shop in the Metals Development Building

Ames Laboratory Research Reactor

- A 5 megawatt heavy water reactor located about one mile from the Iowa State main campus
- Operated from 1965 through 1977
- Decommissioning work was completed in 1981

Remediation Work

- Wilhelm Hall thorium decontamination projects in the 1970s and 1980s and beyond
- Miscellaneous remediation work in the 1980s:
  - Gillman Hall stairwells
  - Blockhouse demolished
  - Thorium-contaminated soils and debris excavated and shipped off-site

Radiological Monitoring Data

- Some environmental air samples from 1980-1982
- A few air samples from 1986 (6) and 1988 (3) are available from Wilhelm Hall and Spedding Hall
- A few air samples are available from the Alpha Operations Facility in the 1980s

Radiological Monitoring Data, cont.

- Loose contamination survey data in R&D facilities
  - Significant amount of data starting in 1983
  - Insufficient amount of data to characterize conditions during developmental work and decontamination work

Internal Dose Feasibility

- Ames Laboratory Research Reactor
  - Tritium bioassay results are available for some claimants that can be used to estimate tritium dose
  - Insufficient data to estimate intakes from other radionuclides

Internal Dose Feasibility, cont.

- Research and Development
  - Various radionuclides were used including uranium, thorium, plutonium, fission products, rare earths, and other radionuclides
  - Insufficient data to estimate intakes from the various radionuclides from Ames R&D work

Internal Dose Feasibility, cont.

- Remediation Work
  - Primarily thorium and uranium contamination in various areas from the production era
  - Insufficient monitoring data during remediation to estimate intakes with sufficient accuracy

Summary of SEC-00245

- There are insufficient monitoring data or source term and process information to reconstruct internal radiation doses from January 1, 1971 through December 31, 1989