PANTEX SEC PETITION REVIEW

Summary of Progress

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Advisory Board on Radiation and Worker Health
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Work Group Review: Overview

- Nov 20, 2007: Petition qualified
  - "All employees who worked in all facilities at the Pantex Plant in Amarillo, TX, from Jan 1, 1951 through Dec 31, 1991"
- Aug 8, 2008: NIOSH Evaluation Report issued
  - "NIOSH found no part of the class under evaluation for which it cannot estimate radiation doses with sufficient accuracy."
- May 4, 2010; May 3, 2011: Work Group meetings
- Oct 26-28, 2010: Onsite tour
- 2009-2011: multiple onsite data captures, worker interviews

Work Group SEC issues

1. Adequacy of Internal Dose Records -- open
2. Internal Dose Models for Uranium – open
3. Dose estimate approach for Plutonium – closed*
4. Dose estimate approach for Thorium – open
5. Internal Dose approach for Metal Tritides – closed*
6. Interpretation of External Dosimetry Data – closed*
7. 95th percentile neutron-to-photon ratio not bounding – open
8. Completeness of historical rad exposure sources – open
9. Incidents cited limited, incomplete – open

(* recommended by SC&A)

Work Group SEC issues (cont'd)

10. Inadequate consideration given to firing sites – open
11. Validation whether most highly exposed worker badged (external) – closed*
12. Accuracy of plant exposure data (petitioner issue) – closed*
13. Too few workers monitored for valid DR (petitioner issue) – open
14. Records incomplete for subcontractors, temp workers, short-term employees (petitioner issue) – closed*
15. Exposure from tritium leaks (petitioner issue) – open
16. Badge placement (petitioner issue) – open
17. Efficacy of HP and IH programs (petitioner issue) – closed,* merged with other issues

(*recommended by SC&A)

Open Issue: Internal Dose Models for Uranium

- W28 involved uncased DU component whose corrosion resulted in contamination upon disassembly; first W28 disassembly in 1958.
- NIOSH ER stipulates 305 bioassay results from 1990 depleted uranium contamination "incident" with W28 system be used to bound all prior DU potential exposures; SC&A disagrees that 1989 incident is necessarily the worst (no objective basis in ER).
- ER indicates that 1990 results were used because "most comprehensive set of [DU] intake data found…" and represent "large, known high quality, intakes form exposures expected to be above normal operational exposures."
- SC&A acknowledges that W28 system appears to have had highest exposure potential, but finds that at least one lab comparison shows mean uranium intakes for earlier years (1966-1979) to be double that of later years (1980-1990).

Uranium (cont'd)

- NIOSH indicates that modeling of airborne contamination levels and analysis of available air sampling data tend to be in agreement with ER recommended intake values.
- However, SC&A believes use of pre-1990 workplace contamination and air sampling data to be of suspect reliability given 1989 DOE audit of Pantex internal dosimetry program finding gross inadequacies.
- Recollections of the magnitude of the 1989 incident, as compared with prior contamination incidents, varies among interviewees.
- SC&A also questions retrospective use of 1990 bioassay results over 30 years of Pantex disassembly operations without some evidence of normalized operations, radiological controls, and monitoring (e.g., multiple units handled in bays during early years).

Uranium (cont'd)

- Worker categories potentially exposed to DU contamination from W28 disassembly included technicians, supervisors, engineers, safety personnel, handlers, and other support personnel (all had access to W28 bay areas).
- Contamination spread may have involved adjacent hallways, storage areas, and offices (contamination control inadequate, self-monitoring limited, RAMs used not BZ monitoring; beryllium contamination found in these areas).
- Interviews indicate that early workers entered and left bay areas without any routine egress monitoring.

Open issue: Thorium

- Thorium was contamination concern in at least four weapon systems dating back to 1960s.
- One bioassay performed in 1983, remainder in 1990s; results showed no intakes of significance.
- NIOSH proposes to base estimate of chronic intake of thorium on 2% of DU intake for times when thorium was present in disassemblies, based on observed mass ratios.
- Further review by work group awaits Board action on uranium SEC issue.

Other open SEC issues

- Data adequacy and completeness – WG received NIOSH response to SC&A white paper on Aug 5, 2011; being reviewed.
- Too few workers monitored for valid DR (petitioner issue)
- Exposure from tritium leaks (petitioner issue)
- Inadequate consideration given to firing sites
- Badge placement (petitioner issue)

Summary

- Work Group recommends full Board review and action regarding dose reconstructability of worker exposure to depleted uranium at Pantex from 1958 through 1983, where an exposure potential existed with the disassembly of the W28.
- Work Group deferring action for 1984 through 1991 pending further NIOSH assessment of whether 1989 bioassay data would be bounding for that specific “campaign” period and subsequent SC&A review of NIOSH approach.
- SC&A will continue its review of DU exposure potential during 1951-1958.
- Work Group deferring action for thorium pending full Board review of uranium SEC issue.
- Remaining issues of data adequacy to be dispositioned with NIOSH and SC&A with receipt of NIOSH response of Aug 5, 2011.