Weldon Spring Site SEC-00143

Working group:

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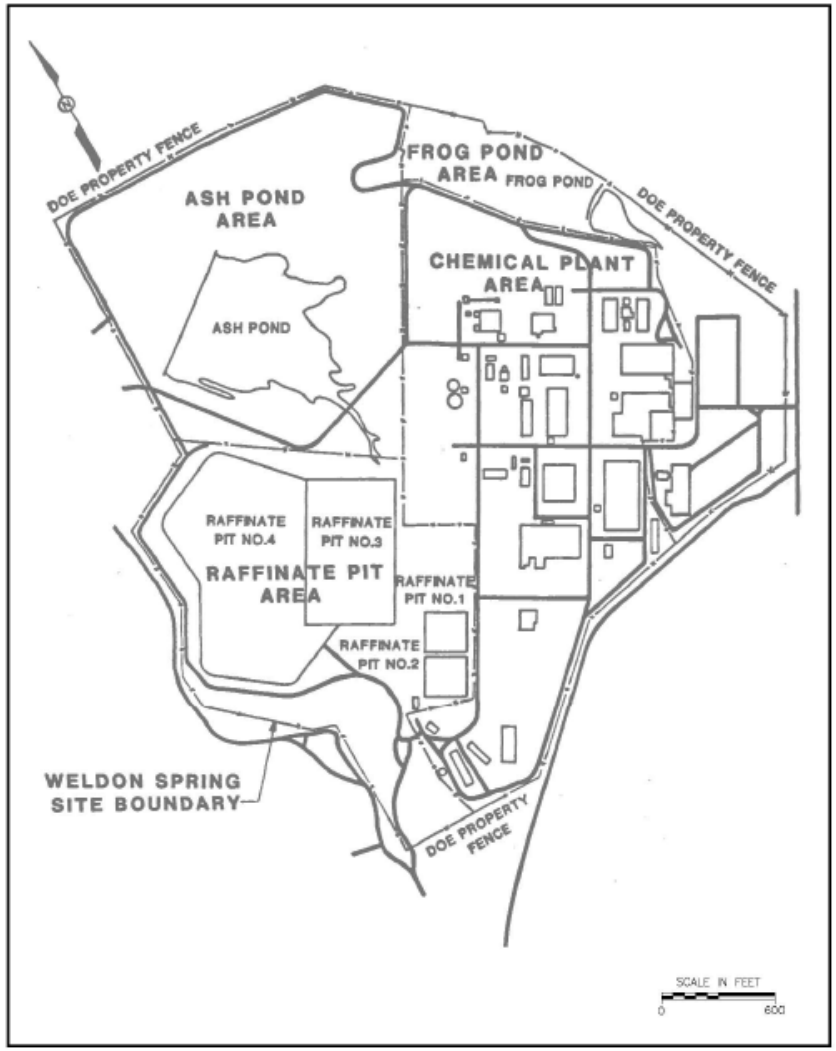
Brief Review of the Weldon Spring (WS) Site

- 1941-1946 Explosive production for Army
- 1946-1954 Idle
- 1954-1957 Land acquisition & plant development
- June 1957-12/31/1966 Uranium operations
- 12/31/1967 Plant transferred to DOD
- 1967-1969 DOD prepares plant, then terminates
- 1975-1985 Monitoring and Maintenance
- 1985-2002 WSSRAP- D&D of plant, quarry & pits. Material placed in engineered disposal cell.

WS Site During Operations

(ORAUT-TKBS-0028-2, page 9)



Engineered Disposal Cell 2008

Recap of WS Site Profile and SEC Activities

- June 2005: NIOSH issued TKBS-0028-1 through 6
- March 2009: SC&A issued WS site profile review
- Sept 2009: SEC-00143 qualified
- April 2010: NIOSH issued Evaluation Report (ER) for SEC-00143.

WS WG Meetings

- 19 Oct 2010: WS 1st WG meeting
- 25 Jan 2011: WS 2nd WG meeting
- 9 May 2011: WS 3rd WG meeting
- 13 Sept 2011: WS 4th WG meeting
- 29 Nov 2011: WS 5th WG meeting by phone conference.

Summary of SEC Issues for 1957-1967

1. Accuracy and completeness of internal data (1a), external dose data (1c), air data (1b), and coworker data (1d).

2. Lack of egress monitoring.

3. Lack of dose records for 1967.

4. No radon/thoron measurements.

SEC issues (continued)

5. Validity of method used to assign recycled uranium intakes.
6. Lack of neutron dose data.
7. Lack of air measurements at quarry and raffinate pits during 1957-1967.
8. Impact of accidents/incidents on dose reconstruction.
9. Geometry/extremity correction factors.

Site Profile Issues

- There were 28 site profile issues identified.
- Most of these site profile issues have been incorporated into the SEC issues, or have been addressed, or are being addressed by changes in the WS TBD and PERs.
- SC&A is tracking the site profile issues along with the SEC issues.

Closed SEC Issue

1a & 1c. Accuracy/completeness of data:

Accuracy of data:

- Dose reconstructors use only photocopies of the original Weldon Spring data sheets.
- Electronic or CER databases are not used for dose reconstruction (DR).

Completeness of data:

- Initial test of data completeness (15 workers) showed that 90-95% of the production workers were bioassayed and monitored for 1957-1967.

Closed SEC Issue

1d. Coworker data:

- Sufficient data to create coworker bioassay and external database.
- Coworker data tables not needed to date.
- NIOSH will create coworker database if needed.

Because of this information SEC Issues 1a, 1c, & 1d have presently been closed.

[Note: SEC **Issue 1b** will be addressed later in this session]

Closed SEC Issue

2. Lack of egress monitoring:

- Sufficient bioassay data to reconstruct dose if ingestion did occur.
- External exposures addressed by monitoring and skin dose calculations.

This issue has presently been closed.

Closed SEC Issue

3. Lack of dose records for 1967:

- Indications are that 1967 may have been a transition year. Operational-period external and internal data sufficient to bound doses incurred during 1967.

This issue has presently been closed.

[Note: SEC **Issue #4** will be addressed later in this session]

Closed SEC Issue

5. Recycled uranium intakes:

- Method was addressed to determine if consistent and appropriate intakes were being applied during DR.
- It was found that inconsistencies in the DR process may have occurred.
- Changes in WS TBD and appropriate PER to be implemented.

This issue has presently been closed.

Closed SEC Issue

6. Lack of neutron dose data:

- There is a lack of neutron dose data at Weldon Spring.
- Fernald neutron dose method can be used as surrogate because of similar materials, i.e., n/p values.
- SC&A independently verified NIOSH's recommended n/p values.

This issue has presently been closed.

Closed SEC Issue

7. **Lack of air measurements at quarry and raffinate pits during 1957-1967:**

    - Measures performed in later period are applicable to operational period because quarry and pits not released to DOD and conditions remained fairly constant.

This issue has presently been closed.

Closed SEC Issue

8. **Impact of accidents/incidents on dose reconstruction:**
    - Bioassay data available for workers with accidents in claims reviewed.
    - Accidents/incidents are factored into DR process on an individual case basis.

This issue has presently been closed.

Closed SEC Issue

9. Geometry and extremity monitoring:

- NIOSH evaluated methods used at other DOE uranium sites for dosimetry geometry and extremity monitoring and the impact on recorded doses at the Weldon Spring site.
- WS TBD will be revised to incorporate adjustments factors from DCAS-TIB-0013.

This issue has presently been closed.

Status of Pending SEC Issues

1b Air Data for Thorium intakes:

- No thorium bioassay data (1966 chest counts not used).
- Gross-alpha activity air samples available.
- Assume 100% thorium activity.
- Original calculational and transcriptional error analyzed.
- These errors are called “blunders” in the scientific literature. They are not gross mistakes, but common errors).

SEC Issue 1b Air Data (continued)

- Need to determine impact of errors on derived daily weighted average (DWA) air concentrations.
- 9/07/2011: NIOSH issued white page addressing DWA errors.
- 9/272011: SC&A issued response to NIOSH's 9/07/2011 paper. SC&A recommended:
  - DR implementation method be provided
  - The representativeness of the limited data be addressed.

SEC Issue 1b Air Data (continued)

- 11/28/2011: NIOSH issued revised white page addressing DWA errors with DR implementation recommendations.
- 11/29/2011: DWA errors discussed at WS WG meeting of 11/29/2011.
- 11/29/2011: SC&A tasked with analyses of NIOSH's revised DWE paper.

Status of Pending SEC Issues

4. No radon/thoron measurements:

- NIOSH performed analyses of potential environmental and indoor radon/thoron intakes and issued response on 4/21/2011.
- SC&A evaluated recommended model and found it to bound the potential intakes.
- The WS radon model is more conservative than previously proposed DOE site radon models in that it does not include any lost of radon/thoron through ventilation.
- WG recommends discussion with AB.

Summary of WS SEC

- WS WG, NIOSH, and SC&A have been actively working on SEC (and site profile) issues during the last several years.
- Progress has been made for each of the nine SEC issues (and also the 28 site profile issues).
- Most SEC and Site Profile issues resolved except for **AWE errors** and **use of radon/thoron model**.