

Dow Chemical Company Special Exposure Cohort

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Facility Designation

- **Dow Chemical Company**
- **Atomic Weapons Employer facility in Pittsburg, CA**
- **Covered time period: 1947-1957**
- **Atomic Energy Commission (AEC) contract for small scale research on uranium recovery from phosphate residues**

Background

- Petition SEC-00216 received: June 12, 2014
- Qualified for Evaluation: August 5, 2014
- Class evaluated for all workers during covered period (1947-1957)
- NIOSH recommended class:
 - All workers at Dow Chemical Company in Pittsburg, California, from October 1, 1947 through June 30, 1957, based on actual contract operations dates

Site History

- AEC contracted with DOW to study uranium extraction from various residues and raw materials from phosphate industry
- Contract lasted more than 9 years
- Small-scale extraction experiments, bench top, and pilot-plant scale
- Successful processes to be scaled up at other sites

Site History (cont.)

- **Pittsburg site is ~ 513 acres, 41 used by DOW**
- **Up to 7 rooms in DOW's research laboratory building used for AEC work**
- **DOW commercial operations at site not associated with AEC work**
- **About 100 workers total involved in project at some point during contract operations**

Site History (cont.)

- Processes investigated :
 - Precipitation
 - Ion exchange
 - Solvent Extraction
- Raw materials:
 - Phosphate industry residues and ores
 - Phosphoric acid
 - Phosphate rock
- No indication that thorium separations took place under this AEC contract

Dose Reconstructions

NIOSH Claims Tracking System

(March 3, 2014)

- Submitted to NIOSH 1
- Within the SEC period (1947–1957) 1
- Dose reconstructions completed outside SEC period 0
- Containing internal dosimetry 0
- External dosimetry 0

Sources of Available Information

- NIOSH Site Research Data Base: 166 documents
- Claim file
- DOW headquarters
- Landauer
- Department of Energy Office Scientific Technical Information
- Former worker interviews (3)
- Other standard data searches conducted

Potential Exposures

- **Internal:**
 - Uranium and progeny if contained in raw materials
 - Thorium and progeny if contained in raw materials – there was no specific research objective to separate thorium
 - Radium and polonium typically are not carried into the phosphoric acid during phosphate rock processing
- **External:**
 - Beta and photon from uranium and thorium daughter nuclides in the decay chains

Personal and Area Monitoring Data

- No internal or external personnel monitoring available
- No air sampling or area survey data available
- Source-term information insufficient
- Process-information insufficient
- No medical occupational exposure information available

Feasibility of Dose Reconstructions

- Available monitoring records, process information and source-term data are insufficient to complete dose reconstructions with sufficient accuracy for the evaluated worker class

Health Endangerment

- The evidence reviewed in this evaluation indicates that some workers in the class may have accumulated chronic radiation exposures through intakes of radionuclides and direct exposure to radioactive materials
- Consequently, NIOSH is specifying the health may have been endangered for those workers who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC

Proposed Class Definition

- All Atomic Weapons Employer employees who worked for the Dow Chemical Company in Pittsburg, California, from October 1, 1947 through June 30, 1957, for a number of work days aggregating at least 250 work days, occurring either solely under this employment or in combination with work days within the parameters established for one or more other classes of employees included in the Special Exposure Cohort.

Summary

Feasibility Findings for SEC-00216 – Dow Chemical, Pittsburg CA (October 1, 1947 through June 30, 1957)

Exposure Source	Reconstruction Feasible	Reconstruction Not Feasible
Internal - Uranium		X
External		X
Gamma		X
Beta		X
Neutron		N/A
Occupational medical X-rays	X	

Questions?