

Latent Disease Findings in Former Hanford Workers

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University of Washington Former Worker Project Methods

- **Locating Workers**
- **Contact Response Rate**
- **Occupational History Survey Exposure Assessment**
- **Medical Exam Results**
- **Analysis**

The 1993 Defense Reauthorization Act

‘The secretary shall establish and carry out a program for the identification and ongoing medical evaluation of current and former Department of Energy employees who are subject to significant health risks as a result of exposure of such employees to hazardous or radioactive substances during such employment.’

Determination of Need for Surveillance

- Interventions to alter the course of disease
- Interventions which could identify substantial impairment or health risk
- Interventions which would reasonably require worker notification

Determination of Need for Surveillance

- **Asbestos** - Smoking cessation can reduce risk. For pulmonary fibrosis, knowledge of significant exposure may eliminate need for open lung biopsy.
- **Beryllium** - Early diagnosis and treatment may decrease morbidity. Exposure assessment
- **Noise** - Motivation for future protection, hearing aids used earlier, workers comp.

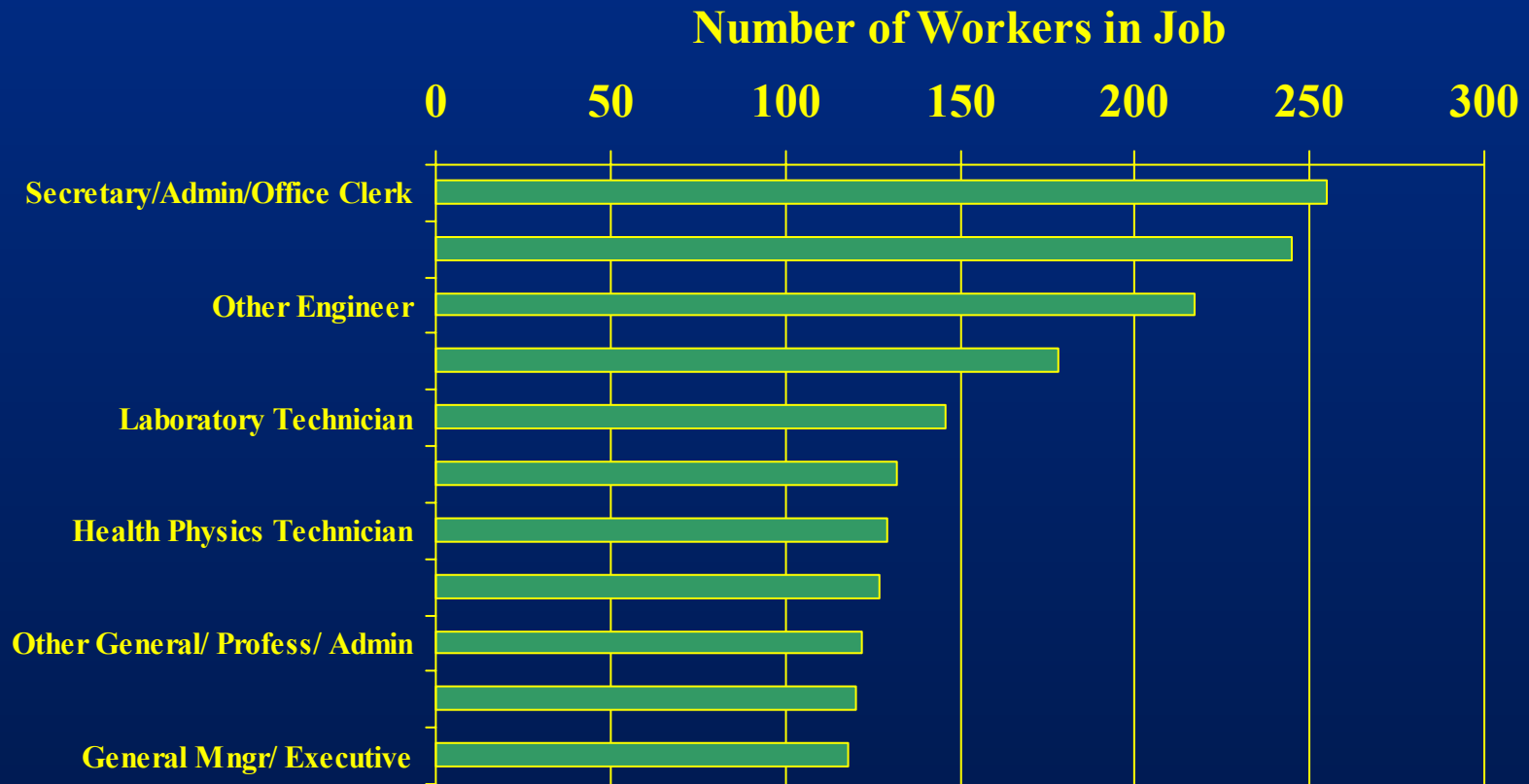
Summary of Program Process

	Building Trades Program (Funding as of 10/97)	Production & Non- construction Program (Funding as of 5/98)
Attempted to contact (by mail or other means)	30,345	51,698
Responded	3,822	15,436
Completed screening exam	1,869	1,240
Results letter sent	1,829	1,212
Follow-up recommended for possible work-related condition	674	652
Follow-up recommended for non- work-related condition	1,213	518

Occupational History Survey

Most Common Job Titles

(N=4205 jobs)



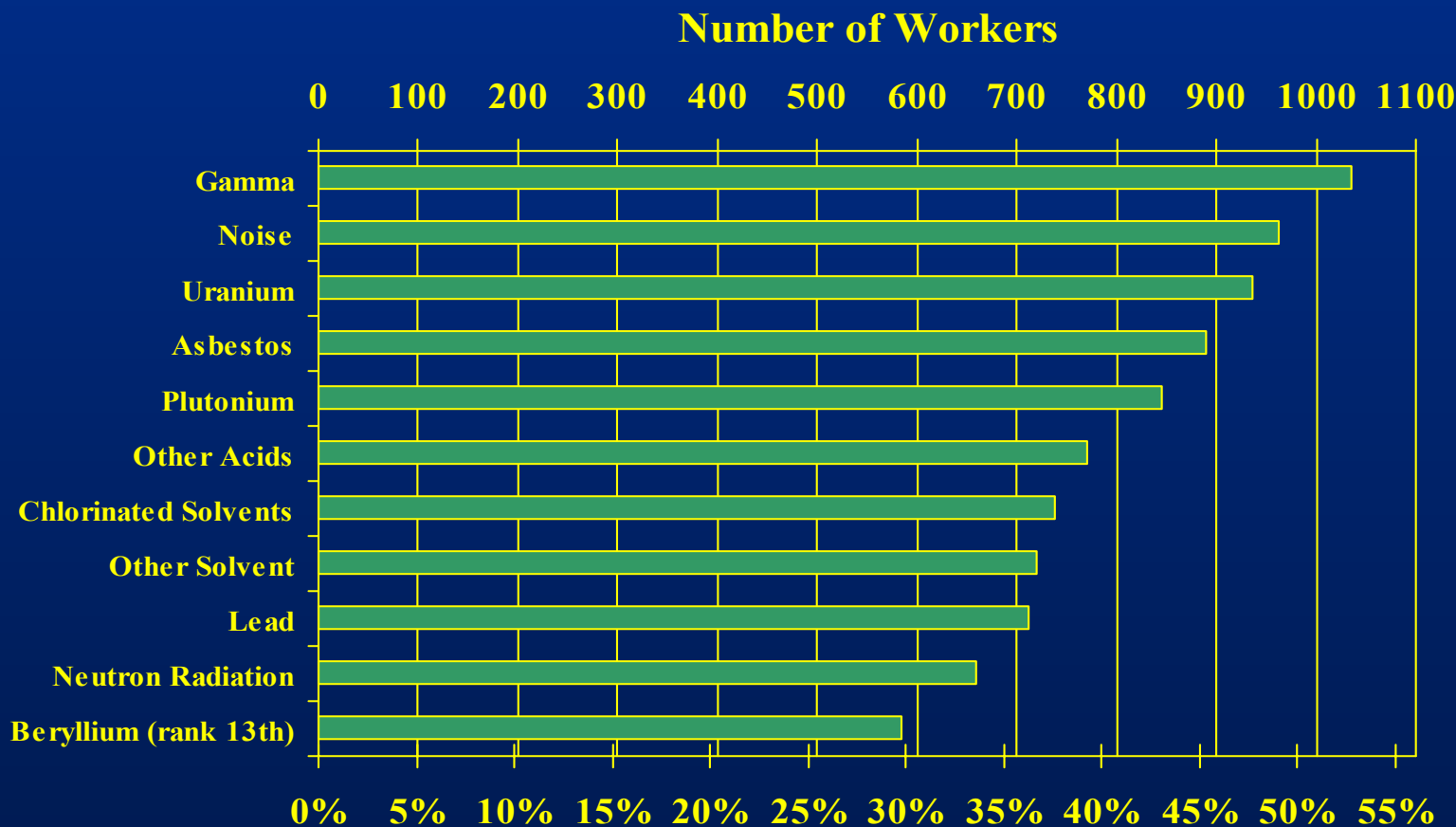
Occupational History Survey

Most Common Job Titles

(N=4205 jobs)

Job Title	Number of Workers in Job
Secretary /Admin /Office Clerk	255
First Line Supervisor	245
Other Engineer	217
Nuclear Process Operator	178
Laboratory Technician	146
Other Technicians	132
Health Physics Technician	129
Instrument&Control Technician	127
Other General/Prof/Admin	122
Nuclear Plant Operator	120
General Manager/Executive	118
Mechanical Engineer	112
Utilities Operator	102
Engineering Technician	91
Electrician	90
Chemist	90
Chemical Engineer	87
Plant Engineer	80
Other Crafts	79
Project & Program Manager	79

Top 10 Hazards Worked With or Near (N=1962 workers)



Medical Exam Results

Production & Non-construction Program

Test	Number Tested	Number Abnormal	Percent Abnormal
Recommended Follow-up for Possible Work-related Condition	1240	652	52.6%
Spirometry Disease (Restrictive, Obstructive, Mixed)	1122	469	41.8%
Chest X-ray (Parenchymal and/or Pleural)	1136	392	34.5 %
Positive Beryllium	897	37	4.1%
Material Hearing Impairment (MHI)	840	445	53.0%
Recommended Follow-up for Non-Work-related Condition	1240	518	41.8%

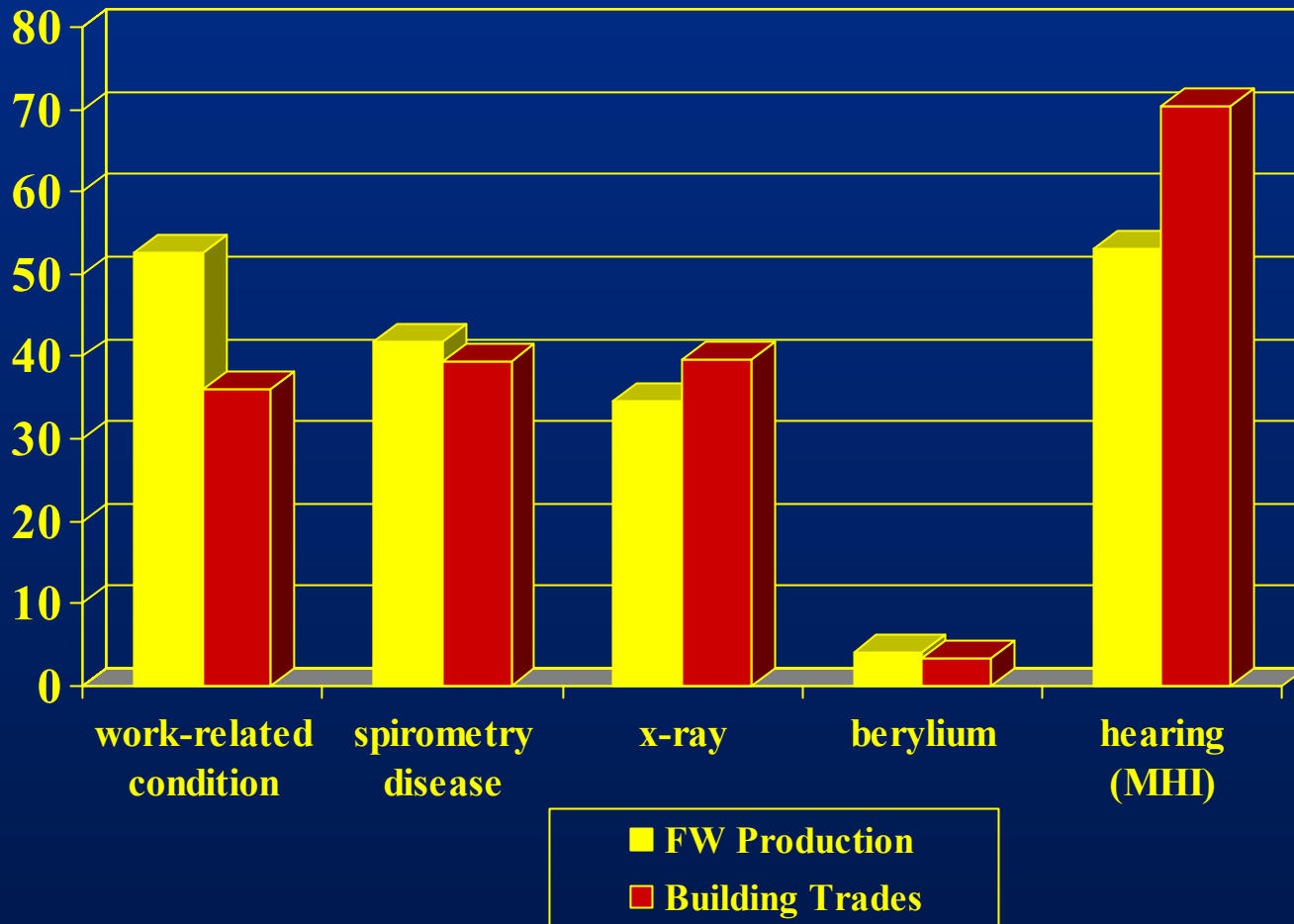
Medical Exam Results

Building Trades Program

Test	Number Tested	Number Abnormal	Percent Abnormal
Recommended Follow-up for Possible Work-related Condition	1869	674	36.1%
Spirometry Disease (Restrictive, Obstructive, Mixed)	1192	469	39.3 %
Chest X-ray (Parenchymal and/or Pleural)	1196	475	39.7 %
Positive Beryllium	1198	39	3.3 %
Material Hearing Impairment (MHI)	674	475	70.5 %
Recommended Follow-up for Non-Work-related Condition	1869	1213	64.9%

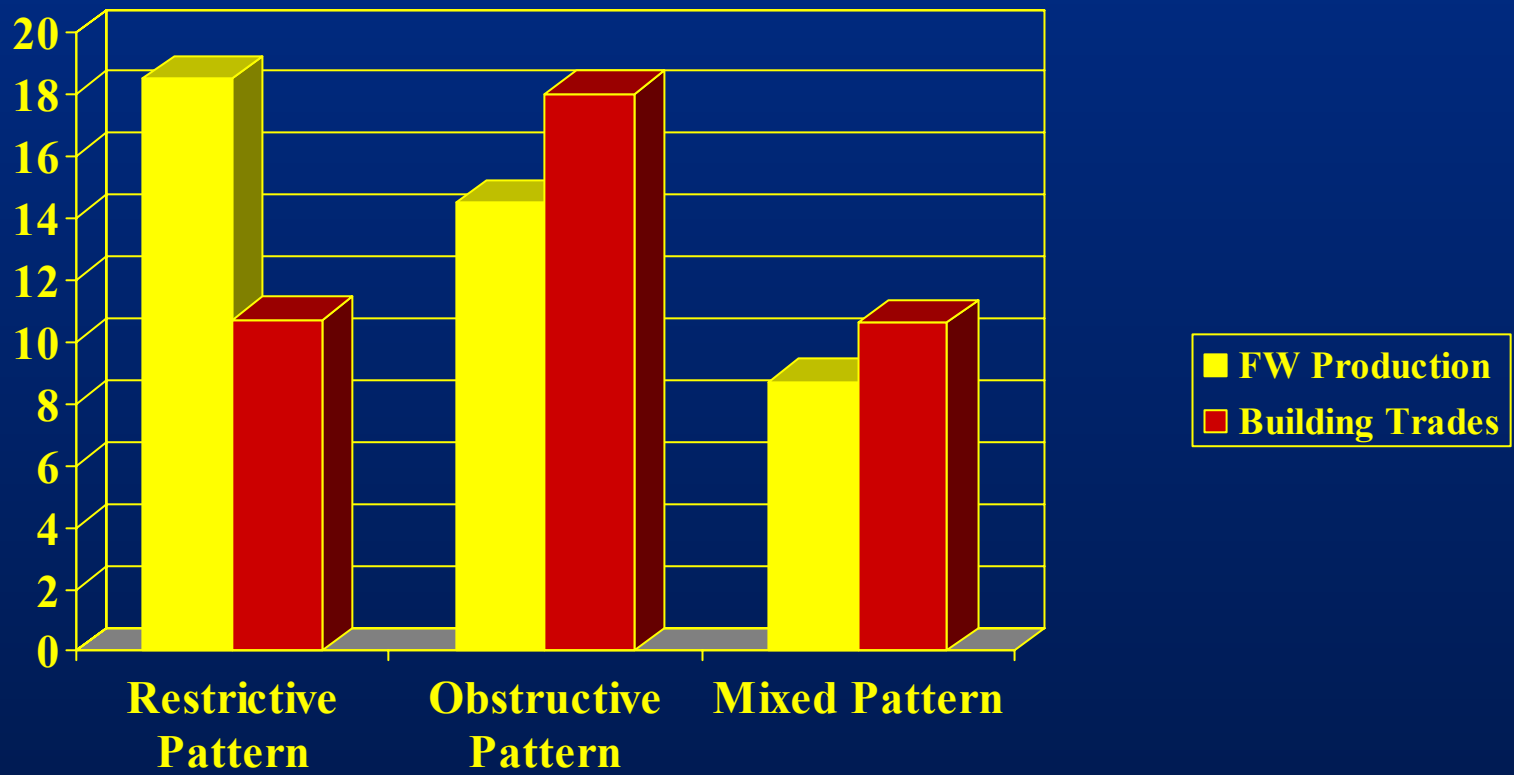
Exam Findings

Percent Abnormal



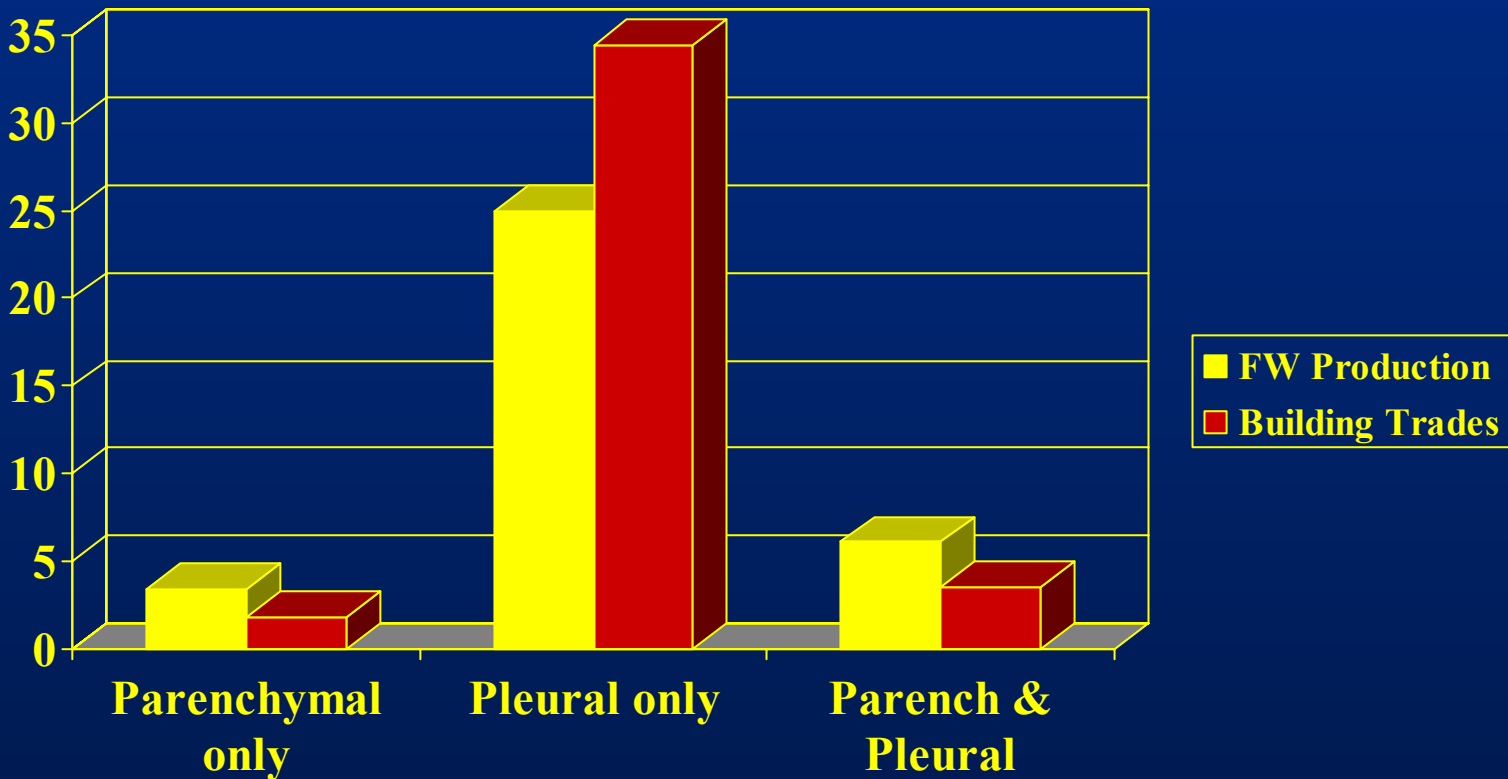
Spirometry Findings

Percent Abnormal



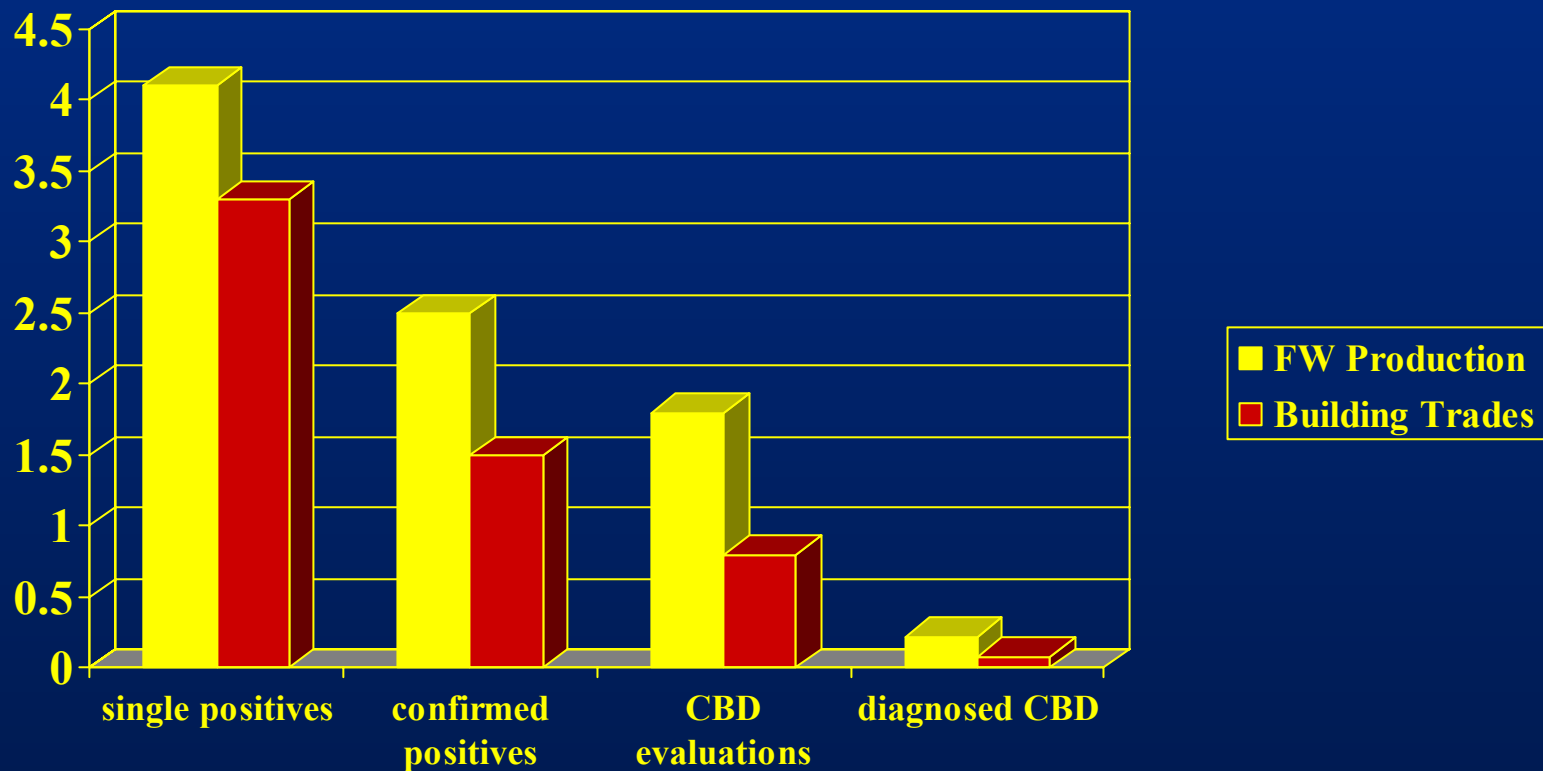
X-ray Findings

Percent Abnormal



Beryllium Findings

Percent Abnormal



Hanford Former Workers

Comparisons with Other Populations

Workers with Potential Beryllium Exposure

	Hanford Building Tr.	Hanford Production	Current Hanford Workers	Rocky Flats *
Workers with BeLPT	1198	952	1082	5173
Workers Sensitized	18 (1.5%)	22 (2.5%)	26 (2.4%)	154 (3.0%)
Workers with CBD	1 (0.08%)	3 (0.33%)	9 (0.83%)	81 (1.6%)

* Stange, et al. 2001. Applied Occ. Env. Hyg. 16:405

Hanford Former Workers

Comparisons with Other Populations

	Hanford Building Tr	Hanford Production	Retired BC Insulators *	Age matched Retirees *
Pleural Abnormality	453 (37.9%)	353 (31.1%)	13 (45%)	12 (14%)
Parenchymal Abnormality	64 (5.3%)	108 (9.5%)	6 (20%)	4 (5%)
Obstructive Disease	215 (18.0%)	163 (14.5%)	31 (35%)	Not measured
Restrictive Disease	128 (10.7%)	208 (18.5%)	31 (22%)	Not measured

* Kennedy, et al. 1991 Am. J. Ind. Med. 20: 673.

L&I Claims Recommended for Hanford Former Production Workers

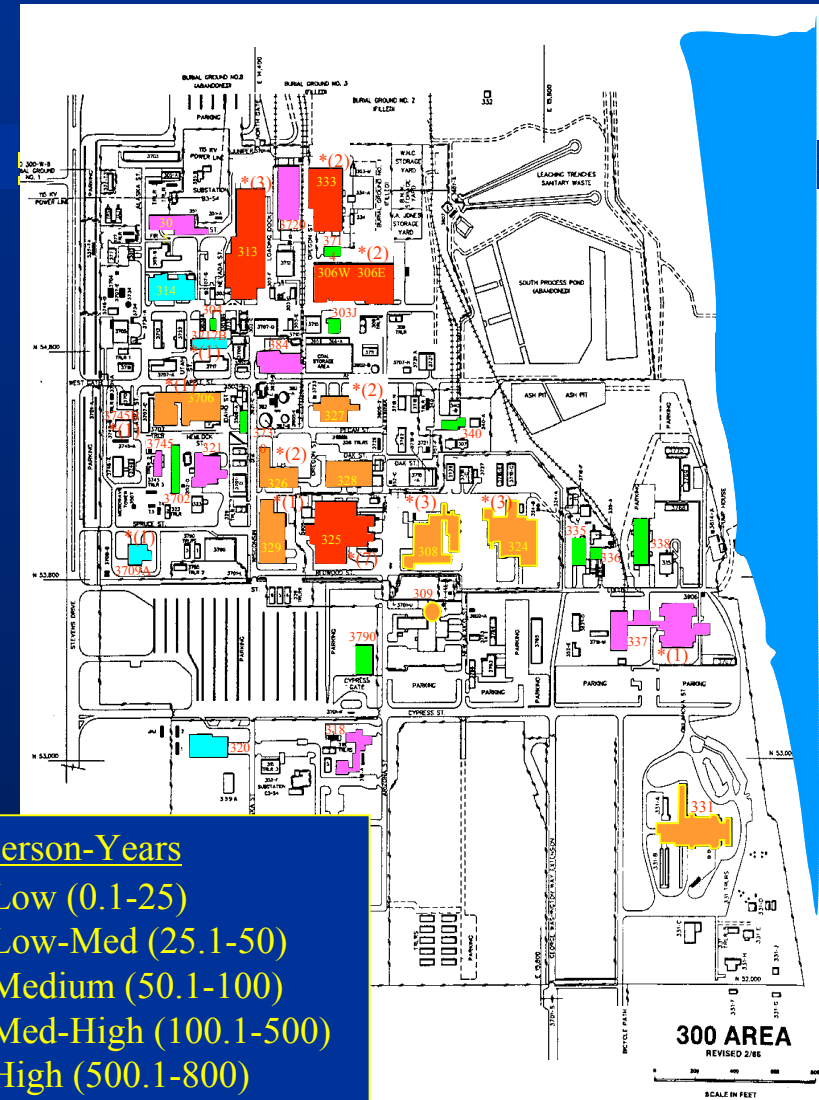
Medical Condition	Recom- mend Claim	Claim filed	Claim accepted	Claim denied	Pending
Asbestos	381	202	55	54	93
Beryllium Sensitivity	48	31	12	8	11
Hearing	431	195	65	46	84

Hanford 300 Area Beryllium: Job Exposure History n=965

Former Worker Beryllium Questionnaire &
Occupational History Survey
9/2001

Operations Performed in Beryllium Exposed Buildings

1. Fuels manufacturing:
333, 313, 303
2. Fuels research (including fuels pilot plants):
313, 306, 308, 303, 304, 305B, 309, 314, 324, 325,
326, 327, 3707
3. Other research (optics, metallurgy, physics, biology,
etc):
324, 327, 331, 3706, 3716, 3745B
4. Research support (machining, fabrication, etc.):
306, 328, 3731A, 3751A
5. Chemical or radiochemical laboratory operation:
320, 325, 329, 3706, 3708, 3720
6. Storage of Be-containing process waste:
303, 305B, 311TF, 334A
7. Storage of Be-containing materials:
309, 318, 3708, 3712, 3718



Person-Years

- Low (0.1-25)
- Low-Med (25.1-50)
- Medium (50.1-100)
- Med-High (100.1-500)
- High (500.1-800)

* (#) Sensitized
jobs/bldg

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