

# Beryllium exposure and disease among Construction Workers

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# Screening for CBD among Former DOE Construction Workers

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<b>Parameter</b>	<b>Hanford</b>	<b>Savannah River</b>	<b>Oak Ridge</b>
<b>Date site opened</b>	1943	1949	1943
<b>Workers ever employed (approx)</b>	109,000	67,000	55,000
<b>Available for screening</b>	30,000	37,000	8,000
<b>Workers screened</b>	1,624	1,592	1242

# Screening for beryllium disease among construction workers

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- ❑ Beryllium used at Hanford + Oak Ridge, reportedly not used at Savannah River
  - ❑ Initial program screened only construction workers who reported work in a beryllium building
  - ❑ Pilot program then tested all participants, found abnormal BeLPTs in workers who did not report work in a beryllium building
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# Screening for beryllium disease among construction workers

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- ❑ Began BeLPT testing at Savannah River even though DOE reported no use of beryllium
  - ❑ After identified positive BELPT among construction workers, site personnel searched records again and found three work locations or events with potential exposure to beryllium
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# Occupation of Workers with BeLPT results

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Trade	Hanford	SRS	Oak Ridge	Combined
Electrician	177	281	249	18.4%
Pipefitter	280	281	129	18%
Laborer	169	230	204	15.7%
Carpenters	105	116	129	9.1%
Ironworker	92	53	69	5.6%
Operators	84	83	47	5.6%
All others				27.6%

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# Demographics of Workers with BeLPT results

<b>Parameter</b>	<b>Hanford</b>	<b>Savannah River</b>	<b>Oak Ridge</b>	<b>All sites</b>
Number tested	1272	1403	1167	3842
Single positive	39 (3.1%)	27 (1.9%)	19 (1.6%)	85 (2.2%)
Double positive	18 (1.4%)	22 (1.6%)	13 (1.1%)	53 (1.4%)
Age (mean)	60.7	52.9	60.9	57.9
Years at DOE site	12.1	12.4	15.6	13.2

# Logistic regression for any positive BeLPT -

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## □ Duration of work at DOE

- < 5 years 1.0
- 5-14 years 0.8 (.04-1.5)
- 15-24 years 0.8 (.04-1.6)
- 25 + years 0.8 (.04-1.8)

## □ Years since last employed at DOE

- <10 1.0
  - >10 0.7 (0.4-1.1)
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# Logistic regression for any positive BeLPT

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- Worker reported beryllium exposure
    - No 1.0
    - Yes 1.1 (0.7-1.7)
  
  - Worked in a beryllium building
    - No 1.0
    - Yes 3.4 (1.3-8.8)
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# Sensitivity and CBD at DOE sites (see also Stange 2003)

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□ Site	% sensitized	sensitized/CBD
□ Rocky Flats	3.7%	45%
■ machinists		73%
□ Pantex	2.7%	25%
□ Livermore	3.07%	13%
□ Kansas City	2%	14%
□ Construction	1.4%	15%

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# Screening for CBD among Former DOE Construction Workers

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- ❑ Proportion sensitized is similar to other surveillance programs for beryllium
  - ❑ Yield of CBD among those sensitized is significantly less than at Rocky Flats, Y-12
  - ❑ Overall, found 5 cases of CBD among 3842 tested
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# Exposures in construction outside DOE facilities

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- Abrasive blasting with coal slag  
(N= 5)
    - 2.5 to 9.5 ug/m<sup>3</sup>, mean of 5.86 ug/m<sup>3</sup>
    - bulk samples had 4 ppm
    - Three times OSHA PEL, 11 times NIOSH REL
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