

# **Weldon Spring Plant: Special Exposure Cohort Petition Evaluation Report**

**Mark Rolfes, M.S.**  
Health Physicist

**National Institute for Occupational Safety and Health  
Division of Compensation Analysis and Support**

**June 2012**

# 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**