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