

Weldon Spring Plant: Special Exposure Cohort Petition Evaluation Report

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Weldon Spring Plant

Site History

- **AEC contracted with Mallinckrodt Chemical Company to refine uranium at Weldon Spring Plant from June 1957 – December 1966**
- **1967 was a transition year, and the site was awaiting the Department of the Army to take ownership**
- **In 1967, AEC returned the land to the Department of the Army**

Weldon Spring Plant

Covered period

- Operational period defined as 1957 through 1967
- Plant closed down by AEC in 1966
- No AEC operations or contractors from 1966 through 1975
- Monitoring and remediation from 1975 through 1984

Operations

- The primary activity during the operational period was the conversion of natural uranium ore concentrate (yellowcake)
- Other highly refined uranium and thorium compounds were processed in significant quantities
- The ore concentrates processed at Weldon Spring Plant were a relatively small source of radon because most of the radium in the ore was removed in the milling process

Approach

- **NIOSH and SC&A agreed (January 2011 WG meeting) on bounding radon exposure conditions for process workers**
 - All radon released during processing was re-circulated back into the process areas
 - Assume steady state; minimum ventilation
- **This approach establishes a bounding intake to perform dose reconstruction**

Bounding Conditions

- Average annual uranium-containing material process throughput was 12,000,000 kilograms
- Radon release estimated based on amount of uranium processed
- Assume 70% of material was uranium
- Estimated radium activity as 1% of uranium activity (a conservative, upper end estimate)

Bounding Conditions (cont'd)

- Equilibrium between radium and radon
- Radon release estimated between 12 to 34 Curies/year (Meshkov et al. 1986, pp 47-48)
 - NIOSH selected the upper bound value of 34 Ci/yr
- No surrogate data used

History of ABRWH WG Discussions

- **January 2011: An agreement reached that a scenario in which ALL radon released during processing was re-circulated into the facility would be bounding**
 - The maximum concentration of radon, based on release estimate, to be assigned for intake
- **May 2011: discussion and clarification, but no change in proposed direction**