



Argonne National Laboratory - West SEC-00224 Update

John Cardarelli II, PhD, CHP, CIH, PE

Research Health Physicist, NIOSH

Division of Compensation Analysis and Support

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Overview

- Petition information
- Facility background and feasibility determination
- Update on current SEC-00224 tasks
 - Last INL/ANL-W WG meeting was on July 16, 2020

Petition information



Other ANL-W Related SEC Petitions

Petition	NIOSH Recommended SEC Class
SEC-00243	Did not qualify

SEC-00224 Petition

- Petition requested from SEC-00219 petitioner because ANL-W was a separate site from INL prior to 2005 thus necessitating a separate evaluation
- Petition received on December 4, 2014 for requested class:
 - *All workers who worked in any work location at the ANL-W from January 1, 1949 through December 31, 1995, with the basis of inadequate monitoring for plutonium, neptunium and fission products during that time period.*
- Petition qualified on March 13, 2015 for class:
 - *All workers who worked in any work location at the ANL-W from April 10, 1951 through December 31, 1979, with the basis of inadequate monitoring for plutonium, neptunium and fission products during that time period.*
- Evaluation Report sent to ABRWH on February 24, 2016

SEC-00224 Class Definition

All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at the Argonne National Laboratory-West between April 10, 1951 and December 31, 1957 for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees in the Special Exposure Cohort.

Site Background & Feasibility Determination

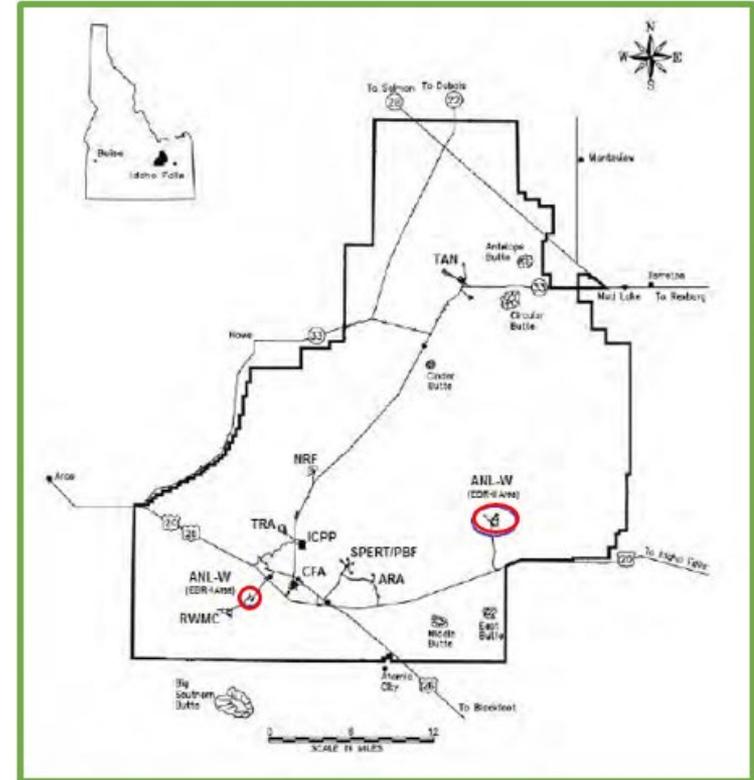


ANL-W – Site Background

- 1949-February 2005: operated by the University of Chicago under the AEC/ERDA/DOE Chicago Operations Office
- February 2005: merged with Idaho National Laboratory and remaining operational facilities collectively named the Materials and Fuels Complex (MFC)
- Purpose was reactor testing, including breeder reactor theory, and experimental measurements.

ANL-W – Site Description (1/3)

- Located on the INL site
- Two primary areas:
 1. EBR-I Complex (red circle on the left)
 2. EBR-II Complex (red circle on the right)



SEC00224 Evaluation Report, Figure 5-1

ANL-W – Site Description (2/3)

- EBR-I Complex
 1. Experimental Breeder Reactor-I (EBR-I)
 2. Zero Power Reactor-III (ZPR-III)
 3. Boiling Water Reactor Experiments I-V (BORAX I-V)
 4. Argonne Fast Source Reactor (AFSR) first location

ANL-W – Site Description (3/3)

- EBR-II Complex
 1. Experimental Breeder Reactor-II (EBR-II)
 2. Transient Reactor Experiment and Test Facility (TREAT)
 3. Fuel Cycle Facility (FCF)
 4. Fuel Assembly and Storage Building (FASB)
 5. Inspection and Test Facility (ITF)
 6. Hot Fuel Examination Facility – North (HFEEF-N)
 7. Zero Power Plutonium Reactor (ZPPR)
 8. Laboratory and Operations Building (L&O Building)
 9. Argonne Fast Source Reactor (AFSR) second location

Argonne National Laboratory-West – Feasibility Summary (1/2)

Feasibility Findings for ANL-W, SEC-00224

Internal Exposures

Source of Exposure	Dose Reconstruction is Feasible 4/10/1951-12/31/1957	Dose Reconstruction is Feasible 1/1/1958 - 12/31/1979
Uranium	No	Yes
Plutonium	No	Yes
Thorium	No	Yes
Mixed Fission Products	No	Yes

Argonne National Laboratory-West – Feasibility Summary (2/2)

Feasibility Findings for ANL-W, SEC-00224

External Exposures

Source of Exposure	Dose Reconstruction is Feasible 4/10/1951-12/31/1957	Dose Reconstruction is Feasible 1/1/1958 - 12/31/1979
Beta - Gamma	No	Yes
Neutron	No	Yes
Medical X-ray	Yes	Yes

Update on Current SEC-00224 Tasks

Argonne National Laboratory-West – Current Tasks

- I. Use of General Area Air Sampling Data to Assess Unmonitored Actinide Exposures
 - SEC-00224 Evaluation Report determined there were inadequate actinide bioassays for some workers potentially exposed to actinides that were present in certain areas with MFPs present.
 - Potential internal exposures could be accounted for by assessing unmonitored intakes based on available general area (GA) air sampling data.

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposure (1/3)

- SEC-00224 Evaluation Report determined:
 - Workers at EBR-I Complex could have been exposed to uranium without MFPs present
 - Workers at EBR-II Complex could have been exposed to thorium, uranium, and plutonium without MFPs present
 - There was inadequate actinide bioassay data to estimate potential intakes but potential unmonitored actinide intakes could be accounted for using the gross alpha sampling data from those areas.
- During review of SEC-00224 Evaluation Report, concerns were raised about the proposed method for accounting for unmonitored actinide intakes using GA air sample data.

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposures (2/3)

- SC&A's primary concerns:
 1. Concerned about the use of GA air samplers with low air flow
 2. Concerned about air sample dilution due to ANL-W sampling during both operational and non-operational periods at its facilities.
 3. The generic lack of parity between air concentrations measured by GA air samplers and lapel samplers worn by individual workers.

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposures (3/3)

- Development began on ORAUT-RPRT-0089 *Evaluation of Issues in the Use of General Area Air Sampling for Argonne National Laboratory-West Internal Dose Assessment*.
- During the development of ORAUT-RPRT-0089 it was determined that a general topical report on the concentration ratios between breathing zone (BZ) samplers and general area (GA) air samplers in small areas was needed.
- Work was suspended on ORAUT-RPRT-0089 and development of ORAUT-RPRT-0097, *Breathing Zone to General Area Air Concentration Ratios in Small Workrooms* began.

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposures: ORAUT-RPRT-0097 (1/2)

- The purpose of ORAUT-RPRT-0097 was to evaluate the relationship between GA and BZ air concentrations for small workrooms and to determine if adjustments to the GA air concentrations are necessary to make them equivalent to the BZ air concentrations in a small workroom.
- The air sample data from five air sampling studies were evaluated assuming different hypothetical BZ and GA air sampler location scenarios.

<https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-97-r0-508.pdf>

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposures: ORAUT-RPRT-0097 (2/2)

- The use of the BZ:GA ratio information in ORAUT-RPRT-0097 is intended for small radiological workrooms with relatively long-lived radionuclides.
- ORAUT-RPRT-0097 (dtd March 29, 2021) is a complex-wide report and is being reviewed by the Subcommittee for Procedures Review. SC&A was tasked to review this report in February 15, 2022.

<https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-97-r0-508.pdf>

I. Use of General Air Sampling Data to Assess Unmonitored Actinide Exposures: ORAUT-RPRT-0089

- In the spring of 2021, work resumed on ORAUT-RPRT-0089
- ORAUT-RPRT-0089 was completed and issued on April 19, 2022. This report will be presented to the INL workgroup at their next meeting. Please note this report relies heavily on ORAUT-RPRT-0097.

<https://www.cdc.gov/niosh/ocas/pdfs/orau/oraurpts/or-rprt-89-r0-508.pdf>

Questions?

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

