Hanford
Special Exposure Cohort
Petition Evaluation Report

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Petition Overview

- Petition received on November 10, 2009
- Petitioner proposed class definition:
  - All personnel who were internally monitored (urine or fecal), who worked at the Plutonium Finishing Plant in the 200 Area at the Hanford Site, from January 1, 1987 through December 31, 1989

Petition Overview—cont.

- May 3, 2010: Petition qualified for evaluation
- Petition basis: Radiation monitoring records for members of the proposed class have been lost, falsified, or destroyed

Petition Overview—cont.

- Three existing SEC classes previously enacted at Hanford:
  1. October 1, 1943 through August 31, 1946, for selected areas of Hanford (SEC-00057-1)
  2. September 1, 1946 through December 31, 1968, for selected areas of Hanford (SEC-00057-2)
  3. October 1, 1943 through June 30, 1972, for all areas of Hanford (this class subsumed previous two classes; SEC-00152)

Petition Overview—cont.

- SEC-0057 petition requested the SEC class be continued through 1990
  - Advisory Board and NIOSH continue to review post 1972
- The timeframe associated with SEC-0155 was encompassed by SEC-0057
- SEC-00155 was specific and focused on data falsification and was deemed appropriate for separate review

Petition Overview—cont.

- The petitioner's specific evidence of accusations by the U.S. EPA of purposeful wrong doing by US Testing resulted in NIOSH determining that issues regarding quality of bioassay data required further investigation as a separate issue from the continuing Board evaluation of SEC 00057.
- The intent of NIOSH's separate evaluation of SEC-00155 is to ensure that issues identified with UST's non-bioassay analytical programs did not also adversely affect the company's bioassay analysis operations in Richland, WA.

Sources of Available Information

- ORAU Team Technical Basis Documents (TBDs)
- ORAU Team Technical Information Bulletins (TIBs) and Procedures
- Interviews with eight former employees
- Existing claimant files
- Documentation provided by petitioner
- NIOSH Site Research Database (over 7500 documents)
- Data captures at Hanford and Office of the Inspector General

Interviews

- Eight interviews with former workers
  - None of the statements collaborated falsification of data from the radiobioassay program

Previous Dose Reconstructions

NIOSH OCAS Claims Tracking System

Information available as of April 13, 2011

- **Hanford claims submitted to NIOSH** **4034**
- **Claims with employment during the period evaluated (1987-1989)** **1347**
- **Claims containing internal dosimetry** **914**
- **Claims containing external dosimetry** **1310**

Periods of NIOSH Evaluation

- NIOSH evaluated the time period requested by the petitioner January 1, 1987 through December 31, 1989
- While the location was specified as employees who worked at the Plutonium Finishing Plant, the evaluation was primarily focused on the program which applies to all of Hanford

Hanford Operations: 1987-1989

- Evaluation report does not repeat the discussions from evaluation reports for SEC-00057 and SEC-00152
- Describes activities at the Plutonium Finishing Plant during the time period in question
- Focus of the evaluation was data falsification and not source-term issues

Plutonium Finishing Plant: 1987-1989

- Weapons grade metal production, Remote Mechanical C Line
- Plutonium Reclamation Facility
- Miscellaneous treatment system glovebox operations
- Analytical laboratory operation
- Development laboratory operations
- Polycube processing (a polycube is a solid mixture of polystyrene and plutonium oxide)

Potential Radiation Exposures During the Class Period

- Internal sources of exposure
  - Plutonium Finishing Plant contained broad spectrum of internal emitters (particularly plutonium and americium)
- External sources of exposure
  - Not the driving force for this evaluation report
  - Photon/beta exposure from the various activities at the Plutonium Finishing Plant
  - Neutrons were also an exposure potential

Personal Monitoring Data

- Internal monitoring data
  - US Testing processed several thousand bioassay samples during the period in question
    - Urinalysis was the principal plutonium method
    - Workers deemed to have a higher risk or those involved in potential incident may also have fecal samples
    - Americium typically monitored with in-vivo counting methods
  - Hanford maintained an extensive area monitoring program (not the focus of this review)
- External monitoring data
  - Extensive monitoring results are available for beta/photon and neutron exposures

Background

- US Testing provided radioanalytical services to Hanford since 1965 (including bioassay)
- US Testing's radioanalytical facilities were located in Richland, WA
  - Richland facility also did non-radiological analyses
- US Testing also had another laboratory in Hoboken, NJ
  - Performed non-radiological analyses

Background—cont.

- Pacific Northwest National Laboratories (PNNL) was responsible for overseeing the quality of the data produced by US Testing for Hanford from 1979 thru the 1991
  - Quality assurance program included blind bioassay samples (~250 blanks and quality control during 1987 thru 1989)
  - Annual reports during the time period of interest were reviewed by NIOSH as part of this evaluation

Background—cont.

- Additional information on US Testing audits
  - PNNL conducted a lengthy procurement process prior to the award of the September 1988 contract with US Testing
    - Included technical and quality assurance/quality control evaluations
    - PNNL further evaluated the data quality provided by US Testing in the fall of 1989 and presented the results to Westinghouse Hanford Company, U.S. EPA, and the U.S. DOE, and State of Washington
  - US Testing participated in on going external quality assessment programs conducted by the DOE Environmental Measurements Laboratory (EML) and the EPA intercomparison quality control programs

Background—cont.

- U.S. EPA suspended US Testing from federal contracts, April 25, 1990
  - The notice of suspension alleges that the management of US Testing "conspired, directed, carried out, and otherwise condoned a scheme to defraud the United States Government" in its performance at facilities in Richland, Washington and Hoboken, New Jersey
  - The notice also alleges that this scheme "resulted in the submission of false, inaccurate, and unreliable test results and data"
  - Suspension was related to EPA's investigation of US Testing as related to falsification of environmental (non-radiological) sample data
- US Testing admitted wrongdoing and pleaded guilty to a felony on April 17, 1991

Evaluations of US Testing

- The U.S. EPA's suspension of US Testing caused U.S. DOE to order PNNL to review US Testing's data quality
- Beginning in May 1990, PNNL conducted two separate activities
  - Formal audit of past US Testing activities that included data traceability
  - Three week on-site performance based technical oversight of current US Testing practices

Evaluations of US Testing—cont.

- June 1, 1990, PNNL and U.S. DOE announced the contract with US Testing was being terminated for default
  - Termination was based on findings that US Testing had sent certain samples to its Hoboken facility without appropriate quality assurance as required by the Battelle contract
  - US Testing billed the government through Battelle for these samples
  - Samples were dioxin and total petroleum hydrocarbons (non-radiological)
- WHC, U.S. EPA, U.S. DOE and the State of Washington performed independent evaluations of US Testing

Evaluations of US Testing—cont.

- University of Washington (Omenn Report) evaluated data from 1983 to 1990 from US Testing, focusing on in vitro bioassay data
- In 1992, PNNL summarized the series of reviews as they relate to the quality and usability of the US Testing data
- Report concluded that “the data produced under the Battelle contract with UST are technically supportable for the purposes for which they were collected” and “all activities performed to date support the technical credibility of the data provided by the UST Richland Laboratory.”
- No indication from any evaluation, audit or surveillance that the data from the US Testing Richland facility was technically compromised

Feasibility of Dose Reconstructions

- NIOSH found no support for an SEC based on falsification of data
- NIOSH and the Advisory Board continue to evaluate various SEC-related issues in the 1972 to 1990 period

NIOSH Recommendation

- NIOSH has obtained numerous documents containing monitoring results, bioassay program audit reports, independent bioassay program data evaluations, as well as Hanford process and source-term information.
  - In addition, several individuals with first-hand knowledge of the contractor bioassay laboratory issues during the period under evaluation have been interviewed.
  - Employee-specific information provided through the EEOICPA claims process and Technical Basis Documents written by NIOSH have also been available for this evaluation.
- Based on its analysis of these available resources, NIOSH found no part of the class under evaluation for which it cannot estimate radiation doses with sufficient accuracy.

NIOSH Recommendation—cont.

Class	Feasibility	Health Endangerment
January 1, 1987 to December 31, 1989	Yes	N/A